MINUTES

NFPA Technical Committee on Electrical Systems (HEA-ELS)
NFPA 99 Second Draft Meeting (Annual 2026)

August 12 – 13, 2025
8:00 AM – 5:00 PM (EDT)

In-Person/Hybrid, NFPA Headquarters Quincy, MA

1. **Call to order.** Pamela Gwynn, chair, called the meeting to order at 8:09 on 8/12/2025.
2. **Introductions.** Attendees introduced themselves and identified their affiliation and NFPA staff took attendance.
3. **Chair report.** Pamela Gwynn welcomed attendees and provided an overview of the meeting.
4. **Staff liaison report.** Jeff Sargent provided an overview of the standards development process and the revision cycle schedule.
   a. The following members declared that they had been retained to represent the interest of an entity that would be classified in an interest category different from their own with respect to a specific issue or issues that were addressed by the committee. These members refrained from voting on the Public Input, Public Comment or other matters, as noted.
      i. No members declared representation of an interest other than their current committee membership classification.
5. **Previous meeting minutes.** The minutes from July 30 - August 2, 2024, Kansas City, MO First Draft meeting were approved without revision.
6. **NFPA 99 Second Draft.**

   Review of Public Comments and Committee Inputs. The Technical Committee reviewed the Public Comments and Committee Inputs and developed Second Revisions as necessary. These will be available in the Second Draft Report at www.nfpa.org/99.

   a. **Task group reports.** The following task groups provided their reports and recommendations.
      i. **Public Comments Task Group 1**. Jan Ehrenwerth. The task group provided a report, and revisions were made. The task group has been discharged with thanks. See attached.
      ii. **Public Comments Task Group 2**. Stephen Lipster. The task group provided a report, and revisions were made. The task group has been discharged with thanks. See attached.

iii. **Low Voltage/Limited Energy Connection Point Task Group.** Joshua Griffith. No report provided. The task group has been discharged with thanks.

7. **Other Business.** No other business was undertaken by the committee. Long time committee member Jan Ehrenwerth representing the American Society of Anesthesiologists is retiring and stepping down from the committee. Dr. Ehrenwerth was thanked for his years of service as a member of the Technical Committee on Electrical Systems.

8. **Future meetings.** This was the final meeting of this committee for the revision cycle. Public Inputs for the next edition are expected to close June 2027. A meeting notification will be posted at www.nfpa.org/99next when the next meeting is scheduled.

9. **Adjournment.** The meeting was adjourned at 1:34 PM on 8/13/2025.

Attendees

Committee Members:

✓	**Gwynn, Pamela**	Chair	UL Solutions
✓	**Biason, Krista**	Principal	HGA Architects and Engineers
✓	**Campbell, David***	Principal	The Aluminum Association, Inc.
	Chandler, H. David	Principal	NFPA Health Care Section
✓	**Chilton, Nancy**	Principal	Schneider Electric
✓	**Chisholm, Dan***	Principal	Motor and Generator Institute/MGI
	D'Antona, Jason	Principal	Partners Healthcare
✓	**Della Croce, Vincent**	Principal	Siemens
✓	**Ehrenwerth, Jan**	Principal	American Society of Anesthesiologists
✓	**Finen, Chris**	Principal	Eaton Corporation
✓	**Griffith, Joshua**	Principal	US Army Corps of Engineers (USACE)
✓	**Hoegberg, Leif**	Principal	InterNational Electrical Testing Association
✓	**Lipster, Stephen**	Principal	SNAG Consulting
✓	**Parrish, Thomas**	Principal	Telgian Corporation
✓	**Porter, Kevin**	Principal	National Electrical Manufacturers Association
✓	**Rea, Vincent***	Principal	TLC Center for Architecture
	Rink, Mike	Principal	University of Rochester Medical Center
	Rock, Brian	Principal	Hubbell Incorporated
✓	**Sappington, Steve***	Principal	Caterpillar Inc.
✓	**Savage, Michael***	Principal	Marion County Building Safety

✓	**Schnick, Jamie**	Principal	Office of Statewide Health Planning and Development
	Schutte, John	Principal	Mortenson Construction
✓	**Smidt, Ronald***	Principal	American Society for Healthcare
✓	**Smith, Gabriel**	Principal	International Brotherhood of Electrical Workers
	Stoddard, Randy	Principal	Children's Hospital Philadelphia
✓	**Vernon, Walter**	Principal	Mazzetti
✓	**Williams, David**	Principal	International Alliance of the Electrical Industry
	Wolff, Robert	Principal	BRE Engineers
✓	**Noren, Jeff**	Voting Alternate	National Electrical Contractors Association
	Williams, John	Voting Alternate	Washington State Department of Health
	Avery, Jesse	Alternate	Mazzetti
✓	**Beebe, Chad**	Alternate	American Society for Healthcare
✓	**Buchanan, Charles**	Alternate	US Army Corps of Engineers, Medical Facilities
✓	**Campbell, Derrick**	Alternate	Penn Medicine
	Chisholm, Dan	Alternate	MGI Systems, Inc.
✓	**Chutka, Steve**	Alternate	Siemens
✓	**Dagenais, David***	Alternate	Partners/Wentworth-Douglas Hospital
✓	**Eason, Matthew***	Alternate	NFPA Health Care Section
	Evers, Paul	Alternate	UL Solutions
	Freidenfelds, Lauris	Alternate	Telgian Corporation
✓	**Hickman, Palmer**	Alternate	International Brotherhood of Electrical Workers
✓	**Kennedy, Chad**	Alternate	Schneider Electric
✓	**Linder, David**	Alternate	Hubbell Incorporated
	Lyons, David	Alternate	American Society of Anesthesiologists
	North, Taw	Alternate	TLC Engineering for Architecture
✓	**Stoudt, Brad**	Alternate	Eaton Corporation
✓	**Sargent, Jeff**	Staff Liaison	NFPA

Guests:

Luria, Isaac American Society of Anesthesiologists

Rabel, Don	National Electrical Contractors Association
Schmitt, Dennis	Illinois Department of Public Health
Stone, Mike	National Electrical Manufacturers Association
Harrington, Greg	NFPA Staff

*Participated by teleconference: 8
Total number in attendance: 38

2027 NFPA 99 HEA-ELS Public Comment Task Group Report

TG# 1		
TG Chair	Jan Ehrenwerth	
TG Members	David Campbell, Danny Chisholm, James Coppage, Jason D'Antona, Vince Della Croce, Leif Hoegberg, David Linder, Don Rabel, Mike Rink, Michael Savage, Randy Stoddard, David Williams, John Williams, Robert Wolff	
Section	Public Comment #	TG Recommendation (Create SR, Reject, Reject but See, Reject but Hold) & Statement
6.7.5.1.2.2	42	Action: Reject but See Statement: The editorial correction suggested by the public comment has been implemented and additional clarification of when it is necessary to provide power for the identified functions has been made.
6.7.5.1.2.3	58	Action: Reject but See Statement: The revision adds a permissive requirement for supply life safety loads in high rise health care facilities from the life safety branch. Only single-phase motors are permitted in order to limit the motor load being supplied by the life safety branch.
New definition following 3.3.79		Action: Create Second Revision to extract definition of "high-rise building" from NFPA 101. "3.3.80 High-Rise Health Care Facility. A building where the floor of an occupiable story is greater than 75 ft (23 m) above the lowest level of fire department vehicle access. [101, 2024] (HEA-ELS)" Statement: The revision adds a definition to provide context for the new requirement covering loads supplied by the life safety branch in high-rise health care facilities.
6.7.5.1.3.2	141	Action: Reject but See Statement: The term "select receptacles" has been revised to use the defined term "selected receptacles" in 6.7.5.1.3.2(A).
6.7.5.1.3.2(A)	39	Action: Reject Statement: This section provide mandatory language on what the critical branch supplies and is necessary for consistent interpretation and application.
6.7.5.1.3.2(B)	43	Action: Reject Statement: The recommended language does not provide

		additional clarity. Determination of what is effective for facility operation is the responsibility of the health care facilities governing body.
6.7.5.1.3.2(B)	**53**	**Action: Reject** **Statement: It is unclear what the recommended action of this public comment is seeking to revise.**
6.7.5.1.4.4	**44**	**Action: Create Second Revision** **Statement: The revision eliminates redundant text.**
6.7.5.2.2	**14**	**Action: Reject but Hold** **Statement: The recommendation is not related to a public input or committee input and is deemed to be new material.**
6.7.6.2.1.4	**142**	**Action: Reject but See** **Statement: This revision deletes Section 6.7.6.2.1.4. A companion second revision amends the text of Section 6.7.2.3.2.**
6.7.2.3.2		**Action: Create Second Revision** **Statement: The revision clarifies that one switch is permitted if the load on the essential electrical system is 150kVA or less.**
6.7.6.2.1.5(A)	**45**	**Action: Reject but See** **Statement: The revision limits the application to single phase equipment only to limit the size of the accessory loads supplied by the life safety branch.**
6.7.6.2.1.5(A)	**57**	**Action: Accept** **Statement: Where provided with a battery system that meets the requirements for length of operation connecting the system to the Life Safety Branch is unnecessary.**
6.7.6.2.1.5(B)	**46**	**Action: Accept** **Statement: The revision correlate with the action to add a new list item (7) for single-phase power source accessories.**
6.7.6.2.1.5(G)	**47**	**Action: Accept** **Statement: The revision deletes a requirement that is now redundant with the addition of 6.7.6.2.1.5(A)(7). Larger 3-phase accessory loads can be connected to the equipment branch per 6.7.6.2.1.6(C).**
6.7.6.2.1.5(G)	**54**	**Action: Reject** **Statement: Section 6.7.6.2.1.5(G) has been deleted.**
6.7.6.2.1.6	**48**	**Action: Accept** **Statement: The revision provides the ability to connect to the equipment branch either automatically without delay or with delay.**

6.9.1.1	**143**	**Action: Reject but see** **Statement: The revision changes "and" to "or" to avoid confusion that the components must be serving both types of spaces to qualify under this requirement.**
6.10.3.2	**112**	**Action: Reject** **Statement: The proposed requirement introduces a term that is undefined. Without any guidance as to what constitutes "interconnection equipment" the designer, installer, and AHJ are left to make that determination.**
7.3.1.1	**78**	**Action: Accept** **Statement: The revision updates the referenced document.**
7.3.1.2.3.5(E)	**115**	**Action: Accept** **Statement: The revision adds a reference to a new requirement covering length of data and communications cables.**
7.3.1.2.3.6	**116**	**Action: Accept** **Statement: The revision provides correlation and parallel language on working space requirements in Chapter 7.**

Chapter 6 Electrical Systems
6.1* Applicability.
6.1.1 Electrical Installation.

Installation shall be in accordance with *NFPA 70.*

6.1.2

This chapter shall apply to new health care facilities as specified in Section 1.3.

6.1.3

The following paragraphs shall apply to new and existing health care facilities:

(1) 6.3.2.2.1

(2) 6.3.2.3.8(B)(2) and 6.3.2.3.8(B)(3)

(3) 6.3.2.3.7

(4) 6.3.2.6.8

(5) 6.3.2.8.2

(6) 6.3.3.2.5 through 6.3.3.2.7

(7) 6.3.3.3.3 and 6.3.3.3.4

(8) 6.3.4

(9) 6.7.1.2.7.2(H)

(10) 6.7.2.2.5(B)

(11) 6.7.2.2.6

(12) 6.7.4

(13) Section 6.8

6.1.4

The following paragraphs shall apply only to existing health care facilities:

(1) 6.3.2.5.1.3

(2) Section 6.9

6.2 Nature of Hazards.
6.2.1* Fire and Explosions.

Electrical systems shall be designed to mitigate the risks from fire and explosions as determined by the health care facility's governing body.

6.2.2 Shock.

Electrical systems shall be designed to mitigate the risks from shock to patients, staff, and visitors as determined by the health care facility's governing body.

6.2.3 Thermal.

Electrical systems shall be designed to mitigate the risks from thermal conditions as determined by the health care facility's governing body.

6.2.4 Natural Disasters.

Electrical systems shall be designed to mitigate the risks from natural disasters and severe weather events as dictated by the health care facility's operations plan.

6.2.5 Location of Electrical System Components.
6.2.5.1

Installations of electrical service equipment, power sources, accessories, and associated distribution equipment shall be located to reduce possible interruptions resulting from natural forces.

6.2.5.1.1 Indoor On-Site Power Source Installations.

Indoor on-site power sources shall be installed in a room dedicated to such sources.

6.2.5.1.1.1

The room housing the on-site power sources shall be separated from the rest of the building by minimum 2-hour fire-resistance-rated construction.

6.2.5.1.1.2

The on-site power source equipment shall be permitted to be installed in the room with the on-site power sources.

6.2.5.1.1.3

No other equipment, including architectural appurtenances, except those that serve the space shall be permitted in the room containing the on-site power sources.

6.2.5.1.2 Outdoor On-Site Power Source Installations.

6.2.5.1.2.1

The on-site power source shall comply with either of the following:

(1) It shall be installed in a suitable enclosure located outside the building and capable of resisting the entrance of snow or rain at a maximum wind velocity as required by the local building codes.

(2) It shall be constructed such that it can resist the impacts of snow or rain.

6.2.5.1.2.2

The power source(s) equipment shall be permitted to be installed in the enclosure with the power source(s).

6.2.5.1.2.3

No other equipment, including architectural appurtenances, except those that serve the space shall be permitted in the enclosure containing the power source(s).

6.2.5.2

Installations of electrical sources shall be located to reduce possible interruption resulting from natural forces and to reduce possible disruption due to internal wiring and equipment failures.

6.2.5.3

Feeders and associated raceways serving essential electrical system transfer equipment shall be located such that physical separation is provided between each of the electrical system feeders to prevent possible simultaneous interruption.

6.3 General.
6.3.1 Sources.

Health care facilities shall have a minimum of two independent power sources or sets of power sources, as required by Sections 6.4, 6.5, and 6.6, as follows:

(1) Each independent power source or set of power sources shall be sized not less than the maximum demand likely to be produced by the connected load of the essential electrical system.

(2) The power sources or sets of power sources shall have sufficient capacity to serve the nonessential electrical system in accordance with 6.3.1.1 or 6.3.1.2.

6.3.1.1

The capacity shall be based on the maximum demand likely to be produced.

6.3.1.2

If an energy management system is employed that automatically manages the connected load, the capacity shall be based on the maximum demand permitted by the energy management system.

6.3.2 Distribution.
6.3.2.1*

Distribution system arrangements shall be designed to minimize interruptions to the electrical systems due to internal failures by the use of equipment rated for the application.

6.3.2.2 Receptacles.
6.3.2.2.1* Types of Receptacles.
(A)

Each receptacle shall provide at least one separate, grounding terminal capable of maintaining low-contact resistance with its mating plug, despite severe electrical and mechanical use of the receptacle. The grounding terminal of each receptacle shall be connected to the reference grounding point by means of an insulated copper equipment grounding conductor.

(B)

Special receptacles, such as the following, shall be permitted:

(1) Four-pole units providing an extra pole for redundant grounding or ground continuity monitoring

(2) Locking-type receptacles

(C)

All non-locking-type, 125-volt, 15- or 20-ampere single, duplex, or quadruplex type receptacles, or any combination thereof, located in operating rooms and at patient bed locations in Category 1 and Category 2 spaces shall be listed and identified as “hospital grade.”

(D)

Receptacles that are located within patient rooms, bathrooms, playrooms, and activity rooms of pediatric units or spaces with similar risk as determined by the health care facility’s governing body by conducting a risk assessment, other than infant nurseries, shall be listed and identified as “tamper resistant” or shall employ a listed tamper-resistant cover.

(E)

Automatic receptacle controls shall not be permitted unless directed by the health care facility’s governing body.

6.3.2.2.2 Minimum Number of Receptacles.

The number of receptacles shall be determined by the intended use of the spaces in accordance with 6.3.2.2.2(A) through 6.3.2.2.2(E).

(A) Receptacles Serving Patient Bed Locations in Category 2 Spaces.

Each patient bed location shall be provided with a minimum of eight non-locking-type, 125-volt, 15- or 20-ampere receptacles, at least four of which shall be connected to either a nonessential electrical system branch circuit or a critical branch circuit supplied by a different transfer switch other than the receptacles at the same location. The receptacles shall be permitted to be single, duplex, or quadruplex type, or any combination thereof. Other receptacles (e.g., portable x-ray receptacles) serving special-purpose, cord- and plug-connected equipment shall be permitted to be locking or non-locking-type.

(B) Receptacles Serving Patient Bed Locations in Category 1 Spaces Other than Operating Rooms.

Each patient bed location shall be provided with a minimum of 14 non-locking-type, 125-volt, 15- or 20-ampere receptacles, at least seven of which shall be connected to either a nonessential electrical system branch circuit or a critical branch circuit supplied by a different transfer switch other than the receptacles at the same location. The receptacles shall be permitted to be single, duplex, or quadruplex type, or any combination thereof. Other receptacles (e.g., portable x-ray receptacles) serving special-purpose,cord- and plug-connected equipment shall be permitted to be locking or non-locking-type.

(C) Receptacles in Operating Rooms.

Each operating room shall be provided with a minimum of 36 125-volt, 15- or 20-ampere receptacles, at least 12 of which shall be connected to either a nonessential electrical system branch circuit or a critical branch circuit supplied by a different transfer switch other than the receptacles at the same location. The receptacles shall be permitted to be single, duplex, or quadruplex type, or any combination of the three. Other receptacles (e.g., portable x-ray receptacles) serving special-purpose, cord- and plug-connected equipment shall be permitted to be locking or non-locking-type.

(D) Receptacles in Bathrooms or Toilet Rooms.

Receptacles shall not be required in bathrooms or toilet rooms.

(E) Receptacles for Special Rooms.

Receptacles shall not be required in rooms where medical requirements mandate otherwise (e.g., certain psychiatric, pediatric, or hydrotherapy rooms).

6.3.2.2.3 Polarity of Receptacles.

Each receptacle shall be wired in accordance with *NFPA 70* to ensure correct polarity.

6.3.2.2.4 Other Services Receptacles.

Receptacles provided for other services having different voltages, frequencies, or types on the same premises shall be of such design that attachment plugs and caps used in such receptacles cannot be connected to circuits of a different voltage, frequency, or type, but shall be interchangeable within each classification and rating required for two-wire, 125-V, single-phase ac service.

6.3.2.2.5* Use of Isolated Ground Receptacles.
(A)

An isolated ground receptacle, if used, shall not defeat the purposes of the safety features of the grounding systems detailed in 6.3.2.5.1.

(B)

An isolated ground receptacle shall not be installed within a patient care vicinity.

(C)

Isolated grounding receptacles installed in branch circuits for patient care spaces shall be connected to an insulated equipment grounding conductor in accordance with 250.146(D) of *NFPA 70* in addition to the two equipment grounding conductor paths required in 6.3.2.5.1.4.

(D)

The equipment grounding conductor installed for isolated grounding receptacles in patient care areas shall be clearly identified using green insulation with one or more yellow stripes along its entire length.

6.3.2.2.6 Special-Purpose Outlets.

Branch circuits serving only special-purpose outlets or receptacles (e.g., portable x-ray receptacles) shall not be required to conform to the requirements of 6.4.3.

6.3.2.2.7* Clinical Laboratories.

Outlets with two to four receptacles, or an equivalent multioutlet assembly, shall be installed every 0.5 m to 1.0 m (1.6 ft to 3.3 ft) in instrument usage areas, and either installation shall be at least 80 mm (3.15 in.) above the countertop.

6.3.2.3 Wet Procedure Locations.
6.3.2.3.1*

Wet procedure locations shall be provided with special protection against electric shock.

6.3.2.3.2

This special protection shall be provided as follows:

(1) Power distribution system that inherently limits the possible ground-fault current due to a first fault to a low value, without interrupting the power supply

(2) Power distribution system in which the power supply is interrupted if the ground-fault current does, in fact, exceed the trip value of a Class A GFCI

6.3.2.3.3

The use of an isolated power system (IPS) shall be permitted as a protective means capable of limiting ground-fault current without power interruption if the IPS complies with 6.3.2.9.

6.3.2.3.4

Patient beds, toilets, bidets, and wash basins shall not be required to be considered wet procedure locations.

6.3.2.3.5*

Operating rooms shall be considered to be a wet procedure location, unless a risk assessment conducted by the health care governing body determines otherwise.

6.3.2.3.6

If the risk assessment conducted by the health care facility's governing body determines that the operating room is not a wet procedure location, then the special protection of 6.3.2.3 shall not be required.

6.3.2.3.7*

Operating rooms defined as wet procedure locations shall be protected by either isolated power or ground-fault circuit interrupters.

6.3.2.3.8

In existing construction, the requirements of 6.3.2.3.1 shall not be required when a written inspection procedure, acceptable to the authority having jurisdiction, is performed by a designated individual at the hospital to indicate that equipment grounding conductors for 120-volt, single-phase, 15- and 20-ampere receptacles; cord- and plug-connected equipment; and fixed electrical equipment are installed and maintained in accordance with *NFPA 70*, the applicable performance requirements of this chapter, and Chapter 10.

(A)

The procedure shall include electrical continuity tests of all required equipment, grounding conductors, and grounding conductor connections.

(B)

Fixed receptacles, cord- and plug-connected equipment, and fixed electrical equipment shall be tested as follows:

(1) When first installed

(2) Where there is evidence of damage

(3) After any repairs

6.3.2.3.9

Where GFCI protection is used in an operating room, one of the following shall apply:

(1) Each receptacle shall be an individual GFCI device.

(2) Each receptacle shall be individually protected by a single GFCI device.

6.3.2.4* Circuits.
6.3.2.4.1

Nonessential electrical system branch circuits serving a patient bed location shall be supplied from not more than one nonessential electrical system branch-circuit distribution panel.

6.3.2.4.2

Branch circuits serving a patient bed location shall be permitted to be supplied from more than one critical branch-circuit distribution panel.

6.3.2.4.3

Only authorized personnel shall have access to overcurrent protective devices serving Category 1 and Category 2 spaces.

6.3.2.4.4

Overcurrent protective devices serving Category 1 and Category 2 spaces shall not be located in public access spaces.

6.3.2.4.5

Isolated power panels shall be permitted to be located in Category 1 spaces.

6.3.2.4.6

Low-voltage wiring shall comply with either of the following:

(1) Fixed systems of 30 V (dc or ac rms) or less shall be permitted to be ungrounded if the insulation between each ungrounded conductor and the primary circuit, which is supplied from a conventionally grounded distribution system, is the same protection as required for the primary voltage.

(2) A grounded low-voltage system shall be permitted if load currents are not carried on the equipment grounding conductors.

6.3.2.5 Grounding.
6.3.2.5.1

Grounding requirements shall comply with the requirements in 6.3.2.5.1.1 through 6.3.2.5.1.5.

6.3.2.5.1.1 Equipment Grounding Circuitry Integrity.

Equipment grounding and bonding conductors and patient care vicinity grounding and bonding conductors shall be installed such that the continuity of the system cannot be interrupted nor the resistance raised above an acceptable level by the installation, removal, or replacement of any installed device or end use equipment.

6.3.2.5.1.2 Reliability of Grounding.

The equipment grounding conductors shall conform to *NFPA 70.* Branch circuits serving electrical equipment within the patient care vicinity shall be provided with effective ground-fault current paths dual-fed by a wiring method that qualifies as an equipment grounding conductor and by an insulated copper equipment grounding conductor.

6.3.2.5.1.3 Separate Equipment Grounding Conductor.

When existing construction does not have a separate equipment grounding conductor, the continued use of the system shall be permitted if it meets the performance requirements in 6.3.3.1.

6.3.2.5.1.4 Grounding of Receptacles and Fixed Electrical Equipment in Patient Care Spaces.
(A) Wiring Methods.

All branch circuits serving patient care spaces shall be provided with an effective ground-fault current path by installation in a metal raceway system, or a cable having a metallic armor or sheath assembly.

The metal raceway system, or metallic cable armor, or sheath assembly shall itself qualify as an equipment grounding conductor.

(B) Insulated Equipment Grounding Conductors and Insulated Equipment Bonding Jumpers.

The following shall be directly connected to an insulated copper equipment grounding conductor that is clearly identified along its entire length by green insulation, with no yellow stripes, and installed with the branch circuit conductors in the wiring methods as provided in 6.3.2.5.1.4(A):

(1) The grounding terminals of all receptacles other than isolated ground receptacles

(2) All non-current-carrying conductive surfaces of fixed electrical equipment likely to become energized and subject to personal contact, operating at over 100 volts

(3) Metal faceplates connected to the equipment grounding conductor by means of a metal mounting screw(s) securing the faceplate to a grounded outlet box or grounded wiring device

(4) Luminaires, more than 2.3 m (7½ ft) above the floor and switches located outside of the patient care vicinity, which are permitted to be connected to an equipment grounding return path complying with 6.3.2.5.1.4(A) or 6.3.2.5.1.4(B)

(C) Receptacles Mounted in Metal Receptacle Outlet Boxes, Metal Device Boxes, or Metal Enclosures.

Where receptacles are mounted in metal receptacle outlet boxes, metal device boxes, or metal enclosures, the performance of the connection between the receptacle grounding terminal and the metal box or enclosure shall be equivalent to the performance provided by copper wire sized in accordance with 250.146 and Table 250.122 of *NFPA 70*, but no smaller than 12 AWG.

6.3.2.5.1.5* Grounding Interconnects.

In patient care spaces supplied by the critical branch and by either the nonessential electrical system or a second critical branch ATS, grounding systems shall be interconnected.

6.3.2.5.2 Patient Equipment Grounding Point.

A patient equipment grounding point comprised of one or more grounding terminals or jacks shall be permitted in an accessible location in the patient care vicinity.

6.3.2.5.3* Special Grounding in Patient Care Rooms.

In addition to the grounding required to meet the performance requirements of 6.3.3.1, additional grounding shall be permitted where special circumstances so dictate.

6.3.2.6 Battery-Powered Lighting Units.
6.3.2.6.1

One or more battery-powered lighting units shall be provided within locations where deep sedation and general anesthesia is administered.

6.3.2.6.2

The lighting level of each unit shall be sufficient to terminate procedures intended to be performed within the operating room.

6.3.2.6.3

The sensor for units shall be wired to the unswitched portion of branch circuit(s) serving general lighting within the room.

6.3.2.6.4

The Level 1 or Level 2 EPS [emergency power supply] equipment location(s) shall be provided with battery-powered emergency lighting. This requirement shall not apply to units located outdoors in enclosures that do not include walk-in access. [**110:**7.3.1]

6.3.2.6.5

The emergency lighting charging system and the normal service room lighting shall be supplied from the load side of the transfer switch. [**110:**7.3.2]

6.3.2.6.6

The minimum average horizontal illumination provided by normal lighting sources in the separate building or room housing the EPS equipment for Level 1 shall be 32.3 lux (3.0 ft-candles) measured at the floor level, unless otherwise specified by a requirement recognized by the authority having jurisdiction. [**110:**7.3.3]

6.3.2.6.7

Units shall be capable of providing lighting for 1½ hours.

6.3.2.6.8

Units shall be tested monthly for 30 seconds, and annually for 30 minutes.

6.3.2.7 Other Non-Patient Care Areas. (Reserved)
6.3.2.8 Ground-Fault Protection.
6.3.2.8.1 Ground-Fault Protection of Equipment (GFPE).
6.3.2.8.1.1 Applicability.

The requirements of 6.3.2.8.1 shall apply to health care facilities housing Category 1 spaces or using life-support equipment and buildings that provide essential utilities or services for the operation of Category 1 spaces or electrical life-support equipment.

6.3.2.8.1.2 Disconnecting Means.

Where ground-fault protection is provided for operation of the service or feeder disconnecting means in accordance with 517.17 of *NFPA 70*, an additional step of ground-fault protection shall be provided at the disconnecting means for the next level of feeders downstream toward the load.

6.3.2.8.1.3 Selectivity.

GFPE for operation of the service and feeder disconnecting means shall be fully selective such that the downstream device and not the upstream device opens for downstream ground faults.

6.3.2.8.2 Ground-Fault Circuit-Interrupter (GFCI) Protection of Personnel.

Ground-fault circuit interrupters (GFCIs) shall be listed.

6.3.2.9* Isolated Power Systems.
6.3.2.9.1 Isolation Transformer.

An isolated power system shall not be required to be installed in any patient care space, except as specified in 6.3.2.3.

6.3.2.9.1.1

The isolation transformer shall be listed and approved for the purpose.

6.3.2.9.1.2

The primary winding shall be connected to a power source so that it is not energized with more than 600 V (nominal).

(A)

If present, the neutral of the primary winding shall be grounded in an approved manner.

(B)

If an electrostatic shield is present, it shall be connected to the reference grounding point.

6.3.2.9.1.3

Wiring of isolated power systems shall be in accordance with 517.160 of *NFPA 70*.

6.3.2.9.2 Impedance of Isolated Wiring.
6.3.2.9.2.1*

The impedance (capacitive and resistive) to ground of either conductor of an isolated system shall exceed 200,000 ohms when installed. The installation at this point shall include receptacles but is not required to include lighting fixtures or components of fixtures. This value shall be determined by energizing the system and connecting a low-impedance ac milliammeter (0 to 1 mA scale) between the reference grounding point and either conductor in sequence. This test shall be permitted to be performed with the line isolation monitor *(see 6.3.2.9.3.1)* connected, provided that the connection between the line isolation monitor and the reference grounding point is open at the time of the test. After the test is made, the milliammeter shall be removed and the grounding connection of the line isolation monitor shall be restored. When the installation is completed, including permanently connected fixtures, the reading of the

meter on the line isolation monitor, which corresponds to the unloaded line condition, shall be made. This meter reading shall be recorded as a reference for subsequent line impedance evaluation. This test shall be conducted with no phase conductors grounded.

6.3.2.9.2.2

An approved capacitance suppressor shall be permitted to be used to improve the impedance of the permanently installed isolated system; however, the resistive impedance to ground of each isolated conductor of the system shall be at least 1 megohm prior to the connection of the suppression equipment. Capacitance suppressors shall be installed so as to prevent inadvertent disconnection during normal use.

6.3.2.9.3 Line Isolation Monitor.
6.3.2.9.3.1*

In addition to the usual control and protective devices, each isolated power system shall be provided with an approved, continually operating line isolation monitor that indicates possible leakage or fault currents from either isolated conductor to ground.

6.3.2.9.3.2

The monitor shall be designed such that a green signal lamp, conspicuously visible in the area where the line isolation monitor is utilized, remains lighted when the system is adequately isolated from ground; and an adjacent red signal lamp and an audible warning signal (remote if desired) shall be energized when the total hazard current (consisting of possible resistive and capacitive leakage currents) from either isolated conductor to ground reaches a threshold value of 5.0 mA under normal line voltage conditions. The line isolation monitor shall not alarm for a fault hazard current of less than 3.7 mA.

6.3.2.9.3.3*

The line isolation monitor shall comply with either of the following:

(1) It shall have sufficient internal impedance such that, when properly connected to the isolated system, the maximum internal current that will flow through the line isolation monitor, when any point of the isolated system is grounded, shall be 1 mA.

(2) It shall be permitted to be of the low-impedance type such that the current through the line isolation monitor, when any point of the isolated system is grounded, will not exceed twice the alarm threshold value for a period not exceeding 5 milliseconds.

6.3.2.9.3.4*

An ammeter connected to indicate the total hazard current of the system (contribution of the fault hazard current plus monitor hazard current) shall be mounted in a plainly visible place on the line isolation monitor with the "alarm on" zone (total hazard current = 5.0 mA) at approximately the center of the scale. A line isolation monitor shall be located in the operating room.

6.3.2.9.3.5

Means shall be provided for shutting off the audible alarm while leaving the red warning lamp activated. When the fault is corrected and the green signal lamp is reactivated, the audible alarm-silencing circuit shall reset automatically, or an audible or distinctive visual signal shall indicate that the audible alarm is silenced.

6.3.2.9.3.6

A reliable test switch shall be mounted on the line isolation monitor to test its capability to operate (i.e., cause the alarms to operate and the meter to indicate in the "alarm on" zone). This switch shall transfer the grounding connection of the line isolation monitor from the reference grounding point to a test impedance arrangement connected across the isolated line; the test impedance(s) shall be of the appropriate magnitude to produce a meter reading corresponding to the rated total hazard current at the nominal line voltage, or to a lesser alarm hazard current if the line isolation monitor is so rated. The operation of this switch shall break the grounding connection of the line isolation monitor to the reference grounding point before transferring this grounding connector to the test impedance(s), so that making this test will not add to the hazard of a system in actual use; nor will the test include the effect of the line-to-ground stray impedance of the system. The test switch shall be of a self-restoring type.

6.3.2.9.3.7

The line isolation monitor shall not generate energy of sufficient amplitude or frequency, as measured by a physiological monitor with a gain of at least 104 with a source impedance of 1000 ohms connected to the balanced differential input of the monitor, to create interference or artifact on human physiological

signals. The output voltage from the amplifier shall not exceed 30 mV when the gain is 104. The impedance of 1000 ohms shall be connected to the ends of typical unshielded electrode leads that are a normal part of the cable assembly furnished with physiological monitors. A 60 Hz notch filter shall be used to reduce ambient interference, as is typical in physiological monitor design.

6.3.2.9.4 Identification of Conductors for Isolated (Ungrounded) Systems.

The isolated conductors shall be identified in accordance with 517.160(A)(5) of *NFPA 70.*

6.3.3 Performance Criteria and Testing.
6.3.3.1 Grounding System in Patient Care Spaces.
6.3.3.1.1* Grounding System Testing.

The effectiveness of the grounding system shall be determined by voltage measurements and impedance measurements.

6.3.3.1.1.1

For new construction, the effectiveness of the grounding system shall be evaluated before acceptance.

6.3.3.1.1.2

Small wall-mounted conductive surfaces not likely to become energized, such as surface-mounted towel and soap dispensers, mirrors, and so forth, shall not be required to be intentionally grounded or tested.

6.3.3.1.1.3

Large metal conductive surfaces not likely to become energized, such as windows, door frames, and drains, shall not be required to be intentionally grounded or periodically tested.

6.3.3.1.1.4*

Whenever the electrical system has been altered or replaced, that portion of the system shall be tested.

6.3.3.1.2 Reference Point.

The voltage and impedance measurements shall be taken with respect to a reference point, which shall be one of the following:

(1) Reference grounding point *(see Chapter 3)*

(2) Grounding point, in or near the room under test, that is electrically remote from receptacles (e.g., an all-metal cold-water pipe)

(3) Grounding contact of a receptacle that is powered from a different branch circuit from the receptacle under test.

6.3.3.1.3* Voltage Measurements.
6.3.3.1.3.1

The voltage measurements shall be made under no-fault conditions between a reference point and exposed fixed electrical equipment with conductive surfaces in a patient care vicinity.

6.3.3.1.3.2

The voltage measurements shall be made with an accuracy of ± 5 percent.

6.3.3.1.3.3

Voltage measurements for faceplates of wiring devices shall not be required.

6.3.3.1.4* Impedance Measurements.

The impedance measurement shall be made with an accuracy of ± 5 percent.

6.3.3.1.4.1

For new construction, the impedance measurement shall be made between the reference point and the grounding contact of 10 percent of all receptacles within the patient care vicinity.

6.3.3.1.4.2

The impedance measurement shall be the ratio of voltage developed (either 60 Hz or dc) between the point under test and the reference point to the current applied between these two points.

6.3.3.1.5 Test Equipment.

Electrical safety test instruments shall be tested periodically, but not less than annually, for acceptable performance.

6.3.3.1.5.1

Voltage measurements specified in 6.3.3.1.3 shall be made with an instrument having an input resistance of 1000 ohms ± 10 percent at frequencies of 1000 Hz or less.

6.3.3.1.5.2

The voltage across the terminals (or between any terminal and ground) of resistance-measuring instruments used in occupied patient care rooms shall not exceed 500 mV rms or 1.4 dc or peak to peak.

6.3.3.1.6 Criteria for Acceptability for New Construction.
6.3.3.1.6.1

The voltage limit shall be 20 mV.

6.3.3.1.6.2

The impedance limit shall be 0.2 ohm for systems containing isolated ground receptacles and 0.1 ohm for all others.

6.3.3.2 Receptacle Testing in Patient Care Spaces.
6.3.3.2.1

The physical integrity of each receptacle shall be confirmed by visual inspection.

6.3.3.2.2

The continuity of the grounding circuit in each electrical receptacle shall be verified.

6.3.3.2.3

Correct polarity of the hot and neutral connections in each electrical receptacle shall be confirmed.

6.3.3.2.4

The retention force of the grounding blade of each electrical receptacle (except locking-type receptacles) shall be not less than 115 g (4 oz).

6.3.3.2.5

Where hospital-grade receptacles are required at patient bed locations and in locations where deep sedation or general anesthesia is administered, testing shall be performed after initial installation, replacement, or servicing of the device.

6.3.3.2.6

Additional testing of receptacles in patient care spaces shall be performed at intervals defined by documented performance data.

6.3.3.2.7

Receptacles not listed as hospital-grade, at patient bed locations and in locations where deep sedation or general anesthesia is administered, shall be tested at intervals not exceeding 12 months.

6.3.3.3 Isolated Power Systems.
6.3.3.3.1 Patient Care Spaces.

If installed, the isolated power system shall be tested in accordance with 6.3.3.3.2.

6.3.3.3.2 Line Isolation Monitor Tests.

The line isolation monitor (LIM) circuit shall be tested after installation, and prior to being placed in service, by successively grounding each line of the energized distribution system through a resistor whose value is 200 × V (ohms), where V equals measured line voltage. The visual and audible alarms *(see 6.3.2.9.3.2)* shall be activated.

6.3.3.3.3

The LIM circuit shall be tested at intervals of not more than 1 month by actuating the LIM test switch *(see 6.3.2.9.3.6)*. For a LIM circuit with automated self-test and self-calibration capabilities, this test shall be performed at intervals of not more than 12 months. Actuation of the test switch shall activate both visual and audible alarm indicators.

6.3.3.3.4

After any repair or renovation to an electrical distribution system, the LIM circuit shall be tested in accordance with 6.3.3.3.2.

6.3.3.4 Ground-Fault Protection Testing.

When equipment ground-fault protection is first installed, each level shall be performance-tested to ensure compliance with 6.3.2.8.

6.3.4 Administration of Electrical System.
6.3.4.1 Record Keeping.
6.3.4.1.1*

A record shall be maintained of the tests required by this chapter and associated repairs or modification.

6.3.4.1.2

At a minimum, the record shall contain the date, the rooms or areas tested, and an indication of which items have met, or have failed to meet, the performance requirements of this chapter.

6.3.4.1.3 Isolated Power System (Where Installed).

A permanent record shall be kept of the results of each of the tests.

6.4 Category 1 Spaces.
6.4.1

Category 1 spaces shall be served by an essential electrical system in accordance with 6.7.5.

6.4.2

Category 1 spaces shall not be served by an essential electrical system in accordance with 6.7.6.

6.4.3

Category 1 spaces shall be served by circuits from a critical branch panel(s) served from a single automatic transfer switch and a minimum of one circuit served by the nonessential electrical system or by a system originating from a second critical branch automatic transfer switch.

6.4.4

An essential electrical system in accordance with 6.7.5 serving a Category 1 space shall be permitted to serve Category 2 spaces in the same facility.

6.5 Category 2 Spaces.
6.5.1

Category 2 spaces shall be served by a Type 1 or Type 2 EES.

6.5.2

Category 2 spaces served by a Type 1 or Type 2 EES shall be served by circuits from a branch panel(s) served from a single automatic transfer switch and a minimum of one circuit served by the nonessential electrical system or by a system originating from a second automatic transfer switch.

6.6 Category 3 and 4 Spaces.
6.6.1

Category 3 or Category 4 spaces shall not be required to be served by an EES.

6.7* Essential Electrical Systems.
6.7.1 Power Sources.
6.7.1.1* Design Considerations.

Essential electrical system loads shall be supplied by a minimum of two independent power sources or sets of power sources and sets of feeders designed to ensure sufficient reliability to provide effective facility operation consistent with the facility's emergency operations plan.

6.7.1.1.1

One on-site power source or set of power sources shall be provided with phase and ground current-sensing devices to minimize the extent of interruption to the electrical system due to abnormal current caused by overload or short circuits, or both.

6.7.1.1.2

The essential electrical system shall have a minimum of two independent power sources or sets of power sources.

6.7.1.1.2.1

At least one power source shall be on-site and sized to supply the entire essential electrical system.

6.7.1.1.2.2

The additional power source(s) shall be permitted to be either on-site or off-site.

6.7.1.2 General.

Power sources for essential electrical systems shall be designed to meet the requirements of such service.

6.7.1.2.1* Power Source.

One on-site power source or set of power sources for Type 1 and Type 2 essential electrical systems shall be classified as Type 10, Class X, Level 1 power sources as defined in 6.11.1.

6.7.1.2.2 Use for Essential Electrical System.
6.7.1.2.2.1* Optional Loads.
(A)

Power sources supplying the essential electrical system shall be permitted to supply optional loads.

(B)

Optional loads shall be served by their own transfer means such that they will not be transferred onto the essential electrical system (EES) power sources if the transfer would overload the equipment and, if connected, will be shed prior to an EES power source overload.

6.7.1.2.2.2

Where optional loads include contiguous or same-site facilities not covered in this code, provisions shall be made to meet the requirements of NFPA 101 for emergency egress under load-shed conditions.

6.7.1.2.2.3 Temporary On-Site Power Source for Maintenance or Repair of the On-Site Power Source.
(A)

If the on-site power source or set of power sources serving the essential electrical system does not have the capacity to support the anticipated demand load when any single on-site power source is disabled for maintenance or repair, it shall include a permanent switching means to connect a portable or temporary on-site power source that is available for the duration of the maintenance or repair and that complies with the following requirements:

(1) The connection to the portable or temporary on-site power source shall not require modification of the permanent system wiring.

(2) Transfer of power to the portable or temporary on-site power source shall be in accordance with 6.7.2.1.3.

(3) The connection point for the portable or temporary on-site power source shall be marked with the phase rotation and system bonding requirements.

(4) Mechanical or electrical interlocking shall prevent inadvertent interconnection of power sources.

(5) The switching means shall include a contact point that annunciates at a location remote from the on-site power source or at another facility monitoring system to indicate that the on-site power source is disconnected from the essential electrical system.

(B)

Using manual switching to switch from the on-site power source to the portable or temporary on-site power source and using the switching means for connection of a load bank shall be permitted.

(C)

The permanent switching means to connect a portable or temporary on-site power source for the duration of maintenance or repair shall not be required where any of the following conditions exists:

(1) All processes that rely on the essential electrical system source are capable of being disabled during maintenance or repair of the on-site power source.

(2) The building or structure is unoccupied and fire protection systems are fully functional and do not require an on-site power source.

(3) Other temporary on-site power sources can be substituted for the essential electrical system.

6.7.1.2.3 Location.
6.7.1.2.3.1 Indoor On-Site Power Source Installations.

On-site power source equipmentfor Level 1 systems shall not be installed in the same room as other power source service equipment where the service equipment is rated over 150 volts to ground and equal to or greater than 1000 amperes.

6.7.1.2.3.2 Physical Separation.

Feeders and associated raceways serving essential electrical system transfer equipment shall be located such that physical separation is provided between each of the electrical system feeders to prevent possible simultaneous interruption.

6.7.1.2.4* Capacity and Rating.

The essential electrical system power source or sets of power sources shall have the capacity and rating to meet the maximum demand likely to be produced by the connected load and be consistent with the facility's emergency operations plan.

6.7.1.2.5 Load Pickup.

The power source or set of power sources shall have the required capacity and response to pick up and carry the load within the time specified in Table 6.11.1(b) upon failure of the other power source or set of power sources.

6.7.1.2.6 Heating, Cooling, and Ventilating.

Design of the heating, cooling, and ventilation system for the on-site power sources room shall provide for factors including, but not limited to, the following:

(1) Heat

(2) Cold

(3) Dust

(4) Humidity

(5) Snow and ice accumulations around housings

(6) Louvers

(7) Remote radiator fans, as applicable

(8) Prevailing winds blowing against radiator fan discharge air

6.7.1.2.7 Alarm Annunciator.
6.7.1.2.7.1

Battery-powered annunciators shall be provided at the location of each on-site power source and at a remote location readily observed by operating personnel.

6.7.1.2.7.2

An electrically supervised annunciator shall indicate alarm conditions of each on-site and off-site power source as indicated in 6.7.1.2.7.2(A) through 6.7.1.2.7.2(H).

(A)

Individual visual signals shall indicate the following:

(1) When the power source is operating to supply power to load

(2) When the power source is unavailable

(B)*

A remote, common audible alarm shall be provided as specified in 6.7.1.2.7.2(G). [**110:**5.6.6]

(C)

Local annunciation and either facility or network remote annunciation shall be provided for a Level 1 on-site power source.

(D)

For the purposes of defining the types of annunciation in 6.7.1.2.7.2(C), the following shall apply:

(1) Local annunciation is located on the equipment itself or within the same equipment room.

(2) Facility remote annunciation is located on site but not within the room where the equipment is located.

(3) Network remote annunciation is located off site.

[**110:**5.6.6.3]

(E)

An alarm-silencing means shall be provided, and the panel shall include repetitive alarm circuitry so that, after the audible alarm has been silenced, it reactivates after the fault condition has been cleared and has to be restored to its normal position to be silenced again. [**110:**5.6.6.4]

(F)

In lieu of the requirement in 6.7.1.2.7.2(E), a manual alarm-silencing means shall be permitted that silences the audible alarm after the occurrence of the alarm condition, provided such means do not inhibit any subsequent alarms from sounding the audible alarm again without further manual action. [**110:**5.6.6.5]

(G)

Individual alarm indication to annunciate any of the conditions listed in Table 6.7.1.3.7.2 shall have the following characteristics:

(1) Be battery powered

(2) Be visually indicated

(3) Have additional contacts or circuits for a common audible alarm that signals locally and remotely when any of the itemized conditions occurs

(4) Have switches to test the operation of all visual alarm indicators

(H)*

The following shall apply to centralized computer systems:

(1) They shall not be used as a substitute for the alarm annunciator in 6.7.1.2.7.

(2) They shall be permitted to supplement the alarm annunciator in 6.7.1.2.7.

(I)

Wireless transmission of the EPS data required by 6.7.1.3.7.2 and 6.7.1.3.7.3 shall be permitted.

6.7.1.3 Generator Set.
6.7.1.3.1 Location.

The generator equipment shall be installed in a location that permits ready accessibility and a minimum of 0.9 m (36 in.) from the skid rails' outermost point in the direction of access for inspection, repair, maintenance, cleaning, or replacement. This requirement shall not apply to units in outdoor housings.

6.7.1.3.2 Maintenance of Temperature.

The generator shall be heated as necessary to maintain the water jacket and battery temperature determined by the generator manufacturer for cold start and load acceptance for the type of system.

6.7.1.3.3* Heating, Cooling, and Ventilating.

With the generator running at rated load, ventilation airflow shall be provided to limit the maximum air temperature in the generator room or the enclosure housing the unit to the maximum ambient air temperature permitted by the generator manufacturer.

6.7.1.3.3.1

Consideration shall be given to all the heat emitted to the generator equipment room by the energy converter, uninsulated or insulated exhaust pipes, and other heat-producing equipment.

6.7.1.3.3.2*

If required by the manufacturer, ventilation shall be supplied to the generator equipment.

(A)

For generators supplying Level 1 EPSS, ventilation air shall be supplied directly from a source outside the building by an exterior wall opening or from a source outside the building by a 2-hour fire-rated air transfer system.

(B)

For generators supplying Level 1 EPSS, discharge air shall be directed outside the building by an exterior wall opening or to an exterior opening by a 2-hour fire-rated air transfer system.

(C)

Fire dampers, shutters, or other self-closing devices shall not be permitted in ventilation openings or ductwork for supply or return/discharge air to generator equipment for Level 1 EPSS.

6.7.1.3.3.3

Ventilation air supply shall be from outdoors or from a source outside the building by an exterior wall opening or from a source outside the building by a 2-hour fire-rated air transfer system. [**110:**7.7.3]

6.7.1.3.3.4

Ventilation air shall be provided to supply and discharge cooling air for radiator cooling of the generator when running at rated load.

(A)

Ventilation air supply and discharge for a radiator-cooled generator shall have a maximum static restriction of 125 Pa (0.5 in. of water column) in the discharge duct at the radiator outlet.

(B)

Radiator air discharge shall be ducted outdoors or to an exterior opening by a 2-hour rated air transfer system. [**110:**7.7.4.2]

6.7.1.3.3.5

Motor-operated dampers, when used, shall be spring operated to open and motor closed. Fire dampers, shutters, or other self-closing devices shall not be permitted in ventilation openings or ductwork for supply or return/discharge air to generator equipment for Level 1 systems.

6.7.1.3.3.6

The ambient air temperature in the generator equipment room or outdoor housing containing Level 1 rotating equipment shall stabilize at not less than 4.5°C (40°F) when the equipment is not operating.

6.7.1.3.4* Energy Converters.

Internal combustion engine energy converters and associated cranking batteries shall be in accordance with the requirements of NFPA 110.

6.7.1.3.5 Compressed Air Starting Devices.

Other types of stored energy starting systems (except pyrotechnic) shall be permitted to be used where recommended by the manufacturer of the prime mover and subject to approval of the authority having jurisdiction, under the following conditions:

(1) Where two complete periods of cranking cycles are completed without replacement of the stored energy

(2) Where a means for automatic restoration from the emergency source of the stored energy is provided

(3) Where the stored energy system has the cranking capacity specified in 5.6.4.2.1 of NFPA 110

(4) Where the stored energy system has a "black start" capability in addition to normal discharge capability

[**110:**5.6.4.1.2]

6.7.1.3.6 Fuel Supply.

The fuel supply for the generator set shall comply with Sections 5.5 and 7.9 of NFPA 110.

6.7.1.3.7 Requirements for Safety Devices.
6.7.1.3.7.1 Internal Combustion Engines.

Internal combustion engines serving generator sets shall be equipped with the following:

(1) Sensor device plus visual warning device to indicate a water-jacket temperature below that required in 6.7.1.3.2

(2) Sensor devices plus visual prealarm warning device to indicate the following:

(a) High engine temperature (above manufacturer's recommended safe operating temperature range)

(b) Low lubricating oil pressure (below manufacturer's recommended safe operating range)

(c) Low water coolant level

(3) Automatic engine shutdown device plus visual device to indicate that a shutdown took place due to the following:

(a) Overcrank (failed to start)

(b) Overspeed

(c) Low lubricating oil pressure

(d) Excessive engine temperature

(4) Common audible alarm device to warn that one or more of the prealarm or alarm conditions exist

6.7.1.3.7.2 Safety Indications and Shutdowns.

Safety indications and shutdowns shall be in accordance with Table 6.7.1.3.7.2.

Table 6.7.1.3.7.2 Safety Indications and Shutdowns

Indicator Function (at Battery Voltage)	Level 1		
	CV	S	RA
(a) Overcrank	X	X	X
(b) Low water temperature	X	—	X
(c) High engine temperature prealarm	X	—	X
(d) High engine temperature	X	X	X
(e) Low lube oil pressure prealarm	X	—	X
(f) Low lube oil pressure	X	X	X
(g) Overspeed	X	X	X
(h) Low fuel main tank	X	—	X
(i) Low coolant level	X	O	X
(j) EPS supplying load	X	—	—
(k) Control switch not in automatic position	X	—	X

Indicator Function (at Battery Voltage)	Level 1		
	CV	S	RA
(l) High battery voltage	X	—	—
(m) Low cranking voltage	X	—	X
(n) Low voltage in battery	X	—	—
(o) Battery charger ac failure	X	—	—
(p) Lamp test	X	—	—
(q) Contacts for local and remote common alarm	X	—	X
(r) Audible alarm-silencing switch	—	—	X
(s) Low starting air pressure	X	—	—
(t) Low starting hydraulic pressure	X	—	—
(u) Air shutdown damper when used	X	X	X
(v) Remote emergency stop	—	X	—

CV: Control panel–mounted visual. S: Shutdown of EPS indication. RA: Remote audible. X: Required. O: Optional.

Notes:

(1) Item (p) is to be provided, but a separate remote audible signal is not required when the regular work site in 5.6.6 of NFPA 110 is staffed 24 hours a day.

(2) Item (b) is not required for combustion turbines.

(3) Item (r) or (s) is required only where used as a starting method.

(4) Item (j): EPS ac ammeter is permitted for this function.

(5) All required CV functions are to be visually annunciated by a remote, common visual indicator.

(6) All required functions indicated in the RA column are to be annunciated by a remote, common audible alarm as required in 5.6.5.2(4) of NFPA 110.

(7) Item (i) requires a low gas pressure alarm on gaseous systems.

(8) Item (b) must be set at 11°C (20°F) below the regulated temperature determined by the EPS manufacturer, as required in 5.3.1 of NFPA 110.

6.7.1.3.7.3

Individual visual signals plus a common audible signal to warn of an engine-generator alarm condition shall indicate the following:

(1) Low lubricating oil pressure

(2) Low water temperature (below that required in 6.7.1.3.2)

(3) Excessive water temperature

(4) Low fuel when the main fuel storage tank contains less than a 4-hour operating supply

(5) Overcrank (failed to start)

(6) Overspeed

6.7.1.4 Health Care Microgrid.

A health care microgrid in accordance with Section 6.10 shall be permitted to serve as the EPS for all or part of an essential electrical system.

6.7.2* Distribution.
6.7.2.1 General Requirements.
6.7.2.1.1* Coordination.
6.7.2.1.1.1

Overcurrent protective devices serving the essential electrical system shall be coordinated for the period of time that a fault's duration extends beyond 0.1 second.

6.7.2.1.1.2

Coordination shall not be required as follows:

(1) Between transformer primary and secondary overcurrent protective devices, where only one overcurrent protective device or set of overcurrent protective devices exists on the transformer secondary

(2) Between overcurrent protective devices of the same size (ampere rating) in series

6.7.2.1.2 Ground-Fault Protection of Equipment, Essential Electrical System.
6.7.2.1.2.1

Ground-fault protection of equipment with automatic disconnecting means shall not be required between on-site power sources or sets of power sources and any essential electrical system transfer switch or on the load side of any essential electrical system transfer switch.

6.7.2.1.2.2

Ground-fault indication without automatic disconnection shall be provided at any on-site power source.

6.7.2.1.3 Automatic Transfer Switch Features.
6.7.2.1.3.1 Power Sources.
(A)*

Undervoltage-sensing devices shall be provided to monitor all ungrounded lines of each power source to the ATS as follows:

(1) When the voltage on any phase falls below the minimum operating voltage of any load to be served, the transfer switch shall automatically initiate start-up and transfer to the other power source.

(2) *When the voltage on all phases of the interrupted power source returns to specified limits, the process of transfer back to that power source shall be initiated.

(B)

Both voltage-sensing and frequency-sensing equipment shall be provided to monitor one ungrounded line of the power sources.

(C)

Transfer to a power source shall be inhibited until the voltage and frequency are within a specified range to handle loads to be served.

(D)

Sensing equipment shall not be required in the transfer switch if it is included with thepower source control system.

6.7.2.1.3.2 Interlocking.

Mechanical interlocking or an approved alternate method shall prevent the inadvertent interconnection of any two separate power sources.

6.7.2.1.3.3* Manual Operation.

Instruction and equipment shall be provided for safe manual nonelectric transfer in the event the transfer switch malfunctions. [**110:**6.2.4]

6.7.2.1.3.4* Time Delay on Starting of Power Sources.
(A)

A time-delay device shall be provided to delay starting of the on-site power source.

(B)

The time-delay device shall prevent nuisance starting of an on-site power source and load transfer in the event of harmless momentary power dips and interruptions of the other power source.

6.7.2.1.3.5 Time Delay on Transfer.

An adjustable time-delay device shall be provided to delay transfer and sequence load transfer to the power source to avoid excessive voltage drop.

(A) Time Delay Commencement.

The time delay shall commence when proper voltage and frequency are achieved.

(B) Time Delay at Engine Control Panel.

Time delays shall be permitted to be located at the power source control panel in lieu of in the transfer switches.

6.7.2.1.3.6* Time Delay on Retransfer to Primary Power Source.

An adjustable time-delay device with automatic bypass shall be provided to delay retransfer to the primary power source.

6.7.2.1.3.7 Time Delay Bypass If a Power Source Fails.

The time delay shall be automatically bypassed if a power source fails.

(A)

The transfer switch shall be permitted to be programmed for a manually initiated retransfer to provide a planned momentary interruption of the load.

(B)

If used, the arrangement in 6.7.2.1.3.7(A) shall be provided with a bypass feature to allow automatic retransfer if the selected power source or set of power sources fails and the other power source is available.

6.7.2.1.3.8 Time Delay on Engine Shutdown.

A minimum time delay of 5 minutes shall be provided for unloaded running of a generator prior to shutdown to allow for engine cooldown.

(A)

The minimum 5-minute delay shall not be required on small (15 kW or less) air-cooled prime movers. [**110:**6.2.10.1]

(B)

A time-delay device shall not be required if it is included with the engine control panel or if a utility feeder is used as a power source.

6.7.2.1.3.9 Test Switch.

A test means shall be provided on each automatic transfer switch (ATS) that simulates failure of one power source and then transfers the load to another power source(s).

6.7.2.1.3.10* Indication of Transfer Switch Position.

Two pilot lights with identification nameplates or other approved position indicators shall be provided to indicate the transfer switch position. [**110:**6.2.13]

6.7.2.1.3.11 Motor Load Transfer.

Provisions shall be included to reduce currents resulting from motor load transfer if such currents could damage power source equipment or cause nuisance tripping of power source overcurrent protective devices.

6.7.2.1.3.12* Isolation of Neutral Conductors.

Provisions shall be included for ensuring continuity, transfer, and isolation of the power source neutral conductors wherever they are separately grounded to achieve ground-fault sensing.

6.7.2.1.3.13 Retransfer.

If a power source or set of power sources fails during a test, provisions shall be made to immediately retransfer to the other power source or set of power sources.

6.7.2.1.3.14 Switch Rating.

The rating of the transfer switches shall be adequate for switching all classes of loads to be served and for withstanding the effects of available fault currents without contact welding.

6.7.2.1.3.15* Automatic Transfer Switch.
(A)

Transfer of all loads shall be accomplished using an automatic transfer switch(es).

(B)

Each automatic transfer switch of 600 V or less shall be listed for the purpose and marked for emergency use.

6.7.2.1.3.16* Nonautomatic Transfer Switch Features.

Switching devices shall be mechanically held and shall be operated by direct manual or electrical remote manual control. [**110:**6.2.16]

(A) Interlocking.

Reliable mechanical interlocking or an approved alternate method shall prevent the inadvertent interconnection of the two power sources.

(B) Indication of Transfer Switch Position.

Two pilot lights with identification nameplates or other approved position indicators shall be provided to indicate the switch position. [**110:**6.2.16.2]

6.7.2.1.4 Nonautomatic Transfer Device Classification.

Nonautomatic transfer devices of 600 V or less shall be listed for the purpose and approved.

6.7.2.1.5 Nonautomatic Transfer Device Features.
6.7.2.1.5.1 General.

Switching devices shall be mechanically held and shall be operated by direct manual or electrical remote manual control. [**110:**6.2.16]

6.7.2.1.5.2 Interlocking.

Reliable mechanical interlocking or an approved alternate method shall prevent the inadvertent interconnection of two power sources.

6.7.2.1.5.3 Indication of Switch Position.

Two pilot lights with identification nameplates, or other approved position indicators, shall be provided to indicate the switch position. [**110:**6.2.16.2]

6.7.2.1.6 Bypass and Isolating Transfer Switches.

Bypass-isolation switches shall be permitted for bypassing and isolating the transfer switch and installed in accordance with 6.4.2, 6.4.3, and 6.4.4 of NFPA 110. [**110:**6.4.1]

6.7.2.1.6.1 Bypass-Isolation Switch Rating.

The bypass-isolation switch shall have a continuous current rating and a current rating compatible with that of the associated transfer switch. [**110:**6.4.2]

6.7.2.1.6.2 Bypass-Isolation Switch Classification.

Each bypass-isolation switch shall be listed for emergency electrical service as a completely factory-assembled and factory-tested apparatus. [**110:**6.4.3]

6.7.2.1.6.3* Operation.

With the transfer switch isolated or disconnected, the bypass-isolation switch shall be designed so it can function as an independent nonautomatic transfer switch and allow the load to be connected to either power source. [**110:**6.4.4]

6.7.2.1.6.4 Reconnection of Transfer Switch.

Reconnection of the transfer switch shall be possible without a load interruption greater than the maximum time, in seconds, specified by the type of system. [**110:**6.4.5]

6.7.2.2 Branches.
6.7.2.2.1

The division between the branches shall occur at transfer switches where more than one transfer switch is required.

6.7.2.2.2

Each branch shall be arranged for connection, within the time limits specified in this chapter, to another power source following a loss of a power source or set of sources.

6.7.2.2.3

The number of transfer switches to be used shall be based upon reliability, design, and load considerations.

6.7.2.2.3.1

Each branch of the essential electrical system shall have one or more transfer switches.

6.7.2.2.3.2

One transfer switch shall be permitted to serve one or more branches in a facility with a continuous essential electrical system load of 150 kVA (120 kW) or less.

6.7.2.2.3.3
(A)

Where a single transfer switch is used as permitted in 6.7.2.2.3.2, the following requirements shall apply:

(1) The single transfer switch shall include a bypass-isolation switch to facilitate maintenance of the transfer switch without jeopardizing continuity of power to the connected load.

(2) Division into separate branches shall not be required.

(B)

A bypass-isolation switch in accordance with 6.7.2.2.3.3(A) shall not be required where any of the following conditions exist:

(1) All processes that rely on the essential electrical system are capable of being disabled during maintenance or repair activities.

(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 are permitted to be substituted for the essential electrical system.

6.7.2.2.4 Feeders from On-Site Power Source.
6.7.2.2.4.1

A single feeder supplied by the on-site power source shall be permitted to supply the essential electrical system to the point at which the life safety, critical, and equipment branches are separated.

6.7.2.2.4.2

Installation of the transfer equipment shall be permitted at locations other than that of the on-site power source.

6.7.2.2.5 Receptacles.

The requirements for receptacles shall comply with 6.7.2.2.5(A) and 6.7.2.2.5(B).

(A)

Branch-circuit overcurrent devices shall be readily accessible to authorized personnel.

(B)*

The electrical receptacles or the cover plates for the electrical receptacles supplied from the life safety and critical branches shall have a distinctive color or marking so as to be readily identifiable.

6.7.2.2.6 Switches.

Switches of all types shall be permitted in the lighting circuits connected to the essential electrical system in accordance with NFPA 101.

6.7.2.2.7

Secondary circuits of transformer-powered communication or signaling systems shall not be required to be enclosed in raceways unless otherwise specified by Chapters 7 or 8 of *NFPA 70*.

6.7.3 Performance Criteria and Testing.
6.7.3.1 Transfer Switches.

All ac-powered support and accessory equipment necessary for the operation of the on-site power source shall be supplied from the load side of the automatic transfer switch(es), or the output terminals of the on-site power source, ahead of the main overcurrent protection to ensure continuity of operation and performance.

6.7.3.2

If required to meet essential load capacity,failure of the selected power source or set of power sources shall automatically start the other power source or set of power sources after a short delay as described in 6.7.2.1.3.4.

6.7.3.2.1

When the other power source has attained a voltage and frequency that satisfies the minimum operating requirements of the essential electrical system, the load shall be connected automatically to the that source.

6.7.3.3 Generator Control Wiring.

Control conductors installed between the transfer switch and the on-site power sources shall be kept entirely independent of all other wiring.

6.7.3.3.1

The integrity of the power source remote-start circuit shall be electrically supervised for broken, disconnected, or short-circuited wires.

6.7.3.3.2

Loss of integrity shall start the on-site power source or set of power sources.

6.7.3.4

Upon connection of a power source, the loads comprising the life safety and critical branches shall be automatically re-energized.

6.7.3.4.1

The load comprising the equipment branch shall be connected either automatically after a time delay, as described in 6.7.2.1.3.5, or nonautomatically and in a sequential manner that will not overload the other power source.

6.7.3.5

When the first power source is restored, and after a time delay as described in 6.7.2.1.3.6, the automatic transfer switches shall disconnect the other power source and connect the loads to the first power source.

6.7.3.5.1

The other power source shall continue to run unloaded for a preset time delay, as described in 6.7.2.1.3.8.

6.7.3.6

If a power source fails and the other power source has been restored, retransfer to the other power source shall be immediate, bypassing the retransfer delay timer.

6.7.3.7

Nonautomatic transfer switching devices shall be restored as soon as possible or at the discretion of the operator.

6.7.4 Administration.
6.7.4.1 Maintenance and Testing of Essential Electrical System.
6.7.4.1.1 Maintenance and Testing of On-Site Power Source, Transfer Switches, and Associated Equipment.
6.7.4.1.1.1 Maintenance of On-Site Power Source.

The on-site power source and associated equipment, including all appurtenance parts, shall be maintained such that it is capable of supplying service within the shortest time practicable and within the 10-second interval specified in 6.7.1.2.5 and 6.7.5.3.1.

6.7.4.1.1.2
(A)

The 10-second criterion shall not apply during the monthly testing of an essential electrical system.

(B)

If the 10-second criterion is not met during the monthly test, a process shall be provided to annually confirm the capability of the life safety and critical branches to comply with 6.7.5.3.1.

6.7.4.1.1.3

Maintenance shall be performed in accordance with Section 6.9.

6.7.4.1.1.4

Maintenance of the electrical equipment for the life safety branch, critical branch, and equipment branch shall be maintained in accordance with the manufacturer's instructions and preventative maintenance programs.

6.7.4.1.1.5 Inspection and Testing.

Criteria, conditions, and personnel requirements shall be in accordance with 6.7.4.1.1.5(A) through 6.7.4.1.1.5(C).

(A)* Test Criteria.

Testing criteria shall be as follows:

(1) On-site power sources or sets of power sources serving the essential electrical system shall be tested 12 times a year, with testing intervals of not less than 20 days nor more than 40 days.

(2) Generator sets serving essential electrical systems shall be tested in accordance with Chapter 8 of NFPA 110.

(3) Other power sources shall be tested in accordance with the criteria developed during the site acceptance testing.

(B) Test Conditions.

The scheduled test under load conditions shall include a simulated unanticipated failure of each independent power source or set of power sources and appropriate automatic and manual transfer of all essential electrical system loads.

(C) Test Personnel.

The scheduled tests shall be conducted by qualified personnel to keep the machines ready to function and, in addition, serve to detect causes of malfunction and to train personnel in operating procedures.

6.7.4.1.1.6

When a transfer switch is bypassed to facilitate maintenance, one of the following conditions shall apply:

(1) The bypass switch automatically transfers the load between power sources upon loss of the connected power source.

(2) The bypass switch remains actively supervised by a qualified person who can manually initiate a transfer of the load between power sources.

6.7.4.1.1.7

Where bypass isolation switches are used, inadvertent parallel operation shall be avoided.

6.7.4.1.2 Maintenance and Testing of Circuitry.
6.7.4.1.2.1 Insulation Resistance.

The resistance readings of main feeder insulation shall be taken prior to acceptance and whenever damage is suspected.

6.7.4.1.2.2 Maintenance of Batteries.

Batteries for on-site generators shall be maintained in accordance with NFPA 110.

6.7.4.2 Record Keeping.

A written record of inspection, performance, exercising period, and repairs shall be regularly maintained and available for inspection by the authority having jurisdiction.

6.7.5* Type 1 Essential Electrical System Requirements.
6.7.5.1* Branches.

6.7.5.1.1

The essential electrical system shall be divided into the following three branches:

(1) Life safety

(2) Critical

(3) Equipment

6.7.5.1.2 Life Safety Branch.
6.7.5.1.2.1

The life safety branch shall be limited to circuits essential to life safety as specified in 6.7.5.1.2.1(A) through 6.7.5.1.2.1(E).

(A) General.

The life safety branch shall supply power for the following functions if present :

(1) Illumination of means of egress in accordance with NFPA 101

(2) Exit signs and exit directional signs in accordance with NFPA 101

(3) *Communications systems as follows:

(a) Where used for issuing instruction during emergency conditions

(b) All components of emergency responder radio communication systems (ERRCs)

(4) On-site power source location as follows:

(a) Task illumination

(b) Battery charger for emergency battery-powered lighting unit(s)

(c) Selected receptacles at the power source location and essential electrical system transfer switch locations

(5) Elevator cab lighting, control, communications, and signal systems

(6) Electrically powered doors used for building egress

(7) Fire alarms and auxiliary functions of fire alarm combination systems complying with *NFPA 72*

(B) Alarm and Alerting Systems.

Alarm and alerting systems (other than fire alarm systems) shall be connected to the life safety branch or critical branch.

(C) Loads Supporting On-Site Power Source.

Loads dedicated to an on-site power source, including the fuel transfer pump(s), ventilation fans, electrically operated louvers, controls, cooling system, and other accessories essential for power source operation, shall be connected to the life safety branch or the output terminals of the power source with overcurrent protective devices.

(D) High-Rise Health Care Facilities.

For new high rise health care occupancies, the following shall be permitted to be connected to the life safety branch:

(1) Single-phase jockey pump motors
(2) Single-phase air compressors serving dry-pipe and pre-action systems
(3) Emergency command center single-phase equipment and lighting
(4) Not less than one elevator serving all floor, with standby power transferable to any elevator
(5) Single-phase mechanical equipment for smokeproof enclosures
(6) Single-phase mechanical equipment required to conform with the requirements of NFPA 101 Section 9.3
(7) Stairway video monitoring equipment as required by NFPA 101 11.8.8 [NFPA 11.8.5.3.4]

(E) No Other Functions.

No functions other than those in 6.7.5.1.2.2, 6.7.5.1.2.3, and 6.7.5.1.2.4 shall be connected to the life safety branch, except as specifically permitted in 6.7.5.1.2.

6.7.5.1.2.2 Branch Circuits for Life Safety Lighting.

Branch circuits supplying life safety lighting shall be served from a power source in compliance with 6.7.1 when the nonessential power supply for lighting is interrupted or where single circuits supply luminaires containing secondary batteries.

6.7.5.1.2.3 Life Safety Lighting Circuit Switches.

Life safety lighting circuit switches shall meet the following requirements:

(1) The switch(es) for the life safety lighting circuits shall be arranged so that only authorized persons have control of the life safety lighting switch(es) unless one of the following conditions are met:

(a) Where two or more single-throw switches are connected in parallel to control a single circuit, at least one of these switches is accessible only to authorized persons.

(b) Additional switches are included that act only to put life safety lights into operation, but not to disconnect them.

(2) Switches connected in series or 3- and 4-way switches shall not be used.

(3) All manual switches for controlling life safety lighting shall meet the following requirements:

(a) The manual switches shall be in locations convenient to authorized persons responsible for their actuation unless there are multiple switches provided.

(b) One of the switches shall be permitted to be located so that it can only energize, but not de-energize, the circuit.

6.7.5.1.2.4 Life Safety Lighting Dimmer and Relay Systems.

A dimmer or relay system containing more than one dimmer or relay and listed for emergency use shall be permitted to be used as a control device for energizing life safety lighting circuits.

(A)

Upon failure of one power source, the dimmer or relay system shall be permitted to selectively energize only those branch circuits necessary to provide the minimum required illumination using a control bypass function.

(B)

Where the dimmer or relay system is supplied by an upstream transfer switch, power sensing for this function shall be permitted to be from either power source or set of power sources upstream of the transfer switch.

6.7.5.1.2.5 Directly Controlled Life Safety Luminaires.

Where life safety illumination is provided by a directly controlled life safety luminaire(s) that responds to an external control input, or loss thereof, to bypass control upon loss of one power source, the luminaire(s) and external bypass control(s) shall be individually listed for emergency use.

6.7.5.1.2.6 Life Safety Lighting Automatic Load Control Relay.
(A) If a life safety lighting load is automatically energized upon loss of one power source, a listed automatic load control relay shall be permitted to energize the load.

(B) The load control relay shall not be used as transfer equipment.

6.7.5.1.3* Critical Branch.
6.7.5.1.3.1

The critical branch shall be permitted to be subdivided into two or more branches.

6.7.5.1.3.2 Critical Branch Loads.

(A) The critical branch shall supply power for task illumination, fixed equipment, selected receptacles, and select power circuits to support patient care.

(B) If the following spaces, functions, or equipment listed in 6.7.5.1.3.2(B)(1), 6.7.5.1.3.2(B)(2), or 6.7.5.1.3.2(B)(3) are present or provided, they shall be supplied by the critical branch:

(1) Task illumination for the following:

(a) Category 1 spaces where deep sedation or general anesthesia is administered

(b) Information and communications technologies (ICTs) serving Category 1 activities, systems, or equipment

(c) Category 1 or Category 2 spaces as required by health care facility's governing body

(d) Angiographic labs

(e) Cardiac catheterization labs

(f) Coronary care units

(g) Hemodialysis rooms or areas

(h) Emergency room treatment areas as selected by the health care facility's governing body

(i) Human physiology labs

(j) Intensive care units

(k) Postoperative recovery rooms as selected by the health care facility's governing body

(l) Patient care spaces, including infant nurseries, selected acute nursing areas, psychiatric bed locations, and ward treatment rooms

(m) Medication preparation spaces

(n) Pharmacy dispensing spaces

(o) Nurses' stations unless adequately lighted by corridor luminaires

(p) Blood, bone, and tissue banks

(q) Additional task illumination needed for effective facility operation

(2) Selected receptacles for the following:

(a) Category 1 spaces where deep sedation or general anesthesia is administered

(b) Information and communications technologies (ICTs) serving Category 1 activities, systems, or equipment

(c) Category 1 or Category 2 spaces

(d) Angiographic labs

(e) Cardiac catheterization labs

(f) Coronary care units

(g) Hemodialysis rooms or areas

(h) Emergency room treatment areas

(i) Human physiology labs

(j) Intensive care units

(k) Postoperative recovery rooms

(l) Patient care spaces, including infant nurseries, selected acute nursing areas, and ward treatment rooms

(m) Medication preparation spaces

(n) Pharmacy dispensing spaces

(o) Nurses' stations

(p) Blood, bone, and tissue banks

(q) Additional receptacles needed for effective facility operation

(3) Select power circuits for the following:

(a) Category 1 spaces where deep sedation or general anesthesia is administered

(b) Information and communications technologies (ICTs) spaces and equipment serving Category 1 functions

(c) Category 1 or Category 2 spaces as required by the health care facility's governing body

(d) Angiographic labs

(e) Cardiac catheterization labs

(f) Coronary care units

(g) Hemodialysis rooms or areas

(h) Emergency room treatment areas as selected by the health care facility's governing body

(i) Human physiology labs

(j) Intensive care units

(k) Postoperative recovery rooms as selected by the health care facility's governing body

(l) Patient care spaces, including infant nurseries, selected acute nursing areas, and ward treatment rooms

(m) Medication preparation spaces

(n) Pharmacy dispensing spaces

(o) Nurse call systems

(p) Blood, bone, and tissue banks

(q) Clinical IT-network equipment

(r) Wireless phone and paging equipment for clinical staff communications

(s) Additional power circuits needed for effective facility operation

(t) Single-phase fractional horsepower motors permitted to be connected to the critical branch

6.7.5.1.4 Equipment Branch.

6.7.5.1.4.1 General.

The equipment branch shall be connected to equipment described in 6.7.5.1.4.3 through 6.7.5.1.4.4.

6.7.5.1.4.2 Connection to On-Site Power Source.
(A)

The equipment branch shall be installed and connected to the two independent power sources or sets of power sources such that equipment described in 6.7.5.1.4.3 is automatically restored to operation at appropriate time-lag intervals following the energizing of the life safety and critical branches.

(B)

The transfer between the independent power sources or sets of power sources shall also provide for the subsequent connection of equipment described in 6.7.5.1.4.4.

6.7.5.1.4.3* Equipment for Delayed-Automatic Connection.
(A)

The following equipment shall be permitted to be arranged for delayed-automatic connection to the on-site power source:

(1) Central suction systems serving medical and surgical functions, including controls, with such suction systems permitted to be placed on the critical branch

(2) Sump pumps and other equipment required to operate for the safety of major apparatus, including associated control systems and alarms

(3) Compressed air systems serving medical and surgical functions, including controls, with such air systems permitted to be placed on the critical branch

(4) Smoke control and stair pressurization systems

(5) Kitchen hood supply or exhaust systems, or both, if required to operate during a fire in or under the hood

(6) Supply, return, and exhaust ventilating systems for the following:

(a) Airborne infectious/isolation rooms

(b) Protective environment rooms

(c) Exhaust fans for laboratory fume hoods

(d) Nuclear medicine areas where radioactive material is used

(e) Ethylene oxide evacuation

(f) Anesthetic evacuation

(B)

Where delayed-automatic connection is not appropriate, the ventilation systems specified in 6.7.5.1.4.3(A)(6) shall be permitted to be placed on the critical branch.

6.7.5.1.4.4* Equipment for Delayed-Automatic or Manual Connection.

The following equipment shall be permitted to be arranged for either delayed-automatic or manual connection to the on-site power source as determined by the health care facility's governing body. *(also see A.6.7.5.1.4.3)*:

(1) Heating equipment used to provide heating for operating, delivery, labor, recovery, intensive care, and coronary care spaces; nurseries; infection/isolation rooms; emergency treatment spaces; and general patient rooms and pressure maintenance (i.e., jockey or make-up) pumps for water-based fire protection systems

(2) *Heating of general patient rooms during disruption of the nonessential electrical system shall not be required under any of the following conditions:

(a) Outside design temperature is higher than −6.7°C (+20°F)

(b) Outside design temperature is lower than −6.7°C (+20°F), where a selected room(s) is provided for the needs of all confined patients [then only such room(s) need be heated]

(3) Elevator(s) selected to provide service to patient, surgical, obstetrical, and ground floors during interruption of the nonessential electrical system

(4) Supply, return, and exhaust ventilating systems for surgical and obstetrical delivery suites; intensive care and coronary care spaces; nurseries; and emergency treatment spaces

(5) Hyperbaric facilities

(6) Hypobaric facilities

(7) Autoclaving equipment

(8) Controls for equipment listed in 6.7.5.1.3

(9) *Other selected equipment

6.7.5.1.5

Load-shed circuits designed for load reduction or for load priority systems shall not shed life safety branch loads, critical branch loads serving Category 1 spaces, medical air compressors, medical–surgical vacuum pumps, fire pumps, pressure maintenance (i.e., jockey) pumps for water-based fire protection systems, generator fuel pumps for on-site power sources, or other accessories for on-site power sources.

6.7.5.2 Wiring Requirements.
6.7.5.2.1* Separation from Other Circuits.

The life safety branch and critical branch shall be kept independent of all other wiring and equipment.

6.7.5.2.2 Mechanical Protection of the Life Safety and Critical Branches.

The wiring of the life safety and critical branches shall be mechanically protected by raceways, as defined in *NFPA 70*.

6.7.5.2.3

Flexible power cords of appliances or other utilization equipment connected to the life safety and critical branches shall not be required to be enclosed in raceways.

6.7.5.3 Performance Criteria and Testing.
6.7.5.3.1 Power Source.

The life safety and critical branches shall be installed and connected to the on-site power source specified in 6.7.1.1.2 so that all functions specified herein for the life safety and critical branches are automatically restored to operation within 10 seconds after interruption of power.

6.7.6* Type 2 Essential Electrical System Requirements.
6.7.6.1 Power Sources.

Power sources for Type 2 essential electrical systems shall comply with 6.7.1.

6.7.6.2 Distribution.
6.7.6.2.1* Branches.
6.7.6.2.1.1

The number of transfer switches to be used shall be based upon reliability, design, and load considerations.

6.7.6.2.1.2

The essential electrical system shall be divided into the following two branches:

(1) Life safety branch

(2) Equipment branch

6.7.6.2.1.3

Each branch of the essential electrical system shall have one or more transfer switches.

6.7.6.2.1.5 Life Safety Branch.

(A) Required to be Connected.

The life safety branch shall supply power as follows:

(1) Illumination of means of egress in accordance with NFPA 101

(2) Exit signs and exit directional signs in accordance with NFPA 101

(3) Alarm and alerting systems, including the following:

(a) Fire alarms and auxiliary functions of fire alarm combination systems complying with *NFPA 72*

(b) Alarms required for medical gas systems as specified in Chapter 5

(4) *Communications systems as follows:

(a) Where used for issuing instruction during emergency conditions

(b) Emergency responder radio communication systems (ERRCs) if not provided with standby batteries.

(5) Task illumination and selected receptacles at the on-site power source(s) location

(6) Elevator cab lighting, control, communications, and signal systems

(7) Single-phase on-site power source accessories including, but not limited to transfer fuel pumps, electrically operated louvers, and other on-site power source accessories essential for on-site power source operation.

(B) Prohibited to be Connected.

No functions other than those listed in 6.7.6.2.1.5(A)(1) through 6.7.6.2.1.5(A)(7) shall be connected to the life safety branch.

(C) Branch Circuits for Life Safety Lighting.

Branch circuits that supply life safety lighting shall be served from a power source or set of power sources in accordance with 6.7.1 when the nonessential electrical system supplying lighting is interrupted or where single circuits supply luminaries containing secondary batteries.

(D) Life Safety Lighting Circuit Switches.

Life safety lighting circuit switches shall meet the following requirements:

(1) The switch(es) for the life safety lighting circuits shall be arranged so that only authorized persons have control of the life safety lighting switch(es) unless one of the following conditions are met:

(a) Where two or more single-throw switches are connected in parallel to control a single circuit, at least one of these switches is accessible only to authorized persons.

(b) Additional switches are included that act only to put life safety lights into operation, but not to disconnect them.

(2) Switches connected in series or 3- and 4-way switches shall not be used.

(3) All manual switches for controlling life safety lighting shall meet the following requirements:

(a) The manual switches shall be in locations convenient to authorized persons responsible for their actuation unless there are multiple switches provided.

(b) One of the switches shall be permitted to be located so that it can only energize, but not de-energize, the circuit.

(E) Life Safety Lighting Dimmer and Relay Systems.

Life safety lighting dimmer and relay systems shall meet the following requirements:

(1) A dimmer or relay system containing more than one dimmer or relay and listed for emergency use shall be permitted to be used as a control device for energizing life safety lighting circuits.

(2) Upon failure of a power source or set of power sources, the dimmer or relay system shall be permitted to selectively energize only those branch circuits necessary to provide minimum required illumination using a control bypass function.

(3) Where the dimmer or relay system is supplied by an upstream transfer switch, normal power sensing for this function shall be permitted to be from either power source or set of power sources upstream of the transfer switch.

(F) Life Safety Lighting Automatic Load Control Relay.

Life safety lighting automatic control relays shall meet the following requirements:

(1) If a life safety lighting load is automatically energized upon loss of a power source, a listed automatic load control relay shall be permitted to energize the load.

(2) The load control relay shall not be used as transfer equipment.

6.7.6.2.1.6 Equipment Branch.

(A) Equipment Automatically Restored to Operation.

The equipment branch shall be installed and connected to the on-site power source such that equipment listed in 6.7.6.2.1.6(C) is automatically restored to operation at appropriate time-lag intervals following the restoration of the life safety branch to operation.

(B) Connection of Additional Equipment.

The equipment branch arrangement shall provide for the additional connection of equipment listed in 6.7.6.2.1.6(D).

(C) Equipment for Nondelayed-Automatic Connection.

Accessories for on-site power sources including the transfer fuel pump, electrically operated louvers, and other accessories essential for power source operation shall be arranged for automatic connection to the other independent on-site power source or set of power sources.

(D) Delayed-Automatic Connections to Equipment Branch.

The following equipment shall be permitted to be connected to the equipment branch and shall be arranged for delayed-automatic connection to the on-site power source:

(1) Task illumination and selected receptacles in the following:

(a) Patient care spaces

(b) Medication preparation spaces

(c) Pharmacy dispensing spaces

(d) Nurses' stations unless adequately lighted by corridor luminaires

(2) Supply, return, and exhaust ventilating systems for airborne infectious isolation rooms

(3) Sump pumps and other equipment required to operate for the safety of major apparatus and associated control systems and alarms

(4) Smoke control and stair pressurization systems

(5) Kitchen hood supply or exhaust systems, or both, if required to operate during a fire in or under the hood

(6) Nurse call systems

(7) HVAC systems serving the EF, TER, and TR

(E)* Delayed-Automatic or Manual Connections to Equipment Branch.

The following equipment shall be permitted to be connected to the equipment branch and shall be arranged for either delayed-automatic or manual connection to either power source or set of power sources:

(1) *Equipment to Provide Heating for General Patient Rooms*. The following shall apply to heating general patient rooms:

(a) *Where the outside design temperature is higher than −6.7°C (+20°F), equipment for heating shall not be required.

(b) Where the outside design temperature is lower than −6.7°C (+20°F) and a selected room(s) is provided for the needs of all confined patients, only that room(s) shall be required to be heated.

(c) Where the facility is served by a dual source of normal power, equipment for heating shall not be required. *(See A.6.7.1.1 for more information.)*

(2) **Elevator Service*. In instances where interruptions of power would result in elevators stopping between floors, throw-over facilities shall be provided to allow the temporary operation of any elevator for the release of passengers.

(3) *Optional Connections to the Equipment Branch*. Additional illumination, receptacles, and equipment shall be permitted to be connected only to the equipment branch.

(4) *Multiple Systems*. Where one switch serves multiple systems as permitted in 6.7.6.2, transfer for all loads shall be nondelayed automatic.

6.7.6.3 Wiring Requirements.
6.7.6.3.1* Separation from Other Circuits.

The life safety and equipment branches shall be kept entirely independent of all other wiring and equipment.

6.7.6.3.2* Receptacles.

The electrical receptacles or the cover plates for the electrical receptacles supplied from the life safety and equipment branches shall have a distinctive color or marking so as to be readily identifiable.

6.7.6.4 Performance Criteria and Testing.
6.7.6.4.1 Power Sources.

The life safety and equipment branches shall be installed and connected to the on-site power source specified in 6.7.1.1.2 so that all functions specified herein for the life safety and equipment branches are automatically restored to operation within 10 seconds after interruption of power.

6.8 Site Acceptance Testing.
6.8.1*

Site acceptance testing shall be performed on the electrical system and all electrical components serving Category 1 and Category 2 spaces.

6.8.1.1

Acceptance testing is required after initial installation or major renovation prior to the system being placed into service.

6.8.2*

Site acceptance testing procedures shall be in accordance with industry-recognized standards and practices for equipment testing and system commissioning.

6.8.3 Site Acceptance Testing Records.
6.8.3.1

A record of all site acceptance testing procedures required in 6.8.1 and testing results shall be maintained.

6.8.3.2

Site acceptance testing records shall be retained for 5 years.

6.8.3.3 Record Medium.
6.8.3.3.1

The records shall be on a medium that will survive the retention period.

6.8.3.3.2

Paper or electronic media shall be permitted.

6.8.3.4 Record Reporting and Archiving.

6.8.3.4.1

The record shall be available for examination and, if required, reported to the authority having jurisdiction.

6.8.3.4.2

Archiving of records by any means shall be permitted if hard copies of the records can be provided promptly when requested.

6.9 Electrical Maintenance Program (EMP).
6.9.1 EMP Program.
6.9.1.1*

All electrical components that are part of an electrical system serving a Category 1 or Category 2 space shall be part of an electrical maintenance program (EMP) that complies with Section 4.2 of NFPA 70B.

6.9.1.2

The EMP shall include the following elements:

(1) Listing of all equipment and systems included as part of the program

(2) Schedule of inspection, testing, and servicing (maintenance) of equipment

(3) Survey and analysis of electrical equipment and systems to determine maintenance requirements and priorities

(4) Scheduled routine inspections and tests

(5) Review of inspection and test reports so that proper corrective measures can be prescribed

(6) Performance of necessary work

(7) Complete records

6.9.2 EMP Records.
6.9.2.1

A record of all testing and maintenance described in 6.9.4 shall be maintained.

6.9.2.2

EMP inspection, testing, and maintenance records shall be retained for 5 years.

6.9.2.3 EMP Record Medium.
6.9.2.3.1

The records shall be on a medium that will survive the retention period.

6.9.2.3.2

Paper or electronic media shall be permitted.

6.9.2.4 EMP Record Reporting and Archiving.
6.9.2.4.1

The record shall be available for examination and, if required, reported to the authority having jurisdiction.

6.9.2.4.2

Archiving of records by any means shall be permitted if hard copies of the records can be provided promptly when requested.

6.9.3 Corrective Measures.
6.9.3.1* Analysis of Inspection, Testing, and Maintenance Reports.

Analysis of inspection, testing, and maintenance reports shall be followed by the implementation of appropriate corrective measures.

6.9.3.2

All corrective measures shall be documented in accordance with the requirements of 6.9.2.

6.9.4 EMP Intervals.

6.9.4.1*

EMP intervals shall be in accordance with Table 6.9.4.1.

Table 6.9.4.1 Electrical Maintenance Program (EMP) Intervals

Item	Inspection Period	Testing Period	Maintenance Period
Medium-voltage switchgear	Every 3 months	Every 3 years	Every 3 years
Power distribution transformers (≥ 750 kVA)	Monthly	Every 3 years	Every 3 years
Generator (alternate source)	*(See Chapter 8 of NFPA 110.)*	*(See Chapter 8 of NFPA 110.)*	*(See Chapter 8 of NFPA 110.)*
Generator paralleling switchgear	Monthly	Annually	Every 3 years
Low-voltage switchgear/switchboards	Every 3 years	Every 3 years	Every 3 years
Overcurrent Protective Devices			
Fuses (≥ 400 A)	Every 3 years	Every 3 years	Every 3 years
Low-voltage power circuit breakers (≥ 400 A)	Every 3 years	Every 3 years	Every 3 years
Low-voltage molded-case circuit breakers (≥ 400 A)	Every 3 years	Every 3 years	Every 3 years
Medium-voltage circuit breakers	Every 3 years	Every 3 years	Every 3 years
Relays (including polyphase ground-fault equipment protection)	Every 3 years	Every 3 years	Every 3 years
Transfer equipment	Monthly	Every 3 years	Every 3 years
Bus duct	Every 3 years	Every 3 years	Every 3 years
Uninterruptible power supplies (≥ 100 kW)	Every 3 months	Every 6 months	Every 6 months
Isolated power panels	*(See 6.3.3.3.3.)*	*(See 6.3.3.3.3.)*	*(See 6.3.3.3.3.)*
Motor control equipment	Annually	Every 3 years	Every 3 years
Branch-circuit panelboards	Annually	Every 3 years	N/A
Wiring devices	*(See 6.3.3.2.)*	*(See 6.3.3.2.)*	*(See 6.3.3.2.)*
Battery-powered lighting units	*(See 6.3.2.6.8.)*	*(See 6.3.2.6.8.)*	*(See 6.3.2.6.8.)*

N/A: not applicable.

6.9.4.2* Alternative Equipment Maintenance (AEM) Program.
6.9.4.2.1

EMP intervals shall be permitted to be developed as part of an alternative equipment maintenance (AEM) program.

6.9.4.2.2

The AEM shall include the following elements:

(1) *The AEM program shall be based on accepted standards of practice for electrical equipment maintenance.

(2) The AEM program requirements (including EMP schedules) shall be clearly documented and available for inspection by the authority having jurisdiction.

(3) The AEM program shall be developed and administered by qualified personnel, regardless of whether they are health care facility employees or contractors.

(4) *The AEM program shall consider the typical health and safety risks associated with the equipment's use, including "critical equipment" for which there exists a risk of serious injury or death to a patient or staff person if the equipment fails.

6.10 Health Care Microgrids.
6.10.1 General Requirements.
6.10.1.1 Applicability.

This section shall apply to health care microgrids serving as the power source for EES loads and nonessential electrical loads.

6.10.1.2* Purpose.

The purpose of this section shall be to describe requirements for health care microgrid systems for health care facilities.

6.10.1.3* Campuses.

Health care microgrids shall be permitted to serve individual buildings or campuses consisting of several buildings.

6.10.1.4 Non-Health-Care Buildings.

Health care microgrids shall be permitted to serve buildings that are designed to comply with multiple use categories as described in Chapter 4.

6.10.2 Sources.
6.10.2.1

All sources shall meet the installation and maintenance requirements of the applicable NFPA code.

6.10.2.2

Any combination of generation, storage, or transformation assets shall be permitted to serve as the on-site power source for all or a portion of health care microgrids.

6.10.2.2.1

The combination of sources shall provide performance equivalent to that of the requirements of 6.7.1.2.1.

6.10.3 Reliability.
6.10.3.1

Health care microgrid systems shall be designed with sufficient reliability to provide effective facility operation consistent with the facility's emergency operations plan.

6.10.3.2*

Health care microgrid system components shall not be compromised by failure of the off-site power source.

6.10.4 Interconnection to an Electrical Utility.

Health care microgrids that are interconnected to an external electrical utility shall comply with regulations relevant to the serving utility.

6.10.5 Distribution System. (Reserved)
6.10.6* Control System.

Health care microgrid control systems shall comply with the requirements of this subsection.

6.10.6.1* Network Segregation.
6.10.6.1.1

Health care microgrid control system networks shall be segregated from other networks.

6.10.6.1.2

Intelligence and memory of health care microgrid control systems shall not be dependent on off-site resources.

6.10.6.2 Source Monitoring. (Reserved)
6.10.6.3 Design.

The design of health care microgrid control systems shall include a sequence of operations for manual controlling of sources in the event of system failure.

6.10.6.4 Controller Backup Power.

Health care microgrid controllers shall have a dedicated battery backup having a minimum 90-minute capacity.

6.10.6.5 Annunciation.
6.10.6.5.1

Health care microgrid control systems shall be capable of providing readouts that indicates which sources are operating.

6.10.6.5.2

The amount of power provided to the health care microgrid by each source shall be visible at all times.

6.10.6.6 Security. (Reserved)
6.10.7 Commissioning.

Health care microgrid systems shall be commissioned in accordance with their sequence of operations.

6.10.7.1 Verification of Means and Methods.

Health care microgrid system installers or commissioning agents shall prepare a written commissioning plan that provides a description of the means and methods necessary to document and verify that the system and its associated controls and safety systems are in proper working condition.

6.10.7.2 Commissioning Plan.

Commissioning plans shall include the following:

(1) An overview of the commissioning process developed specifically for the health care microgrid and its controller to be installed and a narrative description of the activities to be conducted

(2) *Roles and responsibilities for all those involved in the planning, design, construction, installation, and operation of the health care microgrid

(3) Means and methods whereby the commissioning plan will be made available during the implementation of the health care microgrid project

(4) Plans and specifications necessary to understand the installation and operation of the health care microgrid and all associated components, operational controls, and safety systems

(5) A detailed description of each activity to be conducted during the commissioning process, who will perform each activity, and at what point in time each activity is to be conducted

(6) Procedures to be used in documenting the proper operation of the health care microgrid and all associated components, operational controls, and safety systems

(7) Guidelines and format for a commissioning checklist, relevant operational testing forms, and necessary commissioning

(8) Means and methods whereby facility operation and maintenance staff will be trained on the system

(9) Identification of personnel qualified to service, maintain, and respond to incidents involving the system

6.10.7.3 Commissioning Report.

A commissioning report documenting the commissioning process and the results shall be provided.

6.10.7.3.1

The commissioning report shall be prepared by the health care microgrid system commissioning agent and summarize the commissioning process, the operation of the system, the associated operational controls, and the safety systems.

6.10.7.3.2

The commissioning report shall include the final commissioning plan and the results of the commissioning process, as well as a copy of the plans and specifications associated with the as-built health care microgrid system design and installation.

6.10.7.3.3

The commissioning report shall include any issues identified during commissioning and the measures taken to resolve them.

6.10.8 Inspection, Testing, and Maintenance.
6.10.8.1

The health care microgrid system shall be inspected, tested, and maintained by qualified personnel.

6.10.8.2

All health care microgrid components shall be inspected and maintained in accordance with manufacturers' instructions or annually, whichever occurs first.

6.10.8.3

Health care microgrid system components shall be tested in accordance with the manufacturers' requirements.

6.10.8.4

Health care microgrid systems shall be recommissioned for operation when the system configuration changes or every five years, whichever occurs first.

6.11 Classification of Emergency Power Supply Systems (EPSSs).
6.11.1 General.

The EPSS shall provide a source of electrical power of required capacity, reliability, and quality to loads for a length of time as specified in Table 6.11.1(a) and within a specified time following loss or failure of power as specified in Table 6.11.1(b).

Table 6.11.1(a) Classification of EPSSs

Class	Minimum Time
Class 0.083	0.083 hr (5 min)
Class 0.25	0.25 hr (15 min)
Class 2	2 hr
Class 6	6 hr
Class 48	48 hr
Class X	Other time, in hours, as required by the application, code, or user

[**110:**Table 4.1(a)]

Table 6.11.1(b) Types of EPSSs

Designation	Power Restoration
Type U	Basically uninterruptible (UPS systems)
Type 10	10 sec
Type 60	60 sec
Type 120	120 sec
Type M	Manual stationary or nonautomatic — no time limit

[**110:**Table 4.1(b)]

6.11.2 Class.

The class defines the minimum time, in hours, for which the EPSS is designed to operate at its rated load without being refueled or recharged. *[See Table 6.11.1(a).]* [**110:**4.2]

6.11.3 Type.

The type defines the maximum time, in seconds, that the EPSS will permit the load terminals of the transfer switch to be without acceptable electrical power. Table 6.11.1(b) provides the types defined by this standard. [**110:**4.3]

6.11.4 Level.

This standard recognizes two levels of equipment installation, performance, and maintenance. [**110:**4.4]

6.11.4.1

Level 1 systems shall be installed where failure of the equipment to perform could result in loss of human life or serious injuries. [**110:**4.4.1]

6.11.4.2

Level 2 systems shall be installed where failure of the EPSS to perform is less critical to human life and safety. [**110:**4.4.2]

6.11.4.3

All equipment shall be permanently installed. [**110:**4.4.3]

6.11.4.4

Level 1 and Level 2 systems shall ensure that all loads served by the EPSS are supplied by an on-site power source that meets all the following criteria:

(1) It is of a quality within the operating limits of the load.

(2) It operates for a duration specified for the class as defined in Table 6.11.1(a).

(3) It operates within the time specified for the type as defined in Table 6.11.1(b).

2027 NFPA 99 HEA-ELS Public Input Task Group Report

TG#	ELS 2	
TG Chair	Lipster	
TG Members	Rabel, Chilton, Chandler, Griffin, Parrish, Rea, Schutte, Beebe, Wolff, Evers, North, Freidenfelds, Della Croce, Chisholm, Luria	
Section	Public Input #	TG Recommendation (Create SR, Create CR, Reject) & Statement
Non CC Public Comments		
6.2.4	55 55.doc.docx	**Create SR - TG2.1** The term "emergency" is added prior to operations plan to correlate it's use. "Emergency operations plan" is currently used many times throughout the document.
6.2.5.1.2.1	117 117.doc.docx	**Create SR – TG2.2** The pluralization of on-site power source(s) brings this section of the code in alignment with the permitted usage of more than one type of EPS. The redaction of "it" in two places make the code more readable.
6.2.5.1.2.1	41 41.doc.docx	**Create SR – TG2.3** Section 6.2.5.1.2 details the requirements for outside installations. . Deleting the reference to enclosures located outside the building removes redundant text and provides clarity.
6.2.5.2	38 38.doc.docx	**Create SR – TG2.4** The requirement is revised to use the Chapter 3 defined term "power sources" to provide clarity.
6.2.5.3	118 118.doc.docx	**Create SR – TG2.5** This action aligns this section with revisions made during the First Draft stage. These requirements, previously located in 6.7.1.2.3, were inadvertently not moved to 6.2.5.3 in the first draft.
6.3.1.1	108 108.doc.docx	**Reject** Demand factors and load calculations are addressed in NFPA 70 National Electrical Code. NFPA 99 -- 6.1.1 requires the electrical installation to be in compliance with NFPA 70. The addition of

		the proposed text would be an unnecessary rundunancy.
6.3.2.2.2(A)	**122** 122.doc.docx	**Reject** The proposed text does not add clarity to the code. The committee agrees, in principle, with the submitters substantiation and would welcome Public Input during the next cycle.
6.3.2.2.2(B)	**123** 123.doc.docx	**Reject** The proposed text does not add clarity to the code. The committee agrees, in principle, with the submitters substantiation and would welcome Public Input during the next cycle.
6.3.2.2.2(C)	**121** 121.doc.docx	**Reject** The proposed text does not add clarity to the code. The committee agrees, in principle, with the submitters substantiation and would welcome Public Input during the next cycle.
6.7.1.1.1	**109** 109.doc.docx	**Reject** . Insufficient technical substantiation was submitted to support the revision as required by NFPA Regulations 4.4.4
6.7.1.1.2.1	**127** 127.doc.docx	**Create SR – TG2.6** The requirement is revised to include “sets of sources” to recognize their permitted use and correlate with other existing requirements that permit their use.
6.7.2.1.3.1(D)	**110** 110.doc.docx	**Create SR – TG2.7** The redaction of this text removes a conflict with the appropriate UL standard.
6.7.2.1.3.5	**111** 111.doc.docx	**Reject** The standards for EPS equipment found in other NFPA documents are in place and enforceable without the addition of the proposed text. Insufficient technical substantiation was submitted to support the revision as required by NFPA Regulations 4.4.4. Additionally, the

		proposed text does not comply with NFPA Regulations 3.3.7.
6.7.2.1.3.7	**113** **113.doc.docx**	**Reject** The addition of the undefined term "connected" does not add clarity. Additionally, adding this term may prove confusing when considering the multiple emergency power supplies are permitted to be used simultaneously.
6.7.3.2	**128** **128.doc.docx**	**Create SR – TG2.8** The addition of "to transfer to" aligns this section with the permitted use of emergency power supplies that do not undergo a "starting" phase such as batteries
Correlating Committee Public Comments		
New After 6.2.3	**136** **136.doc.docx**	**Create SR – TG2.9** See committee action on PC55.
6.3.2.5.1.4(B)	**137** **137.doc.docx**	**Create SR – TG2.10 [Please see the FR -945 Mark-up in the 137.doc.docx link]** The requirements in 6.3.2.5.1.4(B)(2) were inadvertently deleted in the first draft and are being reinstated for the following reasons: 1- First Revision 945 did not request the deletion of 6.3.2.5.1.4(B)(2). 2- The technical committee provided no technical substantiation for the deletion of 6.3.2.5.1.4(B)(2).
6.7.1.2.2.3	**138** **138.doc.docx**	**Create SR – TG2.11 [Please see the A6.7.1.2.2.1 new text in the 138.doc.docx link]** This second revision fixes annex cross-references to the relevant Code sections for correlation, based on revisions associated with First Revision 1069.
6.7.1.2.3	**139** **139.doc.docx**	**Create SR – TG2.12 [Delete 6.7.1.2.3.2 see 139.doc.docx link]** The 6.7.1.2.3.2 text is deleted as First Revision 1070 inserted identical language in new section

		6.2.5.3. This action removes an unnecessary redundancy.
6.7.1.2.4	**140** **140.doc.docx**	**Reject** The committee notes that the reference in question refers to the proper section of the code despite the rearrangement of this section in First Revision 1071.

Public Comment No. 55-NFPA 99-2025 [Section No. 6.2.4]

TG2 – SR1

6.2.4 Natural Disasters.

Electrical systems shall be designed to mitigate the risks from natural disasters and severe weather events as dictated by the health care facility's ~~operations~~ emergency operations plan.

Statement of Problem and Substantiation for Public Comment

the correct term is "emergency operations plan" not just "operations plan"

Related Item

- FR 939

Submitter Information Verification

Submitter Full Name: Chad Beebe
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Submittal Date: Fri May 16 18:38:32 EDT 2025
Committee: HEA-ELS

Public Comment No. 136-NFPA 99-2025 [New Section after 6.2.3]

Second Revision -- TG2.9

See Committee action on PC 55.

TITLE OF NEW CONTENT

Type your content here ...

Additional Proposed Changes

File Name	Description	Approved
CCNotes_7_ELS.pdf	NFPA99_CCNote7	✓

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 7 appeared in the First Draft Report on First Revisions No. 939, and is also related to Public Input No. 99

Related Item

- First Revision No. 939
- Public Input No. 99

Submitter Information Verification

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Street Address:

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Submittal Date: Wed Jun 04 14:14:52 EDT 2025

Committee: HEA-ELS

CC Note 7.pdf

Public Comment No. 41-NFPA 99-2025 [Section No. 6.2.5.1.2.1]

TG2 – FR3

Parent text calls out outside installations.

6.2.5.1.2.1

The on-site power source shall comply with either of the following:

(1) It shall be installed in a suitable ~~enclosure located outside the building and capable~~ enclosure capable of resisting the entrance of snow or rain at a maximum wind velocity as required by the local building codes.

(2) It shall be constructed such that it can resist the impacts of snow or rain.

Statement of Problem and Substantiation for Public Comment

Propose to clean up the language by removing "located outside the building and" as 6.2.4.1.2 is entitled Outdoor On-Site Power Source Installations

Related Item

- FR-995
- PI-339

Submitter Information Verification

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Submittal Date: Tue May 13 16:53:16 EDT 2025
Committee: HEA-ELS

Public Comment No. 38-NFPA 99-2025 [Section No. 6.2.5.2]

TG2- FR4

6.2.5.2

Installations of ~~electrical~~ power sources shall be located to reduce possible interruption resulting from natural forces and to reduce possible disruption due to internal wiring and equipment failures.

Statement of Problem and Substantiation for Public Comment

This PC proposes to use the Chapter 3 defined term "power sources" instead of the current reference to an "electrical source". Using the defined term will make it clear what source(s) the requirement applies to. This was originally submitted as PI 225 in the first draft by the HEA-ELS Microgrid Task Group. 3.3.159 Power Sources. A system of one or more off-site or one or more on-site power generation or storage components intended to provide power to nonessential electrical loads and the essential electrical system. (ELS)

Related Item

- PI 225

Submitter Information Verification

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Submittal Date: Mon May 12 13:18:00 EDT 2025
Committee: HEA-ELS

Public Comment No. 118-NFPA 99-2025 [New Section after 6.2.5.3]

TG2- FR5

TITLE OF NEW CONTENT

6.2.5.4 The rooms, enclosures, or separate buildings housing on-site electrical power production and or storage equipment for Level 1 or Level 2 systems shall be designed and located to minimize damage from flooding, including that caused by the following:

(1) Firefighting

(2) Sewer water backup

(3) Other disasters or ~~occurences~~occurrences

Statement of Problem and Substantiation for Public Comment

This statement is added to address man-made hazards to ensure essential power sources are located in sufficiently safe areas to minimize unanticipated outages. Note this info was proposed to be removed from 6.7.1.2.3 in PI 329 but was only removed from 6.7.2.3.1 and was not added here, which could create problems with the reliability of essential power sources.

Related Item

- PI 329

Submitter Information Verification

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Submittal Date: Tue Jun 03 11:05:31 EDT 2025
Committee: HEA-ELS

intend that, by checking this box, I am creating an electronic signature that will, upon my submission of this form, have the same legal force and effect as a handwritten signature

Public Comment No. 108-NFPA 99-2025 [Section No. 6.3.1.1]

Reject

See 6.1.1

6.3.1.1

The capacity shall be based on the maximum demand likely to be produced. Maximum demand shall be calculated based on NFPA 70 120.87.

Statement of Problem and Substantiation for Public Comment

We've seen different approaches to calculating Maximum demand amongst specifiers. We'd like to emphasize the correct specific reference to standardize method to calculate maximum demand for improvement of product availability for various applications Maximum Demand Reference NFPA 70 120.87 The calculation of a feeder or service load for existing installations shall be permitted to use actual maximum demand to determine the existing load under all of the following conditions: (1) The maximum demand data is available for a 1-year period. Exception: If the maximum demand data for a 1-year period is not available, the calculated load shall be permitted to be based on the maximum demand (the highest average kilowatts reached and maintained for a 15-minute interval) continuously recorded over a minimum 30-day period using a recording ammeter or power meter connected to the highest loaded phase of the feeder or service, based on the initial loading at the start of the recording. The recording shall reflect the maximum demand of the feeder or service by being taken when the building or space is occupied and shall include by measurement or calculation the larger of the heating or cooling equipment load, and other loads that might be periodic in nature due to seasonal or similar conditions. This exception shall not be permitted if the feeder or service has a renewable energy system (i.e., solar photovoltaic or wind electric) or employs any form of peak load shaving. (2) The maximum demand at 125 percent plus the new load does not exceed the ampacity of the feeder or rating of the service. (3) The feeder has overcurrent protection in accordance with 240.4, and the service has overload protection in accordance with 230.90.

Related Item

- FR-1224

Submitter Information Verification

Submitter Full Name: Bethany Richter

Organization: Schneider Electric

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 02 15:50:14 EDT 2025

Committee: HEA-ELS

I, Bethany Richter, hereby irrevocably grant and assign to the National Fire Protection Association (NFPA) all and full rights in copyright in this Public Comment (including both the Proposed Change and the Statement of Problem and Substantiation). I understand and intend that I acquire no rights, including rights as a joint author, in any publication of the NFPA in which this Public Comment in this or another similar or derivative form is used. I hereby warrant that I am the author of this Public Comment and that I have full power and authority to enter into this copyright assignment.

By checking this box I affirm that I am Bethany Richter, and I agree to be legally bound by the above Copyright Assignment and the terms and conditions contained therein. I understand and intend that, by checking this box, I am creating an electronic signature that will, upon my submission of this form, have the same legal force and effect as a handwritten signature

Public Comment No. 122-NFPA 99-2025 [Section No. 6.3.2.2.2(A)]

Reject

Proposed change does not clarify the code.

(A) Receptacles Serving Patient Bed Locations in Category 2 Spaces.

Each patient bed location shall be provided with a minimum of eight non-locking-type, 125-volt, 15- or 20-ampere receptacles, at least four of which shall be connected to either a nonessential electrical system branch circuit or a critical branch ATS. The remaining receptacles shall be connected to a critical branch circuit supplied by a different transfer switch ~~other than the receptacles at the same location. The~~ . The receptacles shall be permitted to be single, duplex, or quadruplex type, or any combination thereof. Other receptacles (e.g., portable x-ray receptacles) serving special-purpose, cord- and plug-connected equipment shall be permitted to be locking or non-locking-type.

Statement of Problem and Substantiation for Public Comment

Modifications to the existing text to make it clear that the remaining receptacles will need to be connected to a critical branch circuit independent from the wiring to other receptacles at the patient bed.

Related Item

- PI 284

Submitter Information Verification

Submitter Full Name: Jamie Schnick
Organization: HCAI/OSHPD
Affiliation: State of CA
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 03 13:41:30 EDT 2025
Committee: HEA-ELS

intend that, by checking this box, I am creating an electronic signature that will, upon my submission of this form, have the same legal force and effect as a handwritten signature

Each patient bed location shall be provided with a minimum of eight non-locking-type, 125-volt, 15- or 20-ampere receptacles. A minimum of four receptacles shall be connected to either a nonessential electrical system branch circuit(s) or critical branch circuit(s). The remaining receptacles shall be connected to critical branch circuit(s) supplied by a different transfer switch. The receptacles shall be permitted to be single, duplex, or quadruplex type, or any combination thereof. Other receptacles (e.g., portable x-ray receptacles) serving special-purpose, cord-and plug-connected equipment shall be permitted to be locking or non-locking-type.

Each patient bed location shall be provided with a minimum of eight non-locking-type, 125-volt, 15- or 20-ampere receptacles. The receptacles shall be permitted to be single, duplex, or quadruplex type, or any combination thereof. These receptacles shall be connected in the following manner:

1. A minimum of four receptacles shall be connected to a nonessential electrical system branch circuit(s)
    a. These receptacles may be permitted to be connected to critical branch circuit(s).
2. The remaining receptacles shall be connected to critical branch circuit(s) supplied by a transfer switch different from the receptacles detailed in 1.

Public Comment No. 122-NFPA 99-2025 [Section No. 6.3.2.2.2(A)]

Reject

Proposed change does not clarify the code.

(A) Receptacles Serving Patient Bed Locations in Category 2 Spaces.

Each patient bed location shall be provided with a minimum of eight non-locking-type, 125-volt, 15- or 20-ampere receptacles, at least four of which shall be connected to either a nonessential electrical system branch circuit or a critical branch ATS. The remaining receptacles shall be connected to a critical branch circuit supplied by a different transfer switch ~~other than the receptacles at the same location. The~~ . The receptacles shall be permitted to be single, duplex, or quadruplex type, or any combination thereof. Other receptacles (e.g., portable x-ray receptacles) serving special-purpose, cord- and plug-connected equipment shall be permitted to be locking or non-locking-type.

Statement of Problem and Substantiation for Public Comment

Modifications to the existing text to make it clear that the remaining receptacles will need to be connected to a critical branch circuit independent from the wiring to other receptacles at the patient bed.

Related Item

- PI 284

Submitter Information Verification

Submitter Full Name: Jamie Schnick
Organization: HCAI/OSHPD
Affiliation: State of CA
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 03 13:41:30 EDT 2025
Committee: HEA-ELS

intend that, by checking this box, I am creating an electronic signature that will, upon my submission of this form, have the same legal force and effect as a handwritten signature

Each patient bed location shall be provided with a minimum of eight non-locking-type, 125-volt, 15- or 20-ampere receptacles. A minimum of four receptacles shall be connected to either a nonessential electrical system branch circuit(s) or critical branch circuit(s). The remaining receptacles shall be connected to critical branch circuit(s) supplied by a different transfer switch. The receptacles shall be permitted to be single, duplex, or quadruplex type, or any combination thereof. Other receptacles (e.g., portable x-ray receptacles) serving special-purpose, cord-and plug-connected equipment shall be permitted to be locking or non-locking-type.

Each patient bed location shall be provided with a minimum of eight non-locking-type, 125-volt, 15- or 20-ampere receptacles. The receptacles shall be permitted to be single, duplex, or quadruplex type, or any combination thereof. These receptacles shall be connected in the following manner:

1. A minimum of four receptacles shall be connected to a nonessential electrical system branch circuit(s)
    a. These receptacles may be permitted to be connected to critical branch circuit(s).
2. The remaining receptacles shall be connected to critical branch circuit(s) supplied by a transfer switch different from the receptacles detailed in 1.

Public Comment No. 121-NFPA 99-2025 [Section No. 6.3.2.2.2(C)]

Resolve

See 122

(C) Receptacles in Operating Rooms.

Each operating room shall be provided with a minimum of 36 125-volt, 15- or 20-ampere receptacles, at least 12 of which shall be connected to either a nonessential electrical system branch circuit or a critical branch circuit supplied by a critical branch ATS. The remaining receptacles shall be connected to a critical branch circuit supplied by a different transfer switch ~~other than the receptacles at the same location. The~~ . The receptacles shall be permitted to be single, duplex, or quadruplex type, or any combination of the three. Other receptacles (e.g., portable x-ray receptacles) serving special-purpose, cord- and plug-connected equipment shall be permitted to be locking or non-locking-type.

Statement of Problem and Substantiation for Public Comment

Modifications to the existing text to make it clear that the remaining receptacles will need to be connected to a critical branch circuit independent from the wiring to other receptacles in OR.

Related Item

- PI 284

Submitter Information Verification

Submitter Full Name: Jamie Schnick
Organization: HCAI/OSHPD
Affiliation: State of CA
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 03 13:28:41 EDT 2025
Committee: HEA-ELS

intend that, by checking this box, I am creating an electronic signature that will, upon my submission of this form, have the same legal force and effect as a handwritten signature

Public Comment No. 109-NFPA 99-2025 [Section No. 6.7.1.1.1]

Reject

Not sure what issue the PC is addressing

6.7.1.1.1

One on-site power source or set of power sources shall be provided with phase and ground current-sensing devices connected to trigger protective devices to minimize the extent of interruption to the electrical system due to abnormal current caused by overload or short circuits, or both.

Statement of Problem and Substantiation for Public Comment

CT's are not the solution to mitigate this concern. Breaker Trip unit and coordination study should identify and react to abnormal conditions – specify that these are separate devices from the transfer switch. Normal and Emergency or Source and Load.

Related Item

- FR-1063

Submitter Information Verification

Submitter Full Name: Bethany Richter

Organization: Schneider Electric

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 02 16:09:12 EDT 2025

Committee: HEA-ELS

Public Comment No. 127-NFPA 99-2025 [Section No. 6.7.1.1.2.1]

TG2-FR6

See sub

6.7.1.1.2.1

At least one power source ~~shall~~ or set of sources shall be on-site and sized to supply the entire essential electrical system.

Statement of Problem and Substantiation for Public Comment

Clarification that EES could be 1 source or set of sources.

Related Item

- PI 227

Submitter Information Verification

Submitter Full Name: Jamie Schnick

Organization: HCAI/OSHPD

Affiliation: State of CA

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 03 14:06:48 EDT 2025

Committee: HEA-ELS

Public Comment No. 110-NFPA 99-2025 [Section No. 6.7.2.1.3.1(D)]

TG2 – FR7

~~(D)~~

~~Sensing equipment shall not be required in the transfer switch if it is included with thepower source control system.~~

Statement of Problem and Substantiation for Public Comment

Per UL 1008, transfer switches require sensing devices to be integrated. 7.1.25 Other than as noted in 7.1.26 – 7.1.28, control circuits that are depended upon for the proper operation of a transfer switch shall be located wholly within the transfer switch enclosure and shall not have overload protective devices connected in them, but may have short-circuit and ground-fault protection.

Related Item

- FR-1077

Submitter Information Verification

Submitter Full Name: Bethany Richter
Organization: Schneider Electric
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 02 16:19:11 EDT 2025
Committee: HEA-ELS

Public Comment No. 111-NFPA 99-2025 [Section No. 6.7.2.1.3.5 [Excluding any Sub-Sections]]

Reject

The standards for EES equipment found in other NFPA documents are in place and enforceable without reference to this code.

An adjustable time-delay device shall be provided to delay transfer and sequence load transfer to the power source to avoid excessive voltage drop. These time delays shall not violate system performance requirements defined in other standards (NFPA 101, NFPA 110 and NFPA 111)

Statement of Problem and Substantiation for Public Comment

Clarify that time delays are permitted so long as they do not prevent the system from meeting required timings, such as 10 seconds to restore power for emergency systems.

Related Item

- FR-1082

Submitter Information Verification

Submitter Full Name: Bethany Richter
Organization: Schneider Electric
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 02 16:22:56 EDT 2025
Committee: HEA-ELS

Public Comment No. 137-NFPA 99-2025 [Section No. 6.3.2.5.1.4(B)]

SR – TG2 2.10

We want to keep the deleted text as the action was not detailed int eh original PI and the committee statement provided no substantiation for its removal.

(B) Insulated Equipment Grounding Conductors and Insulated Equipment Bonding Jumpers.

The following shall be directly connected to an insulated copper equipment grounding conductor that is clearly identified along its entire length by green insulation, with no yellow stripes, and installed with the branch circuit conductors in the wiring methods as provided in 6.3.2.5.1.4(A):

(1) The grounding terminals of all receptacles other than isolated ground receptacles

(2) All non-current-carrying conductive surfaces of fixed electrical equipment likely to become energized and subject to personal contact, operating at over 100 volts

(3) Metal faceplates connected to the equipment grounding conductor by means of a metal mounting screw(s) securing the faceplate to a grounded outlet box or grounded wiring device

(4) Luminaires, more than 2.3 m (7½ ft) above the floor and switches located outside of the patient care vicinity, which are permitted to be connected to an equipment grounding return path complying with 6.3.2.5.1.4(A) or 6.3.2.5.1.4(B)

Additional Proposed Changes

File Name	Description	Approved
CCNotes_8_ELS.pdf	NFPA 99 CC Note 8	✓

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 8 appeared in the First Draft Report on First Revisions No. 945, and is also related to Public Input No. 415

Related Item

- First Revision No. 945
- Public Input No. 415

Submitter Information Verification

Submitter Full Name: CC Notes

Organization: CC on Heath Care Facilities

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 04 14:18:43 EDT 2025

Committee: HEA-ELS

CCNotes_8_ELS.1749061133810.pdf

Public Input No. 415-NFPA 99-2024 [Section No. 6.3.2.5.1.4(B)]

(B) Insulated Equipment Grounding Conductors and Insulated Equipment Bonding Jumpers. The following shall be directly connected to an insulated copper equipment grounding conductor that is clearly identified along its entire length by green insulation, with no yellow stripes, and installed with the branch circuit conductors in the wiring methods as provided in 6.3.2.5.1.4(A):

(1) The grounding terminals of all receptacles other than isolated ground receptacles.

(2) Where receptacles are mounted in metal receptacle outlet boxes, metal device boxes, or metal enclosures, the performance of the connection between the receptacle grounding terminal and the metal box or enclosure shall be equivalent to the performance provided by copper wire sized in accordance with 250.146 and Table 250.122 of *NFPA 70*, but no smaller than 12 AWG.

(3) All non-current-carrying conductive surfaces of fixed electrical equipment likely to become energized and subject to personal contact, operating at over 100 volts.

(4) Metal faceplates, which shall be connected to the equipment grounding conductor by means of a metal mounting screw(s) securing the faceplate to a grounded outlet box or grounded wiring device.

(5) Luminaires more than 2.3 m (7½ ft) above the floor and switches located outside of the patient care vicinity, which shall be permitted to be connected to an equipment grounding return path complying with 6.3.2.5.1.4(A) ~~and~~ or 6.3.2.5.1.4(B).

Statement of Problem and Substantiation for Public Input

It appears that the intent of this item is to be more lenient for luminaires outside the patient vicinity. Note this would be consistent with NFPA 70 see below: 517.13 Equipment Grounding Conductor for Receptacles and Fixed Electrical Equipment in Patient Care Spaces. Wiring serving patient care spaces shall comply with the requirements of 517.13(A) and (B). Exception: Luminaires more than 2.3 m (7½ ft) above the floor and switches located outside of the patient care vicinity shall be permitted to be connected to an equipment grounding return path complying with the requirements of 517.13(A) or (B).

Submitter Information Verification

Submitter Full Name: Jamie Schnick

Organization: OSHPD/HCAI

Affiliation: California Department of Health Care Access and Information (HCAI) Office of Statewide Hospital Planning and Development (OSHPD)

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 03 20:43:54 EDT 2024

Committee: HEA-ELS

Committee Statement

Resolution: FR-945-NFPA 99-2024

Statement: The revision clarifies that either method of grounding/bonding is compliant.

First Revision No. 945-NFPA 99-2024 [Section No. 6.3.2.5.1.4(B)]

(B) Insulated Equipment Grounding Conductors and Insulated Equipment Bonding Jumpers. The following shall be directly connected to an insulated copper equipment grounding conductor that is clearly identified along its entire length by green insulation, with no yellow stripes, and installed with the branch circuit conductors in the wiring methods as provided in 6.3.2.5.1.4(A):

(1) The grounding terminals of all receptacles other than isolated ground receptacles~~.~~

(2) ~~Where receptacles are mounted in metal receptacle outlet boxes, metal device boxes, or metal enclosures, the performance of the connection between the receptacle grounding terminal and the metal box or enclosure shall be equivalent to the performance provided by copper wire sized in accordance with 250.146 and Table 250.122 of *NFPA 70*, but no smaller than 12 AWG.~~

[The above highlighted text should remain in the code as per SR- TG2.10. Please see the task group substantiation in the final task group 2 report.]

(2) All non-current-carrying conductive surfaces of fixed electrical equipment likely to become energized and subject to personal contact, operating at over 100 volts~~.~~

(3) Metal faceplates~~, which shall be~~ connected to the equipment grounding conductor by means of a metal mounting screw(s) securing the faceplate to a grounded outlet box or grounded wiring device~~.~~

(4) Luminaires, more than 2.3 m (7½ ft) above the floor and switches located outside of the patient care vicinity, which ~~shall be~~are permitted to be connected to an equipment grounding return path complying with 6.3.2.5.1.4(A)~~and~~or6.3.2.5.1.4(B)~~.~~

Submitter Information Verification

Committee: HEA-ELS

Submittal Date: Tue Jul 30 19:29:50 EDT 2024

Committee Statement

Committee Statement: The revision clarifies that either method of grounding/bonding is compliant.

Response Message: FR-945-NFPA 99-2024

Public Input No. 415-NFPA 99-2024 [Section No. 6.3.2.5.1.4(B)]

Ballot Results

This item has passed ballot

x

30 Eligible Voters

3 Not Returned

26 Affirmative All

0 Affirmative with Comments

1 Negative with Comments

0 Abstention

X

Not Returned

Elliott, Steven A.
Sappington, Steve R.
Schutte, John

X

Affirmative All

Beebe, Chad E.
Biason, Krista McDonald
Campbell, David M.
Chandler, H. David
Chilton, Nancy W.
Chisholm, Jr., Dan
Dagenais, David A.

Della Croce, Vincent
Ehrenwerth, Jan
Finen, Chris M.
Griffith, Joshua
Gwynn, Pamela
Hickman, Palmer L.
Hoegberg, Leif
Lipster, Stephen M.
Parrish, Thomas J.
Porter, Kevin T.
Rabel, Don
Rea, Vincent M.
Rink, Mike
Savage, Sr., Michael L.
Stoddard, Randy
Vernon, IV, Walter N.
Williams, David A.
Williams, John L.
Wolff, Robert
X
Negative with Comment
Linder, David S.
Removing item 6.3.2.5.1.4(B)(2) was not requested as part of the Public Input 415, and removing this sub-section is not substantiated by the Committee Statement of FR-945.

Public Comment No. 128-NFPA 99-2025 [Section No. 6.7.3.2 [Excluding any Sub-Sections]]

TG2 – SR9

See Sub

If required to meet essential load capacity,failure of the selected power source or set of power sources shall automatically start ~~the~~ or transfer to the other power source or set of power sources after a short delay as described in 6.7.2.1.3.4.

Statement of Problem and Substantiation for Public Comment

To address the nature of some on-site power sources that can be in operation 24/7 it is proposed that the addition of "or transfer to" be added to the requirements to bring into service for essential loads when required.

Related Item

- PI 155

Submitter Information Verification

Submitter Full Name: Jamie Schnick

Organization: HCAI/OSHPD

Affiliation: State of CA

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 03 14:55:02 EDT 2025

Committee: HEA-ELS

Public Comment No. 136-NFPA 99-2025 [New Section after 6.2.3]

Second Revision -- TG2.9

See Committee action on PC 55.

TITLE OF NEW CONTENT

Type your content here ...

Additional Proposed Changes

File Name	Description	Approved
CCNotes_7_ELS.pdf	NFPA99_CCNote7	✓

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 7 appeared in the First Draft Report on First Revisions No. 939, and is also related to Public Input No. 99

Related Item

- First Revision No. 939
- Public Input No. 99

Submitter Information Verification

Submitter Full Name: CC Notes

Organization: CC on Heath Care Facilities

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 04 14:14:52 EDT 2025

Committee: HEA-ELS

CC Note 7.pdf

Public Comment No. 137-NFPA 99-2025 [Section No. 6.3.2.5.1.4(B)]

SR – TG2 2.10

We want to keep the deleted text as the action was not detailed int eh original PI and the committee statement provided no substantiation for its removal.

(B) Insulated Equipment Grounding Conductors and Insulated Equipment Bonding Jumpers.

The following shall be directly connected to an insulated copper equipment grounding conductor that is clearly identified along its entire length by green insulation, with no yellow stripes, and installed with the branch circuit conductors in the wiring methods as provided in 6.3.2.5.1.4(A):

(1) The grounding terminals of all receptacles other than isolated ground receptacles

(2) All non-current-carrying conductive surfaces of fixed electrical equipment likely to become energized and subject to personal contact, operating at over 100 volts

(3) Metal faceplates connected to the equipment grounding conductor by means of a metal mounting screw(s) securing the faceplate to a grounded outlet box or grounded wiring device

(4) Luminaires, more than 2.3 m (7½ ft) above the floor and switches located outside of the patient care vicinity, which are permitted to be connected to an equipment grounding return path complying with 6.3.2.5.1.4(A) or 6.3.2.5.1.4(B)

Additional Proposed Changes

File Name	Description	Approved
CCNotes_8_ELS.pdf	NFPA 99 CC Note 8	✓

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 8 appeared in the First Draft Report on First Revisions No. 945, and is also related to Public Input No. 415

Related Item

- First Revision No. 945
- Public Input No. 415

Submitter Information Verification

Submitter Full Name: CC Notes

Organization: CC on Heath Care Facilities

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 04 14:18:43 EDT 2025

Committee: HEA-ELS

CCNotes_8_ELS.1749061133810.pdf

Public Input No. 415-NFPA 99-2024 [Section No. 6.3.2.5.1.4(B)]

(B) Insulated Equipment Grounding Conductors and Insulated Equipment Bonding Jumpers. The following shall be directly connected to an insulated copper equipment grounding conductor that is clearly identified along its entire length by green insulation, with no yellow stripes, and installed with the branch circuit conductors in the wiring methods as provided in 6.3.2.5.1.4(A):

(1) The grounding terminals of all receptacles other than isolated ground receptacles.

(2) Where receptacles are mounted in metal receptacle outlet boxes, metal device boxes, or metal enclosures, the performance of the connection between the receptacle grounding terminal and the metal box or enclosure shall be equivalent to the performance provided by copper wire sized in accordance with 250.146 and Table 250.122 of *NFPA 70*, but no smaller than 12 AWG.

(3) All non-current-carrying conductive surfaces of fixed electrical equipment likely to become energized and subject to personal contact, operating at over 100 volts.

(4) Metal faceplates, which shall be connected to the equipment grounding conductor by means of a metal mounting screw(s) securing the faceplate to a grounded outlet box or grounded wiring device.

(5) Luminaires more than 2.3 m (7½ ft) above the floor and switches located outside of the patient care vicinity, which shall be permitted to be connected to an equipment grounding return path complying with 6.3.2.5.1.4(A) ~~and~~ or 6.3.2.5.1.4(B).

Statement of Problem and Substantiation for Public Input

It appears that the intent of this item is to be more lenient for luminaires outside the patient vicinity. Note this would be consistent with NFPA 70 see below: 517.13 Equipment Grounding Conductor for Receptacles and Fixed Electrical Equipment in Patient Care Spaces. Wiring serving patient care spaces shall comply with the requirements of 517.13(A) and (B). Exception: Luminaires more than 2.3 m (7½ ft) above the floor and switches located outside of the patient care vicinity shall be permitted to be connected to an equipment grounding return path complying with the requirements of 517.13(A) or (B).

Submitter Information Verification

Submitter Full Name: Jamie Schnick

Organization: OSHPD/HCAI

Affiliation: California Department of Health Care Access and Information (HCAI) Office of Statewide Hospital Planning and Development (OSHPD)

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 03 20:43:54 EDT 2024

Committee: HEA-ELS

Committee Statement

Resolution: FR-945-NFPA 99-2024

Statement: The revision clarifies that either method of grounding/bonding is compliant.

First Revision No. 945-NFPA 99-2024 [Section No. 6.3.2.5.1.4(B)]

(B) Insulated Equipment Grounding Conductors and Insulated Equipment Bonding Jumpers. The following shall be directly connected to an insulated copper equipment grounding conductor that is clearly identified along its entire length by green insulation, with no yellow stripes, and installed with the branch circuit conductors in the wiring methods as provided in 6.3.2.5.1.4(A):

(1) The grounding terminals of all receptacles other than isolated ground receptacles~~.~~

(2) ~~Where receptacles are mounted in metal receptacle outlet boxes, metal device boxes, or metal enclosures, the performance of the connection between the receptacle grounding terminal and the metal box or enclosure shall be equivalent to the performance provided by copper wire sized in accordance with 250.146 and Table 250.122 of *NFPA 70*, but no smaller than 12 AWG.~~

[The above highlighted text should remain in the code as per SR- TG2.10. Please see the task group substantiation in the final task group 2 report.]

(2) All non-current-carrying conductive surfaces of fixed electrical equipment likely to become energized and subject to personal contact, operating at over 100 volts~~.~~

(3) Metal faceplates~~, which shall be~~ connected to the equipment grounding conductor by means of a metal mounting screw(s) securing the faceplate to a grounded outlet box or grounded wiring device~~.~~

(4) Luminaires, more than 2.3 m (7½ ft) above the floor and switches located outside of the patient care vicinity, which ~~shall be~~are permitted to be connected to an equipment grounding return path complying with 6.3.2.5.1.4(A)~~and~~or6.3.2.5.1.4(B)~~.~~

Submitter Information Verification

Committee: HEA-ELS

Submittal Date: Tue Jul 30 19:29:50 EDT 2024

Committee Statement

Committee Statement: The revision clarifies that either method of grounding/bonding is compliant.

Response Message: FR-945-NFPA 99-2024

Public Input No. 415-NFPA 99-2024 [Section No. 6.3.2.5.1.4(B)]

Ballot Results

This item has passed ballot

x

30 Eligible Voters

3 Not Returned

26 Affirmative All

0 Affirmative with Comments

1 Negative with Comments

0 Abstention

X

Not Returned

Elliott, Steven A.
Sappington, Steve R.
Schutte, John

X

Affirmative All

Beebe, Chad E.
Biason, Krista McDonald
Campbell, David M.
Chandler, H. David
Chilton, Nancy W.
Chisholm, Jr., Dan
Dagenais, David A.

Della Croce, Vincent
Ehrenwerth, Jan
Finen, Chris M.
Griffith, Joshua
Gwynn, Pamela
Hickman, Palmer L.
Hoegberg, Leif
Lipster, Stephen M.
Parrish, Thomas J.
Porter, Kevin T.
Rabel, Don
Rea, Vincent M.
Rink, Mike
Savage, Sr., Michael L.
Stoddard, Randy
Vernon, IV, Walter N.
Williams, David A.
Williams, John L.
Wolff, Robert
X
Negative with Comment
Linder, David S.
Removing item 6.3.2.5.1.4(B)(2) was not requested as part of the Public Input 415, and removing this sub-section is not substantiated by the Committee Statement of FR-945.

Public Comment No. 138-NFPA 99-2025 [Section No. 6.7.1.2.2.3]

SR -TG2.11

These changes align with changes made to the document in the First Revision.

6.7.1.2.2.3 Temporary On-Site Power Source for Maintenance or Repair of the On-Site Power Source.

(A)

If the on-site power source or set of power sources serving the essential electrical system does not have the capacity to support the anticipated demand load when any single on-site power source is disabled for maintenance or repair, it shall include a permanent switching means to connect a portable or temporary on-site power source that is available for the duration of the maintenance or repair and that complies with the following requirements:

(1) The connection to the portable or temporary on-site power source shall not require modification of the permanent system wiring.

(2) Transfer of power to the portable or temporary on-site power source shall be in accordance with 6.7.2.1.3.

(3) The connection point for the portable or temporary on-site power source shall be marked with the phase rotation and system bonding requirements.

(4) Mechanical or electrical interlocking shall prevent inadvertent interconnection of power sources.

(5) The switching means shall include a contact point that annunciates at a location remote from the on-site power source or at another facility monitoring system to indicate that the on-site power source is disconnected from the essential electrical system.

(B)

Using manual switching to switch from the on-site power source to the portable or temporary on-site power source and using the switching means for connection of a load bank shall be permitted.

(C)

The permanent switching means to connect a portable or temporary on-site power source for the duration of maintenance or repair shall not be required where any of the following conditions exists:

(1) All processes that rely on the essential electrical system source are capable of being disabled during maintenance or repair of the on-site power source.

(2) The building or structure is unoccupied and fire protection systems are fully functional and do not require an on-site power source.

(3) Other temporary on-site power sources can be substituted for the essential electrical system.

Additional Proposed Changes

File Name	Description	Approved
CCNotes_9_ELS.pdf	NFPA 99 CC Notes 9	✓

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 9 appeared in the First Draft Report on First Revisions No. 1069, and is also related to Public Input No. 298.

Related Item

- First Revision 1069
- Public Input 298

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: CC on Health Care Facilities
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 04 14:34:39 EDT 2025
Committee: HEA-ELS

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Correlating Committee Note No. 9-NFPA 99-2025 [Section No. 6.7.1.2.2.3]

Submitter Information Verification

Committee: HEA-AAC
Submittal Date: Thu Jan 16 11:03:54 EST 2025

Committee Statement

Committee Statement: Revise A.6.7.1.2.2.1(2) by correcting the unlinked cross-references: 6.7.5.1.3.2(10), 6.7.5.1.3.2(1) through 6.7.5.1.3.2(10), 6.7.5.1.3.2(1) through 6.7.5.1.3.2(10).

First Revision No. 1069-NFPA 99-2024 [Section No. 6.7.1.2.2.3]

Ballot Results

This item has passed ballot

x

11 Eligible Voters

2 Not Returned

9 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

X

Not Returned

Beebe, Chad E.

Dagenais, David A.

X

Affirmative All

Brooks, Bruce D.

Burrill, Gordon D.

Ferrari, Keith

Gagnon, Robert M.

Kennedy, Chad

Koffel, William E.

Marks, Maria B.

Reiswig, Rodger

Rosenbaum, Eric R.

New Text:

A.6.7.1.2.2.1

The intent of **6.7.1.2.2.1** is as follows:

(1) Contiguous or same-site nonhospital buildings can be served by the generating equipment. However, such loads should not compromise the integrity of the system serving the hospital. Thus, any such contiguous or same-site nonhospital buildings can be served by the generating equipment only if the transfer means operates in accordance with **6.7.1.2.2.1**.

(2) Within a hospital building, **6.7.5.1.3.2~~(10)~~** (B)(1) (q), (B)(2)(q), (B)(3)(s) and (B)(3)(t) permit~~s~~ "additional" loads on the critical branch and **6.7.5.1.4.4(9)** permits "other equipment" on the equipment system in order to provide limited flexibility to a facility to add one or two loads not otherwise listed in **6.7.5.1.3.2~~(1)~~** (B)(1) through **6.7.5.1.3.2~~(10)~~**(B)(3), **6.7.5.1.4.3**, or **6.7.5.1.4.4(1)** through **6.7.5.1.4.4(9)** to a critical branch panel or an equipment system panel. This is permitted to prevent the need for an additional panel to serve a small number of selected circuits in a particular area. These

sections are not intended to permit large blocks of loads not listed in these sections to be on the critical branch or equipment system. The intent of the division of the essential system loads into systems and branches is to ensure maximum reliability of service to loads considered essential. Every additional load placed onto a system somewhat increases the probability of a failure on the system that threatens the integrity of service to the balance of loads served by the system. Therefore, while “additional” loads and “other equipment” are permitted to be placed onto the critical branch and equipment system in very limited situations, where a facility wants to put large blocks of loads not listed in **6.7.5.1.3.2(1)** through**6.7.5.1.3.2~~(1)~~** (B)(1) through **6.7.5.1.3.2~~(10)~~**(B)(3), **6.7.5.1.4.3**, or **6.7.5.1.4.4(1)** through **6.7.5.1.4.4(9)** onto the generating equipment, the facility is permitted to do so, but only by designating these large blocks of loads as “optional loads” and by complying with **6.7.1.2.2.3**

Critical branch highlighted in yellow
Equipment branch highlighted in blue

Public Comment No. 139-NFPA 99-2025 [Section No. 6.7.1.2.3]

SR – TG2.12

Delete 6.7.1.2.3.2

Removing a redundancy – see 6.2.5.3

6.7.1.2.3 ~~Location.~~

~~6.7.1.2.3.1~~ Indoor On-Site Power Source Installations.

On-site power source equipmentfor Level 1 systems shall not be installed in the same room as other power source service equipment where the service equipment is rated over 150 volts to ground and equal to or greater than 1000 amperes.

~~6.7.1.2.3.2 Physical Separation.~~

~~Feeders and associated raceways serving essential electrical system transfer equipment shall be located such that physical separation is provided between each of the electrical system feeders to prevent possible simultaneous interruption.~~

Additional Proposed Changes

File Name	Description	Approved
.1749063701918	NFPA 99 CC Note 10	✓

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 10 appeared in the First Draft Report on First Revisions No. 1070.

Related Item

- First Revision 1070

Submitter Information Verification

Submitter Full Name: CC Notes

Organization: CC on Health Care Facilities

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 04 14:58:18 EDT 2025

Committee: HEA-ELS

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Correlating Committee Note No. 10-NFPA 99-2025 [Section No. 6.7.1.2.3]

Submitter Information Verification

Committee: HEA-AAC

Submittal Date: Thu Jan 16 11:20:20 EST 2025

Committee Statement

Committee Statement: Consider Linder's affirmative comment: "NOTE to Correlating Committee: Please review the need for section 6.2.5.3 (old 6.2.4.3) with the addition of 6.7.1.2.3.2. These sections are identical."

First Revision No. 1070-NFPA 99-2024 [Section No. 6.7.1.2.3]

Ballot Results

This item has passed ballot

x

11 Eligible Voters

2 Not Returned

9 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

X

Not Returned

Beebe, Chad E.

Dagenais, David A.

X

Affirmative All

Brooks, Bruce D.

Burrill, Gordon D.

Ferrari, Keith

Gagnon, Robert M.

Kennedy, Chad

Koffel, William E.

Marks, Maria B.

Reiswig, Rodger

Rosenbaum, Eric R.

Public Comment No. 140-NFPA 99-2025 [Section No. 6.7.1.2.4]

Reject

The reference in question refers to the new proper section of the code.

6.7.1.2.4* Capacity and Rating.

The essential electrical system power source or sets of power sources shall have the capacity and rating to meet the maximum demand likely to be produced by the connected load and be consistent with the facility's emergency operations plan.

Additional Proposed Changes

File Name	Description	Approved
CCNotes_11_ELS.pdf	NFPA 99 CC Note 11	✓

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 11 appeared in the First Draft Report on First Revisions No. 1071.

Related Item

- First Revision 1071

Submitter Information Verification

Submitter Full Name: CC Notes
Organization: CC on Health Care Facilities
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 04 15:23:47 EDT 2025
Committee: HEA-ELS

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Correlating Committee Note No. 11-NFPA 99-2025 [Section No. 6.7.1.2.4]
Submitter Information Verification

Committee: HEA-AAC

Submittal Date: Thu Jan 16 11:21:33 EST 2025

Committee Statement

Committee Statement: Revise A.6.7.1.2.4 by correcting the cross-reference to 6.7.1.2.2.1, which was deleted by FR-1067.

First Revision No. 1071-NFPA 99-2024 [Section No. 6.7.1.2.4]

Ballot Results

This item has passed ballot

x

11 Eligible Voters

2 Not Returned

9 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

X
Not Returned
Beebe, Chad E.
Dagenais, David A.
X
Affirmative All
Brooks, Bruce D.
Burrill, Gordon D.
Ferrari, Keith
Gagnon, Robert M.
Kennedy, Chad
Koffel, William E.
Marks, Maria B.
Reiswig, Rodger
Rosenbaum, Eric R.

First Revision No. 1071-NFPA 99-2024 [Section No. 6.7.1.2.4]

6.7.1.2.4* Capacity and Rating.
The essential electrical system power source or sets of power sources shall have the capacity and rating to meet the maximum demand likely to be produced by the connected load and be consistent with the facility's emergency operations plan.

Submitter Information Verification

Committee: HEA-ELS

Submittal Date: Fri Aug 02 21:14:20 EDT 2024

Committee Statement

Committee Statement: The defined term is power source, not source.

Response Message: FR-1071-NFPA 99-2024

Ballot Results

This item has passed ballot

x

30 Eligible Voters

3 Not Returned

27 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

X
Not Returned
Elliott, Steven A.
Sappington, Steve R.
Schutte, John
X
Affirmative All
Beebe, Chad E.
Biason, Krista McDonald
Campbell, David M.
Chandler, H. David
Chilton, Nancy W.
Chisholm, Jr., Dan
Dagenais, David A.
Della Croce, Vincent
Ehrenwerth, Jan
Finen, Chris M.
Griffith, Joshua
Gwynn, Pamela
Hickman, Palmer L.
Hoegberg, Leif
Linder, David S.
Lipster, Stephen M.
Parrish, Thomas J.
Porter, Kevin T.
Rabel, Don
Rea, Vincent M.
Rink, Mike
Savage, Sr., Michael L.
Stoddard, Randy
Vernon, IV, Walter N.
Williams, David A.

Williams, John L.
Wolff, Robert

Terra Cut and Paste

6.7.1.2.4* Capacity and Rating.

The essential electrical system power source or sets of power sources shall have the capacity and rating to meet the maximum demand likely to be produced by the connected load and be consistent with the facility's emergency operations plan.

A.6.7.1.2.4

Paragraph 12.5.3.3.5 includes the requirements and components for an emergency operations plan. For additional loads to be considered, see 6.7.1.2.2.1.

PIs [1] FR-1067 Hide Legislative

~~**6.7.1.2.2.1**~~

~~The power source supplying the essential electrical system shall be either reserved exclusively for such service or used for other purposes of peak demand control, internal voltage control, load relief for the external utility, cogeneration, or other approved uses.~~

PIs [1] FR-1068 Hide Legislative

~~**6.7.1.2.2.2***~~

~~Each independent source or sets of sources supplying the essential electrical system shall be designed to meet the maximum demand likely to be produced by the connected load and be consistent with the facility's emergency operations plan.~~

PIs [1] CNs [1] FR-1069 Hide Legislative

6.7.1.2.2.1* Optional Loads.

(A)

~~Sources~~Power sources supplying the essential electrical system shall be permitted to supply optional loads.

PIs [1]

(B)

Optional loads shall be served by their own transfer means~~.~~, such that they will not be transferred onto the ~~generating equipment~~essential electrical system (EES) power sources if the transfer would overload the equipment and, if connected, will be shed prior to ~~a generating equipment~~an EES power source overload.

6.7.1.2.2.2

Where optional loads include contiguous or same-site facilities not covered in this code, provisions shall be made to meet the requirements of NFPA 101 for emergency egress under load-shed conditions.