Code-Making Panel 15
Public Input Report (A19)

Public Input No. 3453-NFPA 70-2017 [Global Input]

Remove the phrase “the provisions of” throughout the entire NEC and editorial revise each segment of text as required.

Statement of Problem and Substantiation for Public Input

The phrase is unnecessary and redundant. This global public input seeks to request that each NEC Panel (technical committee) review the articles under their responsibility and remove this phrase and reword the text accordingly. The requirements are already provided in the NEC so it does not make sense to refer to provisions. In many cases the phrase should refer to a section, then state that section in accordance with the NEC Style Manual requirements.

Substantiation Examples:

90.6 Formal Interpretations. To promote uniformity of interpretation and application of the provisions of this Code, formal interpretation procedures have been established and are found
in the NFPA Regulations Governing Committee Projects.

110.3(A)Examination, Identification, Installation, Use, and Listing (Product Certification) of Equipment.
(1) Suitability for installation and use in conformity with the provisions of this Code

110.30 General. Conductors and equipment used on circuits over 1000 volts, nominal, shall comply with Part I of this article and with 110.30 through 110.41 , which supplement or modify
Part I. In no case shall the provisions of this part apply to equipment on the supply side of the service point.

110.51 General.

(A)Covered. The provisions of this p Part IV shall apply to the installation and use of high-voltage power distribution and utilization equipment that is portable, mobile, or both, such as substations, trailers, cars, mobile shovels, draglines, hoists, drills, dredges, compressors, pumps, conveyors, underground excavators, and the like.

210.13 Ground-Fault Protection of Equipment. Each branch circuit disconnect rated 1000 A or more and installed on solidly grounded wye electrical systems of more than 150 volts to ground, but not exceeding 600 volts phase-to-phase, shall be provided with ground-fault protection of equipment in accordance with the provisions of 230.95.

Exception No. 1: The provisions of this This section shall not apply to a disconnecting means for a continuous industrial process where a nonorderly shutdown will introduce additional or increased hazards.
Exception No. 2: The provisions of this This section shall not apply if ground-fault protection of equipment is provided on the supply side of the branch circuit and on the load side of any transformer supplying the branch circuit.

Section 210.60(B)

(B) Receptacle Placement. In applying the provisions of 210.52(A), the total number of receptacle outlets shall not be less than the minimum number that would comply with the
provisions of that section. These receptacle outlets shall be permitted to be located conveniently for permanent furniture layout. At least two receptacle outlets shall be readily accessible. Where receptacles are installed behind the bed, the receptacle shall be located to prevent the bed from contacting any attachment plug that may be installed or the receptacle shall be provided with a suitable guard.

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Public Input No. 4317-NFPA 70-2017 [Global Input]

Each code making panel should set time aside to review the requirements under their purview to ensure that new and existing requirements are in compliance with the NEC style manual.

Statement of Problem and Substantiation for Public Input

Code making panels are responsible for ensuring that the Code text which agreed upon at the technical panel meetings comply with all requirements of the NEC style manual. It would be prudent for each code making panel to set time aside to review the requirements under their purview to ensure that not only new but existing requirements are in compliance with the requirements of the NEC style manual.

Adherence to the NEC style manual promotes consistency throughout the NEC adding to clarity to the users of the NEC. Code making panels should spend available time reviewing for such important style manual requirements as the following: (These are just some examples and not a comprehensive list of style manual requirements.)

Unenforceable Terms. The NEC shall not contain references or requirements that are unenforceable or vague. The terms contained in Table 3.2.1 of the style manual shall be reviewed in context, and, addressed if the resulting requirement is unenforceable or vague. Examples of unenforceable and Vague Terms include the following:

designed for the purpose.
good
adequate
frequent(ly)

Writing in present text. Requirements must be written in present text and not future text. A good example of this is as follows:

Correct: No conductor shall be used in such a manner that its operating temperature exceeds that designated for the type of insulated conductor involved.
Incorrect: No conductor shall be used in such a manner that its operating temperature will exceed that designated for the type of insulated conductor involved.

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Public Input No. 777-NFPA 70-2017 [Global Input]

The terms “satisfactory” - "equal" - "equivalent", etc., are examples of numerous subjective terms found in the NEC where decisions of suitability fall under the purview of the AHJ. Changing or supplementing these terms to "approved" - "approved equivalent" will continue the alignment of language used throughout the NEC.

I authored a couple of such changes for the 2014 NEC that were adopted in the 2017. It was suggested to me by someone from NFPA that I submit a global input, so a committee would be appointed to locate and revise all such subjective terms to include the word "approved".

This will reduce the number of terms used to determine suitability of equipment as it applies to installation/inspection to one of the following: "Listed" - "Identified" - "Approved"

Statement of Problem and Substantiation for Public Input

I think the language in my global proposal not only states the problem, but offers a viable solution to facilitate uniformity of language throughout the NEC.

Submitter Information Verification

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Public Input No. 1456-NFPA 70-2017 [New Article after 100]

Single-Pole Separable Connector.

A device that is installed at the ends of portable, flexible, single-conductor cable that is used to establish connection or dissconnection between two cables or one cable and a single-pole,panel-mounted separable inlet of outlet.

Statement of Problem and Substantiation for Public Input

This Public Input (PI), along with its companion PI, would relocate the definition for “Single-Pole Separable Connector” from Section 530.2 to Article 100, in accordance with 2.2.2.1 of the NEC Style Manual. This definition appears in Section 530.2 (definitions) and is also a term used in Article 520 (refer to Section 520.53(C)). As this term appears in two or more Articles, its definition should be located in Article 100.

This proposed definition of a single- pole separable includes a minor modification at the end of the definition, changing the term “connector” to the phrase “inlet or outlet”. This revised definition coincides with that used in the UL Standard covering single pole separable connectors (UL 1691).

There is also a companion Public Input to add requirements for Single-Pole Separable Connectors to Article 406.

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Submittal Date: Mon Jul 31 11:32:49 EDT 2017

Public Input No. 1981-NFPA 70-2017 [Definition: Basic Care (Category 3) Space.]

Basic Care (Category 3) Space.

Space in which failure of equipment or a system is not likely to cause injury to the patients, staff, or visitors but can cause patient discomfort. [**99:**3.3.127.3]

Informational Note: [Category 3] spaces, formerly known as basic care rooms [(spaces)], are typically where basic medical or dental care, treatment, or examinations are performed. Examples include, but are not limited to, examination or treatment rooms in clinics, medical, chiropractic, o **ptometry,** and dental offices, nursing homes, and limited care facilities. [~~**99:** A.3.3.127.3~~]

Statement of Problem and Substantiation for Public Input

Adding "chiropractic, optometry" to the Informational Note will make it clear that these areas are included.

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Public Input No. 2099-NFPA 70-2017 [Definition: Health Care Facilities.]

Health Care Facilities.

Buildings, portions of buildings, or mobile enclosures in which human medical, dental, psychiatric, nursing, obstetrical, or surgical care are provided. [**99:**3.3.67]

Informational Note: Examples of health care facilities include, but are not limited to, hospitals, nursing homes, limited care facilities, clinics, medical and dental ~~offices~~ facililties , and ambulatory care centers, whether permanent or movable.

Statement of Problem and Substantiation for Public Input

Revise the Informational Note by replacing 'offfice' with facility, since it this word adds confusion as it relates to 'office' as it relates to Patient Care Space.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 2098-NFPA 70-2017 [Definition: Medical Office (Dental Office).]	

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Public Input No. 269-NFPA 70-2017 [Definition: Invasive Procedure.]

Invasive Procedure.

Any procedure that penetrates the protective surfaces of a patient's body (i.e., skin, mucous membrane, cornea) and that is performed with an aseptic field (procedural site). Not included in this category are placement of peripheral intravenous needles or catheters used to administer fluids and/or medications, gastrointestinal endoscopies (i.e., sigmoidoscopies), insertion of urethral catheters, and other similar procedures. [**99:**3.3.81]

Statement of Problem and Substantiation for Public Input

This definition needs to be relocated per the NEC Style Manual "2.2.2 Definitions. Definitions shall be in alphabetical order".

Submitter Information Verification

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Public Input No. 2098-NFPA 70-2017 [Definition: Medical Office (Dental Office).]

Medical ~~Office (~~ or Dental ~~Office)~~ Facility .

A building or part thereof in which the following occur: (1) examinations and minor treatments or procedures are performed under the continuous supervision of a medical or dental professional; (2) only sedation or local anesthesia is involved and treatment or procedures do not render the patient incapable of self-preservation under emergency conditions; and (3) overnight stays for patients or 24-hour operation are not provided. [**99:**3.3.98]

Statement of Problem and Substantiation for Public Input

Revise the title of this definition by deleting 'offfice', since it adds confusion as it relates to Informational Note 2 to Patient Care Space.

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Public Input No. 437-NFPA 70-2017 [Definition: Medical Office (Dental Office).]

~~**Medical Office (Dental Office).**~~

~~A building or part thereof in which the following occur: (1) examinations and minor treatments or procedures are performed under the continuous supervision of a medical or dental professional; (2) only sedation or local anesthesia is involved and treatment or procedures do not render the patient incapable of self-preservation under emergency conditions; and (3) overnight stays for patients or 24-hour operation are not provided. [**99:** 3.3.98]~~

Statement of Problem and Substantiation for Public Input

Terms that aren't used in the Code don't need to be defined. If the 2020 NEC adds provisions that address medical office buildings then by all means retain the definition, but as is it serves no purpose.

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Submittal Date: Fri Mar 31 13:30:02 EDT 2017

Public Input No. 438-NFPA 70-2017 [Definition: Support (Category 4) Space.]

~~**Support (Category 4) Space.**~~

~~Space in which failure of equipment or a system is not likely to have a physical impact on patient care. [**99:** 3.3.127.4]~~

~~Informational Note: [Category 4] spaces were formerly known as support rooms [(spaces)]. Examples of support spaces include, but are not limited to, anesthesia work rooms, sterile supply, laboratories, morgues, waiting rooms, utility rooms, and lounges. [**99:** A.3.3.127.4]~~

Statement of Problem and Substantiation for Public Input

Not only is this term not used in the NEC, but the definition is absurd. The areas described in the informational note aren't even patient care spaces to begin with (work rooms, supply rooms, waiting rooms(!), lounges, etc.) so their inclusion in the definition of patient care space is confusing at best, laughable at worst (it seems pretty obvious that you aren't going to be injuring a patient in a morgue).

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Public Input No. 1901-NFPA 70-2017 [Section No. 517.2]

517.2 Definitions. The definitions in this section shall apply only within this article.

Alternate Power Source.

One or more generator sets, or battery systems where permitted, intended to provide power during the interruption of the normal electrical service; or the public utility electrical service intended to provide power during interruption of service normally provided by the generating facilities on the premises. [**99:** 3.3.4]

Ambulatory Health Care Occupancy.

An occupancy used to provide services or treatment simultaneously to four or more patients that provides, on an outpatient basis, one or more of the following:

(1) Treatment for patients that renders the patients incapable of taking action for self-preservation under emergency conditions without assistance of others.

(2) Anesthesia that renders the patients incapable of taking action for self-preservation under emergency conditions without the assistance of others.

(3) Emergency or urgent care for patients who, due to the nature of their injury or illness, are incapable of taking action for self-preservation under emergency conditions without the assistance of others.
[***101:*** 3.3.188.1]

Anesthetizing Location.

Any area of a facility that has been designated to be used for the administration of any flammable or nonflammable inhalation anesthetic agent in the course of examination or treatment, including the use of such agents for relative analgesia.

Battery-Powered Lighting Units.

Individual unit equipment for backup illumination consisting of the following:

(1) Rechargeable battery

(2) Battery-charging means

(3) Provisions for one or more lamps mounted on the equipment, or with terminals for remote lamps, or both

(4) Relaying device arranged to energize the lamps automatically upon failure of the supply to the unit equipment

Critical Branch.

A system of feeders and branch circuits supplying power for task illumination, fixed equipment, select receptacles, and select power circuits serving areas and functions related to patient care that are automatically connected to alternate power sources by one or more transfer switches during interruption of normal power source. [**99:** 3.3.27]

Electrical Life-Support Equipment.

Electrically powered equipment whose continuous operation is necessary to maintain a patient's life.
[**99:** 3.3.39]

Equipment Branch.

A system of feeders and branch circuits arranged for delayed, automatic, or manual connection to the alternate power source and that serves primarily 3-phase power equipment. [**99:** 3.3.43].

Essential Electrical System.

A system comprised of alternate sources of power and all connected distribution systems and ancillary equipment, designed to ensure continuity of electrical power to designated areas and functions of a health care facility during disruption of normal power sources, and also to minimize disruption within the internal wiring system. [**99:** 3.3.45]

Exposed Conductive Surfaces.

Those surfaces that are capable of carrying electric current and that are unprotected, uninsulated, unenclosed, or unguarded, permitting personal contact. [**99:** 3.3.47]

> Informational Note: Paint, anodizing, and similar coatings are not considered suitable insulation, unless they are listed for such use.

Fault Hazard Current.

See *Hazard Current* .

Flammable Anesthetics.

Gases or vapors, such as fluroxene, cyclopropane, divinyl ether, ethyl chloride, ethyl ether, and ethylene, which may form flammable or explosive mixtures with air, oxygen, or reducing gases such as nitrous oxide.

Flammable Anesthetizing Location.

Any area of the facility that has been designated to be used for the administration of any flammable inhalation anesthetic agents in the normal course of examination or treatment.

Governing Body.

The person or persons who have the overall legal responsibility for the operation of a health care facility. [**99:** 3.3.62]

Hazard Current.

For a given set of connections in an isolated power system, the total current that would flow through a low impedance if it were connected between either isolated conductor and ground.

Fault Hazard Current.

The hazard current of a given isolated system with all devices connected except the line isolation monitor.

Monitor Hazard Current.

The hazard current of the line isolation monitor alone.

Total Hazard Current.

The hazard current of a given isolated system with all devices, including the line isolation monitor, connected.

Health Care Facilities.

Buildings, portions of buildings, or mobile enclosures in which human medical, dental, psychiatric, nursing, obstetrical, or surgical care are provided. [**99:** 3.3.67]

> Informational Note: Examples of health care facilities include, but are not limited to, hospitals, nursing homes, limited care facilities, clinics, medical and dental offices, and ambulatory care centers, whether permanent or movable.

Hospital.

A building or portion thereof used on a 24-hour basis for the medical, psychiatric, obstetrical, or surgical care of four or more inpatients. [***101:*** 3.3.142]

Isolated Power System.

A system comprising an isolating transformer or its equivalent, a line isolation monitor, and its ungrounded circuit conductors. [**99:** 3.3.83]

Isolation Transformer.

A transformer of the multiple-winding type, with the primary and secondary windings physically separated, that inductively couples its ungrounded secondary winding(s) to the grounded feeder system that energizes its primary winding(s). [**99:** 3.3.84]

Invasive Procedure.

Any procedure that penetrates the protective surfaces of a patient's body (i.e., skin, mucous membrane, cornea) and that is performed with an aseptic field (procedural site). Not included in this category are placement of peripheral intravenous needles or catheters used to administer fluids and/or medications, gastrointestinal endoscopies (i.e., sigmoidoscopies), insertion of urethral catheters, and other similar procedures. [**99:** 3.3.81]

Life Safety Branch.

A system of feeders and branch circuits supplying power for lighting, receptacles, and equipment essential for life safety that is automatically connected to alternate power sources by one or more transfer switches during interruption of the normal power source. [**99:** 3.3.87]

Limited Care Facility.

A building or portion thereof used on a 24-hour basis for the housing of four or more persons who are incapable of self-preservation because of age; physical limitation due to accident or illness; or limitations such as mental retardation/developmental disability, mental illness, or chemical dependency.

Line Isolation Monitor.

A test instrument designed to continually check the balanced and unbalanced impedance from each line of an isolated circuit to ground and equipped with a built-in test circuit to exercise the alarm without adding to the leakage current hazard. [**99:** 3.3.89]

Medical Office (Dental Office).

A building or part thereof in which the following occur: (1) examinations and minor treatments or procedures are performed under the continuous supervision of a medical or dental professional; (2) only sedation or local anesthesia is involved and treatment or procedures do not render the patient incapable of self-preservation under emergency conditions; and (3) overnight stays for patients or 24-hour operation are not provided. [**99:** 3.3.98]

Monitor Hazard Current.

See *Hazard Current* .

Nurses' Stations.

Areas intended to provide a center of nursing activity for a group of nurses serving bed patients, where the patient calls are received, nurses are dispatched, nurses' notes written, inpatient charts prepared, and medications prepared for distribution to patients. Where such activities are carried on in more than one location within a nursing unit, all such separate areas are considered a part of the nurses' station.

Nursing Home.

A building or portion of a building used on a 24-hour basis for the housing and nursing care of four or more persons who, because of mental or physical incapacity, might be unable to provide for their own needs and safety without the assistance of another person. [***101:*** 3.3.142.2]

Patient Bed Location.

The location of a patient sleeping bed, or the bed or procedure table of a critical care space. [**99:** 3.3.125]

Patient Care Space.

Any space of a health care facility wherein patients are intended to be examined or treated. [**99:** 3.3.127]

> Informational Note No. 1: The governing body of the facility designates patient care space in accordance with the type of patient care anticipated. [**99:** 1.3.4.1]
>
> Informational Note No. 2: Business offices, corridors, lounges, day rooms, dining rooms, or similar areas typically are not classified as patient care spaces. [**99:** A.3.3.127]

Basic Care (Category 3) Space.

Space in which failure of equipment or a system is not likely to cause injury to the patients, staff, or visitors but can cause patient discomfort. [**99:** 3.3.127.3]

> Informational Note: [Category 3] spaces, formerly known as basic care rooms [(spaces)], are typically where basic medical or dental care, treatment, or examinations are performed. Examples include, but are not limited to, examination or treatment rooms in clinics, medical and dental offices, nursing homes, and limited care facilities. [**99:** A.3.3.127.3]

General Care (Category 2) Space.

Space in which failure of equipment or a system is likely to cause minor injury to patients, staff, or visitors. [**99:** 3.3.127.2]

> Informational Note: [Category 2] spaces were formerly known as general care rooms [(spaces)]. Examples include, but are not limited to, inpatient bedrooms, dialysis rooms, in vitro fertilization rooms, procedural rooms, and similar rooms. [**99:** A.3.3.127.2]

Critical Care (Category 1) Space.

Space in which failure of equipment or a system is likely to cause major injury or death of patients, staff, or visitors. [**99:** 3.3.127.1]

> Informational Note: [Category 1] spaces, formerly known as critical care rooms [(spaces)], are typically where patients are intended to be subjected to invasive procedures and connected to line-operated, patient care–related appliances. Examples include, but are not limited to, special care patient rooms used for critical care, intensive care, and special care treatment rooms such as angiography laboratories, cardiac catheterization laboratories, delivery rooms, operating rooms, post-anesthesia care units, trauma rooms, and other similar rooms. [**99:** A.3.3.127.1]

Support (Category 4) Space.

Space in which failure of equipment or a system is not likely to have a physical impact on patient care. [**99:** 3.3.127.4]

> Informational Note: [Category 4] spaces were formerly known as support rooms [(spaces)]. Examples of support spaces include, but are not limited to, anesthesia work rooms, sterile supply, laboratories, morgues, waiting rooms, utility rooms, and lounges. [**99:** A.3.3.127.4]

Patient Care Vicinity.

A space, within a location intended for the examination and treatment of patients, extending 1.8 m (6 ft) beyond the normal location of the patient bed, chair, table, treadmill, or other device that supports the patient during examination and treatment and extending vertically to 2.3 m (7 ft 6 in.) above the floor. [**99:** 3.3.128]

Patient Equipment Grounding Point.

A jack or terminal that serves as the collection point for redundant grounding of electrical appliances serving a patient care vicinity or for grounding other items in order to eliminate electromagnetic interference problems. [**99:** 3.3.129]

Psychiatric Hospital.

A building used exclusively for the psychiatric care, on a 24-hour basis, of four or more inpatients.

Reference Grounding Point.

The ground bus of the panelboard or isolated power system panel supplying the patient care room. [**99:** 3.3.143]

Relative Analgesia.

A state of sedation and partial block of pain perception produced in a patient by the inhalation of concentrations of nitrous oxide insufficient to produce loss of consciousness (conscious sedation).

Selected Receptacles.

A minimum number of receptacles selected by the governing body of a facility as necessary to provide essential patient care and facility services during loss of normal power. [**99:** 3.3.148]

Task Illumination.

Provisions for the minimum lighting required to carry out necessary tasks in the described areas, including safe access to supplies and equipment and access to exits. [**99:** 63.3.161]

Total Hazard Current.

The hazard current of a given isolated system with all devices, including the line isolation monitor, connected. [**99:** 3.3.66.3]

Wet Procedure Location.

The area in a patient care space where a procedure is performed that is normally subject to wet conditions while patients are present, including standing fluids on the floor or drenching of the work area, either of which condition is intimate to the patient or staff. [**99:** 3.3.171]

> Informational Note: Routine housekeeping procedures and incidental spillage of liquids do not define a wet procedure location. [**99:** A.3.3.171]

X-Ray Installations, Long-Time Rating.

A rating based on an operating interval of 5 minutes or longer.

X-Ray Installations, Mobile.

X-ray equipment mounted on a permanent base with wheels, casters, or a combination of both to facilitate moving the equipment while completely assembled.

X-Ray Installations, Momentary Rating.

A rating based on an operating interval that does not exceed 5 seconds.

X-Ray Installations, Portable.

X-ray equipment designed to be hand carried.

X-Ray Installations, Transportable.

X-ray equipment to be conveyed by a vehicle or that is readily disassembled for transport by a vehicle.

Statement of Problem and Substantiation for Public Input

The only proposed revision is to add the following parent text in 517.2: "The definitions in this section shall apply only within this article."
Terraview chose to underline everything.

This public input is submitted on behalf of task group appointed by the NEC Correlating Committee. This task group was appointed to identify potential issues in the NEC with respect to how definitions in both Article 100 and the XXX.2 sections of this Code apply. The member of the task group are: David Hittinger, Rich Holub, Chris Hunter, Dave Williams, Chris Porter, Alan Manche, Ken Boyce, John Kovacik, Donny Cook, Dave Kendall and Jim Dollard.

Section 2.2.2.1 of the NEC Style Manual requires that in general definitions that appear in two or more articles be located in Article 100. Section 2.2.2.2 requires that where an individual article contains definition(s), they be located in the second section (XXX.2) of the article. It is extremely important to note that the style manual does not prohibit a definition in the second section of an article from applying elsewhere in the NEC. The style manual clearly states that in general definitions that appear in two or more articles shall be located in Article 100. This has confused many code users in the past. This style manual requirement is accurate and these public inputs are simply an attempt to provide needed clarity. See the example below:

344.2 Definition.
Rigid Metal Conduit (RMC). A threadable raceway of circular cross section designed for the physical protection and routing of conductors and cables and for use as an equipment grounding conductor when installed with its integral or associated coupling and appropriate fittings.

The definition of the term “rigid metal conduit” is appropriately located in the article that contains general, installation and construction specifications for this raceway. It is commonly understood that the term “rigid metal conduit” is used in more than one article. There are many articles that contain a single definition that is necessary for application of the contained requirements but will apply elsewhere in the NEC. This occurs in articles that address cable assemblies, raceways, systems and more.
This public input seeks to delete the last sentence in the first paragraph, as it is unnecessary. A new sentence is proposed to simply inform the user of the code that definitions are also found in the second section (XXX.2) of other articles.
This public input is supplemented with proposed revisions to the second section (XXX.2) of articles that contain definitions. New parent text is proposed for these sections to increase clarity and usability. There are two different scenarios that will be addressed. First, any second section (XXX.2) that contains definitions that apply only within that article will contain parent text as follows:

XXX.2 Definitions. The definitions in this section shall apply only within this article.

Second, any second section (XXX.2) that contains definitions that apply within the individual article and throughout the code will contain parent text as follows:

XXX.2 Definitions. The definitions in this section shall apply within this article and throughout the code.

In a few cases, in the second section (XXX.2) of an Article there are definitions that will apply only in that Article and some that will apply in that Article and throughout the code. New parent text and first level subdivisions are proposed to achieve clarity and usability The combination of these proposed revisions will provide necessary clarity and usability

with respect to application of definitions. These actions will also achieve compliance with the NEC Style Manual

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1202-NFPA 70-2017 [Article 100 [Excluding any Sub-Sections]]	

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Public Input No. 4334-NFPA 70-2017 [Section No. 517.2]

517.2 Definitions.

Alternate Power Source.

One or more generator sets, or battery systems where permitted, intended to provide power during the interruption of the normal electrical service; or the public utility electrical service intended to provide power during interruption of service normally provided by the generating facilities on the premises. [**99:** 3.3.4]

Ambulatory Health Care Occupancy.

An occupancy used to provide services or treatment simultaneously to four or more patients that provides, on an outpatient basis, one or more of the following:

(1) Treatment for patients that renders the patients incapable of taking action for self-preservation under emergency conditions without assistance of others.

(2) Anesthesia that renders the patients incapable of taking action for self-preservation under emergency conditions without the assistance of others.

(3) Emergency or urgent care for patients who, due to the nature of their injury or illness, are incapable of taking action for self-preservation under emergency conditions without the assistance of others. [***101:*** 3.3.188.1]

Anesthetizing Location.

Any area of a facility that has been designated to be used for the administration of any flammable or nonflammable inhalation anesthetic agent in the course of examination or treatment, including the use of such agents for relative analgesia.

Battery-Powered Lighting Units.

Individual unit equipment for backup illumination consisting of the following:

(1) Rechargeable battery

(2) Battery-charging means

(3) Provisions for one or more lamps mounted on the equipment, or with terminals for remote lamps, or both

(4) Relaying device arranged to energize the lamps automatically upon failure of the supply to the unit equipment

Critical Branch.

A system of feeders and branch circuits supplying power for task illumination, fixed equipment, select receptacles, and select power circuits serving areas and functions related to patient care that are automatically connected to alternate power sources by one or more transfer switches during interruption of normal power source. [**99:** 3.3.27]

Demonstrated Load.

Historical maximum demand watt information recorded over at least a 24-month period for the same type of facility as the one in question, equated in watts per square foot (watts per meter)

Electrical Life-Support Equipment.

Electrically powered equipment whose continuous operation is necessary to maintain a patient's life. [**99:** 3.3.39]

Equipment Branch.

A system of feeders and branch circuits arranged for delayed, automatic, or manual connection to the alternate power source and that serves primarily 3-phase power equipment. [**99:** 3.3.43].

Essential Electrical System.

A system comprised of alternate sources of power and all connected distribution systems and ancillary equipment, designed to ensure continuity of electrical power to designated areas and functions of a health care facility during disruption of normal power sources, and also to minimize disruption within the internal wiring system. [**99:** 3.3.45]

Exposed Conductive Surfaces.

Those surfaces that are capable of carrying electric current and that are unprotected, uninsulated, unenclosed, or unguarded, permitting personal contact. [**99:** 3.3.47]

> Informational Note: Paint, anodizing, and similar coatings are not considered suitable insulation, unless they are listed for such use.

Fault Hazard Current.

See *Hazard Current* .

Flammable Anesthetics.

Gases or vapors, such as fluroxene, cyclopropane, divinyl ether, ethyl chloride, ethyl ether, and ethylene, which may form flammable or explosive mixtures with air, oxygen, or reducing gases such as nitrous oxide.

Flammable Anesthetizing Location.

Any area of the facility that has been designated to be used for the administration of any flammable inhalation anesthetic agents in the normal course of examination or treatment.

Governing Body.

The person or persons who have the overall legal responsibility for the operation of a health care facility. [**99:** 3.3.62]

Hazard Current.

For a given set of connections in an isolated power system, the total current that would flow through a low impedance if it were connected between either isolated conductor and ground.

Fault Hazard Current.

The hazard current of a given isolated system with all devices connected except the line isolation monitor.

Monitor Hazard Current.

The hazard current of the line isolation monitor alone.

Total Hazard Current.

The hazard current of a given isolated system with all devices, including the line isolation monitor, connected.

Health Care Facilities.

Buildings, portions of buildings, or mobile enclosures in which human medical, dental, psychiatric, nursing, obstetrical, or surgical care are provided. [**99:** 3.3.67]

> Informational Note: Examples of health care facilities include, but are not limited to, hospitals, nursing homes, limited care facilities, clinics, medical and dental offices, and ambulatory care centers, whether permanent or movable.

Hospital.

A building or portion thereof used on a 24-hour basis for the medical, psychiatric, obstetrical, or surgical care of four or more inpatients. [***101:*** 3.3.142]

Isolated Power System.

A system comprising an isolating transformer or its equivalent, a line isolation monitor, and its ungrounded circuit conductors. [**99:** 3.3.83]

Isolation Transformer.

A transformer of the multiple-winding type, with the primary and secondary windings physically separated, that inductively couples its ungrounded secondary winding(s) to the grounded feeder system that energizes its primary winding(s). [**99:** 3.3.84]

Invasive Procedure.

Any procedure that penetrates the protective surfaces of a patient's body (i.e., skin, mucous membrane, cornea) and that is performed with an aseptic field (procedural site). Not included in this category are placement of peripheral intravenous needles or catheters used to administer fluids and/or medications, gastrointestinal endoscopies (i.e., sigmoidoscopies), insertion of urethral catheters, and other similar procedures. [**99:** 3.3.81]

Life Safety Branch.

A system of feeders and branch circuits supplying power for lighting, receptacles, and equipment essential for life safety that is automatically connected to alternate power sources by one or more transfer switches during interruption of the normal power source. [**99:** 3.3.87]

Limited Care Facility.

A building or portion thereof used on a 24-hour basis for the housing of four or more persons who are incapable of self-preservation because of age; physical limitation due to accident or illness; or limitations such as mental retardation/developmental disability, mental illness, or chemical dependency.

Line Isolation Monitor.

A test instrument designed to continually check the balanced and unbalanced impedance from each line of an isolated circuit to ground and equipped with a built-in test circuit to exercise the alarm without adding to the leakage current hazard. [**99:** 3.3.89]

Medical Office (Dental Office).

A building or part thereof in which the following occur: (1) examinations and minor treatments or procedures are performed under the continuous supervision of a medical or dental professional; (2) only sedation or local anesthesia is involved and treatment or procedures do not render the patient incapable of self-preservation under emergency conditions; and (3) overnight stays for patients or 24-hour operation are not provided. [**99:** 3.3.98]

Monitor Hazard Current.

See *Hazard Current* .

Nurses' Stations.

Areas intended to provide a center of nursing activity for a group of nurses serving bed patients, where the patient calls are received, nurses are dispatched, nurses' notes written, inpatient charts prepared, and medications prepared for distribution to patients. Where such activities are carried on in more than one location within a nursing unit, all such separate areas are considered a part of the nurses' station.

Nursing Home.

A building or portion of a building used on a 24-hour basis for the housing and nursing care of four or more persons who, because of mental or physical incapacity, might be unable to provide for their own needs and safety without the assistance of another person. [***101:*** 3.3.142.2]

Patient Bed Location.

The location of a patient sleeping bed, or the bed or procedure table of a critical care space. [**99:** 3.3.125]

Patient Care Space.

Any space of a health care facility wherein patients are intended to be examined or treated. [**99:** 3.3.127]

> Informational Note No. 1: The governing body of the facility designates patient care space in accordance with the type of patient care anticipated. [**99:** 1.3.4.1]
>
> Informational Note No. 2: Business offices, corridors, lounges, day rooms, dining rooms, or similar areas typically are not classified as patient care spaces. [**99:** A.3.3.127]

Basic Care (Category 3) Space.

Space in which failure of equipment or a system is not likely to cause injury to the patients, staff, or visitors but can cause patient discomfort. [**99:** 3.3.127.3]

> Informational Note: [Category 3] spaces, formerly known as basic care rooms [(spaces)], are typically where basic medical or dental care, treatment, or examinations are performed. Examples include, but are not limited to, examination or treatment rooms in clinics, medical and dental offices, nursing homes, and limited care facilities. [**99:** A.3.3.127.3]

General Care (Category 2) Space.

Space in which failure of equipment or a system is likely to cause minor injury to patients, staff, or visitors. [**99:** 3.3.127.2]

> Informational Note: [Category 2] spaces were formerly known as general care rooms [(spaces)]. Examples include, but are not limited to, inpatient bedrooms, dialysis rooms, in vitro fertilization rooms, procedural rooms, and similar rooms. [**99:** A.3.3.127.2]

Critical Care (Category 1) Space.

Space in which failure of equipment or a system is likely to cause major injury or death of patients, staff, or visitors. [**99:** 3.3.127.1]

> Informational Note: [Category 1] spaces, formerly known as critical care rooms [(spaces)], are typically where patients are intended to be subjected to invasive procedures and connected to line-operated, patient care–related appliances. Examples include, but are not limited to, special care patient rooms used for critical care, intensive care, and special care treatment rooms such as angiography laboratories, cardiac catheterization laboratories, delivery rooms, operating rooms, post-anesthesia care units, trauma rooms, and other similar rooms. [**99:** A.3.3.127.1]

Support (Category 4) Space.

Space in which failure of equipment or a system is not likely to have a physical impact on patient care. [**99:** 3.3.127.4]

> Informational Note: [Category 4] spaces were formerly known as support rooms [(spaces)]. Examples of support spaces include, but are not limited to, anesthesia work rooms, sterile supply, laboratories, morgues, waiting rooms, utility rooms, and lounges. [**99:** A.3.3.127.4]

Patient Care Vicinity.

A space, within a location intended for the examination and treatment of patients, extending 1.8 m (6 ft) beyond the normal location of the patient bed, chair, table, treadmill, or other device that supports the patient during examination and treatment and extending vertically to 2.3 m (7 ft 6 in.) above the floor. [**99:** 3.3.128]

Patient Equipment Grounding Point.

A jack or terminal that serves as the collection point for redundant grounding of electrical appliances serving a patient care vicinity or for grounding other items in order to eliminate electromagnetic interference problems. [**99:** 3.3.129]

Psychiatric Hospital.

A building used exclusively for the psychiatric care, on a 24-hour basis, of four or more inpatients.

Reference Grounding Point.

The ground bus of the panelboard or isolated power system panel supplying the patient care room. [**99:** 3.3.143]

Relative Analgesia.

A state of sedation and partial block of pain perception produced in a patient by the inhalation of concentrations of nitrous oxide insufficient to produce loss of consciousness (conscious sedation).

Selected Receptacles.

A minimum number of receptacles selected by the governing body of a facility as necessary to provide essential patient care and facility services during loss of normal power. [**99:** 3.3.148]

Task Illumination.

Provisions for the minimum lighting required to carry out necessary tasks in the described areas, including safe access to supplies and equipment and access to exits. [**99:** 63.3.161]

Total Hazard Current.

The hazard current of a given isolated system with all devices, including the line isolation monitor, connected. [**99:** 3.3.66.3]

Wet Procedure Location.

The area in a patient care space where a procedure is performed that is normally subject to wet conditions while patients are present, including standing fluids on the floor or drenching of the work area, either of which condition is intimate to the patient or staff. [**99:** 3.3.171]

Informational Note: Routine housekeeping procedures and incidental spillage of liquids do not define a wet procedure location. [**99:** A.3.3.171]

X-Ray Installations, Long-Time Rating.

A rating based on an operating interval of 5 minutes or longer.

X-Ray Installations, Mobile.

X-ray equipment mounted on a permanent base with wheels, casters, or a combination of both to facilitate moving the equipment while completely assembled.

X-Ray Installations, Momentary Rating.

A rating based on an operating interval that does not exceed 5 seconds.

X-Ray Installations, Portable.

X-ray equipment designed to be hand carried.

X-Ray Installations, Transportable.

X-ray equipment to be conveyed by a vehicle or that is readily disassembled for transport by a vehicle.

Additional Proposed Changes

File Name	Description	Approved
CSA-Groups-CEC-Section-8-Circuit-loading-and-demand-factors_2_.pdf	CSA Group CEC Section 8 Circuit loading and demand factors.	

Statement of Problem and Substantiation for Public Input

This proposed definition pairs with a design concept proposed later in this Article -- Section 517,11. It has been taken from the CSA Group (Canadian Electrical Code) and is attached herewith.

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Public Input No. 3823-NFPA 70-2017 [Section No. 517.40]

517.40 Type 2 Essential Electrical Systems ~~for Nursing Homes and Limited Care Facilities~~ .

Informational Note: Nursing homes and other limited care facilities can be classified as critical care (Category 1) or general care (Category 2) patient care space depending on the design and type of care administered in the facility. For small, less complex facilities, only minimal alternate lighting and alarm service may be required. At nursing homes and other limited care facilities where patients are not sustained by electrical life-support equipment or inpatient hospital care the requirements of 517.40 through 517.41 apply. If the level of care is comparable to that provided in a hospital, see the essential electrical system requirements of 517.29 through 517.30.

(A) Applicability.

The requirements of Part III, 517.40(C) through 517.41, shall apply to ~~nursing homes and limited care facilities~~ Category 2 spaces .

Exception: The requirements of Part III, 517.40(C) through 517.41, shall not apply to freestanding buildings used as nursing homes and limited care facilities, provided that the following apply:

(1) Admitting and discharge policies are maintained that preclude the provision of care for any patient or resident who may need to be sustained by electrical life-support equipment.

(2) No surgical treatment requiring general anesthesia is offered.

(3) An automatic battery-operated system(s) or equipment shall be effective for at least 1½ hours and is otherwise in accordance with 700.12 and that shall be capable of supplying lighting for exit lights, exit corridors, stairways, nursing stations, medical preparation areas, boiler rooms, and communications areas. This system shall also supply power to operate all alarm systems.

Informational Note: See NFPA *101*-2015, *Life Safety Code*.

(B) ~~Inpatient Hospital Care Facilities~~ Category 1 Spaces .

For those nursing homes and limited care facilities that admit patients who need to be sustained by electrical life support equipment, the essential electrical system from the source to the portion of the facility where such patients are treated shall comply with the requirements of Part III, 517.29 through 517.30.

(C) Facilities Contiguous or Located on the Same Site with Hospitals.

Nursing homes and limited care facilities that are contiguous or located on the same site with a hospital shall be permitted to have their essential electrical systems supplied by the hospital.

Informational Note No. 1: For performance, maintenance, and testing requirements of essential electrical systems in nursing homes and limited care facilities, see NFPA 99-2015, *Health Care Facilities Code*.

Informational Note No. 2: Where optional loads include contiguous or same-site facilities not covered in this *Code*, see the requirements of Article 700 of this *Code*; NFPA *101*-2015, *Life Safety Code*; and other applicable NFPA requirements for emergency egress under loadshed conditions.

Statement of Problem and Substantiation for Public Input

As the Chair of NFPA 99 Electrical Systems Committee (HEA-ELS), I am submitting this proposal to improve the correlation between NFPA 99 and NFPA 70. The substantiation of this proposal is as follows: Application of EES should be based on risk not on the name of the facility. Informational notes provided do a good job of explaining this. Other facilities might require Type 2 EES and some nursing homes and limited care facilities will require Type 1 EES while others might not need an EES at all.
Note: there are several sections that follow this section that refer to hospitals or nursing homes or limited care facilities. These should be considered to be revised as well.

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Public Input No. 1694-NFPA 70-2017 [Section No. 517.10(B)]

(B) Not Covered.

Part II shall not apply to the following:

(1) Business offices, corridors, waiting rooms, and the like in clinics, medical and dental offices, and outpatient facilities

(2) Areas of nursing homes and limited care facilities wired in accordance with Chapters 1 through 4 of this *Code* where these areas are used exclusively as patient sleeping rooms

Informational Note: See NFPA *101* -2015, *Life Safety Code* ®.

(3) Areas of Type B Occupancies used exclusively for any of the following purposes:

a. Intramuscular Injections (Immunizations)

b. Psychiatry and Psychotherapy

c. Massage Therapy

d. Optometry

e. Acupuncture

Statement of Problem and Substantiation for Public Input

There is a need to provide additional clarification as to when the more restrictive wiring methods in Part II of Article 517 are triggered. As an example, some pharmacies are giving flu shots and some inspectors are requiring those areas be wired in accordance with Part II of 517, which would appear to be unnecessary. Where there is no invasive procedures performed, and no electro-medical equipment connected to the body the shock risks are greatly reduced which reduces the need for redundant equipment grounding paths with branch circuits serving those patient care spaces.

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Public Input No. 4331-NFPA 70-2017 [Section No. 517.11]

517.11 General Installation — Construction Criteria.

The purpose of this article is to specify the installation criteria and wiring methods that minimize electrical hazards by the maintenance of adequately low potential differences only between exposed conductive surfaces that are likely to become energized and could be contacted by a patient.

Informational Note 1 : In a health care facility, it is difficult to prevent the occurrence of a conductive or capacitive path from the patient's body to some grounded object, because that path may be established accidentally or through instrumentation directly connected to the patient. Other electrically conductive surfaces that may make an additional contact with the patient, or instruments that may be connected to the patient, then become possible sources of electric currents that can traverse the patient's body. The hazard is increased as more apparatus is associated with the patient, and, therefore, more intensive precautions are needed. Control of electric shock hazard requires the limitation of electric current that might flow in an electrical circuit involving the patient's body by raising the resistance of the conductive circuit that includes the patient, or by insulating exposed surfaces that might become energized, in addition to reducing the potential difference that can appear between exposed conductive surfaces in the patient care vicinity, or by combinations of these methods. A special problem is presented by the patient with an externalized direct conductive path to the heart muscle. The patient may be electrocuted at current levels so low that additional protection in the design of appliances, insulation of the catheter, and control of medical practice is required.

Informational Note 2: Service, feeder and branch circuit load calculations for health care facilities shall be permitted to be based upon demonstrated loads, provided that such calculations are performed by a qualified person, as determined by the Authority Having Jurisdiction.

Additional Proposed Changes

File Name	Description	Approved
CSA-Groups-CEC-Section-8-Circuit-loading-and-demand-factors_2_.pdf	CSA Group Section 8 Circuit loading and demand factors (Canadian Electrical Code)	

Statement of Problem and Substantiation for Public Input

This proposal pairs with the proposal for a new term -- "Demonstrated Load" -- which takes its inspiration from the Canadian Electrical Code. The intent is to "rightsize" the health care facilities power chain by giving design experts more freedom than presently allowed i Chapter 2. A cut from the Canadian Electrical Code is attached herewith.

Please note that a web page has been set up to make it easier for technical committee members to access a recent NFPA Fire Protection Research Foundation project crafted to scope a data gathering effort that would help the health care facilities industry in the US and abroad rightsize the power chain.

http://standardsmichigan.com/nfpa-2020-concepts/

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Public Input No. 1068-NFPA 70-2017 [New Section after 517.13(A)]

TITLE OF NEW CONTENT

Type your content here ...

Exception; Power feeds to equipment rated over 60 amps that require flexibility shall be permitted to install a 2nd equipment grounding conductor wire to achieve redundancy

Statement of Problem and Substantiation for Public Input

I have been fortunate to inspect a high volume of health care facilities and see a fair share of medical equipment that falls in the patient care area. An example is Xray equipment, more often than not, the listing does not include the power feed. This now becomes a branch circuit (single piece of utilization equipment) in a patient care area that requires both an wire type EGC and a raceway type EGC. Metallic flex is only good for 20a and metallic sealtight up to 11/4" is only good for 60a and sealtight over 1/14" has no EGC value. THis places all parties in NEC non compliance. Allowing a 2nd egc wire would give direction for a comoliant installation.

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Public Input No. 2010-NFPA 70-2017 [Section No. 517.13]

517.13 Equipment Grounding ~~of~~ Conductor for Receptacles and Fixed Electrical Equipment in Patient Care Spaces.

Wiring in patient care spaces shall comply with 517.13(A) and (B).

(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, metallic cable armor, or sheath assembly shall itself qualify as an equipment grounding conductor in accordance with 250.118.

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

(1) General.

The following shall be directly connected to an insulated copper equipment grounding conductor that is clearly identified along its entire length by green insulation and installed with the branch circuit conductors in the wiring methods as provided in 517.13(A):

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

(2) Metal outlet boxes, metal device boxes, or metal enclosures

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

Exception No. 1: For other than isolated ground receptacles, an insulated equipment bonding jumper that directly connects to the equipment grounding conductor is permitted to connect the box and receptacle(s) to the equipment grounding conductor. Isolated ground receptacles shall be connected in accordance with 517.16.

Exception No. 2: Metal faceplates shall be ~~permitted to be~~ connected to the equipment grounding conductor by means of a metal mounting screw(s) securing the faceplate to ~~a grounded~~ the metal yoke of a receptacle or metal outlet box ~~or grounded wiring device~~ .

Exception No. 3: 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 517.13(A)or (B).

(2) Sizing.

Equipment grounding conductors and equipment bonding jumpers shall be sized in accordance with 250.122.

Statement of Problem and Substantiation for Public Input

Revised title to reflect the rule and edited exception for accuracy and proper reference to Article 250. And coordinate with 406.6(B).

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1716-NFPA 70-2017 [Section No. 406.6(B)]	

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Public Input No. 464-NFPA 70-2017 [Section No. 517.16]

517.16 Use of Isolated Ground Receptacles.

(A) Inside of a Patient Care Vicinity.

An isolated grounding receptacle shall not be installed within a patient care vicinity. [**99:**6.3.2.2.7.1(B)]

(B) Outside of a Patient Care Vicinity.

Isolated ground receptacle(s) installed in patient care spaces outside of a patient care vicinity(s) shall comply with 517.16(B)(1) and (2).

(1)

The grounding terminals of isolated ground receptacles installed in branch circuits for patient care spaces shall be connected to an insulated equipment grounding conductor in accordance with 250.146(D) ~~in addition to the equipment grounding conductor path required~~ installed in a wiring method described in 517.13(A).

The equipment grounding conductor connected to the grounding terminals of isolated ground receptacles in patient care spaces shall be clearly identified along the equipment grounding conductor's entire length by green insulation with one or more yellow stripes.

(2)

The insulated grounding conductor required in 517.?13?(B)?(1) shall be clearly identified along its entire length by green insulation, with no yellow stripes, and shall not be connected to the grounding terminals of isolated ground receptacles but shall be connected to the box or enclosure indicated in 517.13(B)(1)(2) and to non–current-carrying conductive surfaces of fixed electrical equipment indicated in 517.13(B)(1)(3).

Informational Note No. 1: This type of installation is typically used where a reduction of electrical noise (electromagnetic interference) is necessary, and parallel grounding paths are to be avoided.

Informational Note No. 2: Care should be taken in specifying a system containing isolated ground receptacles, because the grounding impedance is controlled only by the grounding wires and does not benefit from any conduit or building structure in parallel with the grounding path. [**99:**A.6.3.2.2.7.1]

Statement of Problem and Substantiation for Public Input

The EGC described in 517.13(A) cannot be connected to the grounding terminal of an IG receptacle without defeating the purpose of the device.

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Public Input No. 2401-NFPA 70-2017 [Section No. 517.16(B)]

(B) Outside of a Patient Care Vicinity.

Isolated ground receptacle(s) installed in patient care spaces outside of a patient care vicinity(s) shall comply with 517.16(B)(1) and (2).

(1)

The equipment grounding terminals of isolated ground receptacles installed in branch circuits for patient care spaces shall be connected to an insulated equipment grounding conductor in accordance with 250.146(D) in addition to the equipment grounding conductor path required in 517.13(A).

The equipment grounding conductor connected to the equipment grounding terminals of isolated ground receptacles in patient care spaces shall be clearly identified along the equipment grounding conductor's entire length by green insulation with one or more yellow stripes.

(2)

The insulated equipment grounding conductor required in 517.13(B)(1) shall be clearly identified along its entire length by green insulation, with no yellow stripes, and shall not be connected to the equipment grounding terminals of isolated ground receptacles but shall be connected to the box or enclosure indicated in 517.13(B)(1)(2) and to non–current-carrying conductive surfaces of fixed electrical equipment indicated in 517.13(B)(1)(3).

Informational Note No. 1: This type of installation is typically used where a reduction of electrical noise (electromagnetic interference) is necessary, and parallel grounding paths are to be avoided.

Informational Note No. 2: Care should be taken in specifying a system containing isolated ground receptacles, because the grounding impedance is controlled only by the equipment grounding ~~wires~~ conductor(s) and does not benefit from any conduit or building structure in parallel with the grounding path. [**99:**A.6.3.2.2.7.1]

Statement of Problem and Substantiation for Public Input

Grounding and bonding still continues to be one of the most misunderstood and misapplied sections of the NEC. Most of the problems can be traced back to using undefined terminology (trade slang in many cases) or incorrect terminology. The term “grounding conductor” is one that is no longer defined. As part of a Correlating Committee Task Force activity on grounding and bonding in general, this term and its related definition was removed from the NEC during the 2008 NEC cycle. The term had been found to be misapplied in a number of instances and the definition of “grounding conductor” was determined to be very close to the definition of “grounding electrode conductor” yet, many uses of the term in previous editions of the NEC were found to be more correctly to be either “equipment grounding conductor”, “grounding electrode conductor” or one of the several types of “bonding jumper”.

The revised text uses terms defined in the Code and is consistent with the context of the meaning of the section where the revisions are made. The revisions are made to provide clarity, and consistency in terminology usage.

It is requested the Correlating Committee consider a policy or procedures that require a review when a term under the responsibility of a specific Code panel is used by another Code panel. The panel responsible for the term is to review the application to ensure correct usage. It is further requested that when new terms are created that would be identified as under the responsibility of another Code panel that the new term and application be reviewed by the Code panel that would have responsibility for use and application.

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Copyright Assignment

I, Charles Mello, hereby irrevocably grant and assign to the National Fire Protection Association (NFPA) all and full rights in copyright in this Public Input (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 Input in this or another similar or derivative form is used. I hereby warrant that I am the author of this Public Input and that I have full power and authority to enter into this copyright assignment.

☑ By checking this box I affirm that I am Charles Mello, 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 Input No. 2895-NFPA 70-2017 [Section No. 517.16(B)(1)]

(1)

The equipment grounding ~~terminals~~ terminal of isolated ground receptacles that are installed in ~~branch circuits for~~ patient care spaces shall be connected to an insulated equipment grounding conductor in accordance with 250.146(D) ~~in addition to the equipment grounding conductor path required in 517.13(A)~~ . . The equipment grounding conductor connected to the grounding ~~terminals~~ terminal of isolated ground receptacles in patient care spaces shall be clearly identified along the equipment grounding conductor's entire length by green insulation with one or more yellow stripes.

Statement of Problem and Substantiation for Public Input

The present wording seems confusing as it requires both the insulated equipment grounding conductor for the branch circuit required by 517.13(B) AND the equipment grounding conductor provided by 517.13(A) to be connected to the isolated ground receptacle. This parallel connection defeats the purpose of installing an isolated ground receptacle.
The reason 517.16(A) prohibits installing isolated ground receptacles in the patient care vicinity is they are provided with only one equipment grounding conductor path.

Submitter Information Verification

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Submittal Date: Mon Aug 28 17:28:51 EDT 2017

Public Input No. 1514-NFPA 70-2017 [Section No. 517.16(B)(2)]

(2)

The insulated grounding conductor required in 517.13(B)(1) shall be clearly identified along its entire length by green insulation, with no yellow stripes, and shall not be connected to the grounding terminals of isolated ground receptacles but shall be connected to the box or enclosure indicated in 517.13(B)(1)(2) and to non–current-carrying conductive surfaces of fixed electrical equipment indicated in 517.13(B)(1)(3).

Informational Note~~ No. 1~~ : ~~This type of installation is typically used where a reduction of electrical noise (electromagnetic interference) is necessary, and parallel grounding paths are to be avoided. Informational Note No. 2:~~ Care should be taken in specifying a system containing isolated ground receptacles, because the ~~grounding impedance~~ impedance of the effective ground-fault current path is controlled only by the grounding wires and does not benefit from any conduit or building structure in parallel with the equipment grounding ~~path.~~ [~~**99:** A.6.3.2.2.7.1~~] conductor.

Statement of Problem and Substantiation for Public Input

Remove text about 'noise' since this term is not defined. I have submitted PI to remove the same text from: 250.6, 250.94(B), , 250.96(B), and 250.146(D), 517.16(B)(2), 647.3, and 647.8. I will be at the Code panel meeting to better explain.
Replace 'ground' with effective ground-fault current path for accuracy.

Submitter Information Verification

Submitter Full Name: Mike Holt
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Public Input No. 3773-NFPA 70-2017 [Section No. 517.17(A)]

(A) Applicability.

The requirements of 517.17 shall apply to health care facilities ~~hospitals, and other buildings (including multiple-occupancy buildings)~~ with critical care (Category 1) spaces or utilizing electrical life-support equipment, and buildings that provide the required essential utilities or services for the operation of critical care (Category 1) spaces or electrical life-support equipment.

Statement of Problem and Substantiation for Public Input

As the Chair of NFPA 99 Electrical Systems Committee (HEA-ELS), I am submitting this proposal to improve the correlation between NFPA 99 and NFPA 70. The substantiation of this proposal is as follows: The application of codes and standards to health care facilities should be based on the considerations listed (critical care (category 1) or life-support equipment) rather than the name of the building. Removing the reference to hospitals and referencing health care facilities that have this risk means it will be applied where the risk is.

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Public Input No. 2320-NFPA 70-2017 [Section No. 517.17(B)]

(B) Feeders.

Where ground-fault protection is provided for operation of the service disconnecting means or feeder disconnecting means as specified by 230.95 or 215.10, an additional step of ground-fault protection shall be provided in all next level feeder disconnecting means downstream toward the load. Such protection shall consist of overcurrent devices and current transformers or other equivalent protective equipment that shall cause the feeder disconnecting means to open.

The additional levels of ground-fault protection shall not be installed on the load side of an essential electrical system transfer switch.

Where ground-fault protection is provided as specified by 250.36 , The ground-fault shall located as soon as possible to avoid disruption to the system.

Statement of Problem and Substantiation for Public Input

There is no disconnecting in 250.36 as there is in 230.95 as the fault is limited to a low value. The fault should be located as soon as possible to avoid power interruption in case of a second fault on the system.

Submitter Information Verification

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Submittal Date: Wed Aug 16 13:37:41 EDT 2017

Public Input No. 3437-NFPA 70-2017 [Section No. 517.17(D)]

(D) Testing.

When equipment ground-fault protection is first installed, each level shall be performance tested to ensure compliance with 517.17(C). This testing shall be conducted by a qualified person(s) using a test process of primary current injection, in accordance with instructions provided with the equipment. A written record of this testing shall be made and shall be available to the authority having jurisdiction.

Statement of Problem and Substantiation for Public Input

This public input seeks to provide clarity by requiring qualified persons perform a test process of primary current injection.

This correlates with the testing requirements in 230.95(C) as follows: "(C) Performance Testing. The ground-fault protection system
shall be performance tested when first installed on site. This testing shall be conducted by a qualified person(s) using a test process of primary current injection, in accordance with instructions that shall be provided with the equipment. A written record of this testing shall be made and shall be available to the authority having jurisdiction."

Submitter Information Verification

Submitter Full Name: James Dollard
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Submittal Date: Wed Sep 06 08:06:11 EDT 2017

Public Input No. 1790-NFPA 70-2017 [Section No. 517.18(A)]

(A) Patient Bed Location.

Each patient bed location shall be supplied by at least two branch circuits, one from the critical branch and one from the normal system. All branch circuits from the normal system shall originate in the same panelboard. The electrical receptacles ~~or the cover plate for the electrical receptacles~~ supplied from the critical branch shall have a distinctive color or marking so as to be readily identifiable and shall also indicate the panelboard and branch-circuit number supplying them.

Branch circuits serving patient bed locations shall not be part of a multiwire branch circuit.

Exception No. 1: Branch circuits serving only special purpose outlets or receptacles, such as portable X-ray outlets, shall not be required to be served from the same distribution panel or panels.

Exception No. 2: The requirements of 517.18(A) shall not apply to patient bed locations in clinics, medical and dental offices, and outpatient facilities; psychiatric, substance abuse, and rehabilitation hospitals; sleeping rooms of nursing homes; and limited care facilities meeting the requirements of 517.10(B)(2).

Exception No. 3: A general care (Category 2) patient bed location served from two separate transfer switches on the critical branch shall not be required to have circuits from the normal system.

Statement of Problem and Substantiation for Public Input

I have found during remodels and renovations in hospitals, painters remove the standard colored plates (normal branch) and red plates (life safety or critical branches) to paint. They then sometimes forget where they go when they reinstall them. The "distinctive color" plates sometimes are installed on the normal branch receptacles and the standard color plates sometimes end up being installed on the life safety or critical branch receptacles. Requiring the receptacles to be a distinctive color will prevent unqualified people from unknowingly creating a violation of the electrical code with the use of a simple screwdriver.

Submitter Information Verification

Submitter Full Name: Kevin Nutley
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Submittal Date: Fri Aug 04 22:03:09 EDT 2017

Public Input No. 3811-NFPA 70-2017 [Section No. 517.18(A)]

(A) Patient Bed Location.

Each patient bed location shall be supplied by at least two branch circuits, one from the critical branch and one from the normal system. All branch circuits from the normal system shall originate in the same panelboard. The electrical receptacles or the cover plate for the electrical receptacles supplied from the ~~critical~~ a branch of the Essential Electrical System shall have a distinctive color or marking so as to be readily identifiable and shall also indicate the panelboard and branch-circuit number supplying them.

Branch circuits serving patient bed locations shall not be part of a multiwire branch circuit.

Exception No. 1: Branch circuits serving only special purpose outlets or receptacles, such as portable X-ray outlets, shall not be required to be served from the same distribution panel or panels.

Exception No. 2: The requirements of 517.18(A) shall not apply to patient bed locations in clinics, medical and dental offices, and outpatient facilities; psychiatric, substance abuse, and rehabilitation hospitals; sleeping rooms of nursing homes; and limited care facilities meeting the requirements of 517.10(B)(2).

Exception No. 3: A general care (Category 2) patient bed location served from two separate Essential Electrical System transfer switches ~~on the critical branch~~ shall not be required to have circuits from the normal system.

Statement of Problem and Substantiation for Public Input

As the Chair of NFPA 99 Electrical Systems Committee (HEA-ELS), I am submitting this proposal to improve the correlation between NFPA 99 and NFPA 70. The substantiation of this proposal is as follows: NFPA 99-2015 Section 6.3.2.2.10.2 allows Category 2 Spaces to be served by a Type 1 or Type 2 EES. Per Section 6.5.2.2.1.2 Type 2 EES consists of the Life Safety and Equipment Branch therefore, it is not appropriate to specifically reference the Critical Branch in 517.18(A).

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Public Input No. 3776-NFPA 70-2017 [Section No. 517.18(B)]

(B) Patient Bed Location Receptacles.

Each patient bed location shall be provided with a minimum of eight receptacles. ~~They~~ The receptacles required in 517.18(B)(1) shall be permitted to be of the single, duplex, or quadruplex type or any combination of the three. All receptacles shall be listed "hospital grade" and shall be so identified. The grounding terminal of each receptacle shall be connected to an insulated copper equipment grounding conductor sized in accordance with Table 250.122.

Exception No. 1: The requirements of 517.18(B) shall not apply to psychiatric, substance abuse, and rehabilitation hospitals meeting the requirements of 517.10(B)(2).

Exception No. 2: Psychiatric security rooms shall not be required to have receptacle outlets installed in the room.

Informational Note: It is not intended that there be a total, immediate replacement of existing non–hospital grade receptacles. It is intended, however, that non–hospital grade receptacles be replaced with hospital grade receptacles upon modification of use, renovation, or as existing receptacles need replacement.

Statement of Problem and Substantiation for Public Input

As the Chair of NFPA 99 Electrical Systems Committee (HEA-ELS), I am submitting this proposal to improve the correlation between NFPA 99 and NFPA 70. The substantiation of this proposal is as follows: This proposed change simply pulls out that requirement into a standalone requirement and the change aligns this section nicely with its counterpart in 517.19(B). This proposal does not change any of the requirements of 517.18(B).

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Public Input No. 3459-NFPA 70-2017 [Section No. 517.18(C)]

(C) Designated General Care (Category 2) Pediatric Locations.

Receptacles that are located within the patient rooms, bathrooms, playrooms, and activity rooms of pediatric units or spaces with similar risk as determined by the governing body, other than nurseries, shall be listed tamper-resistant ~~or shall employ a listed tamper-resistant cover~~ . ~~[**99:** 6.3.2.2.6.2(F)]~~

Statement of Problem and Substantiation for Public Input

Removing the allowance for a “tamper-resistant” coverplate in this section will bring a higher level of safety and will provide more consistency in Code requirements.

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Public Input No. 4215-NFPA 70-2017 [Section No. 517.18(C)]

(C) Designated General Care (Category 2) Pediatric Locations.

Receptacles that are located within the patient rooms, bathrooms, playrooms, and activity rooms of pediatric units or spaces with similar risk as determined by the governing body, other than nurseries, shall be listed tamper-resistant or shall employ a listed tamper-resistant cover. [**99:**6.3.2.2.6.2(F)]

517.18 (C) Designated General Care (Category 2) Pediatric Locations.

Delete Article 517.18 (C) in its entirety and replace with the following language:

Art 517.18(C) Receptacles that are located within the patient rooms, bathrooms, playrooms, and activity rooms of pediatric units or spaces with similar risk as determined by the governing body, other than nurseries, shall be listed tamper-resistant

~~or shall employ a listed cover. [**99:** 6.3.2.2.6.2(F)]~~

. n the other sections in the NEC referencing " tamper-resistant "

",(Article 406.12 and Article 201.52) the receptacle device is required to listed as "tamper-resistant".There appears to be no technical reason for permitting the use of "tamper-resistant"cover plates in pediatric locations

Removing the allowance for a "tamper-resistant" coverplate in this section will bring a higher level of safety and will provide more consistency in Code requirements.

Statement of Problem and Substantiation for Public Input

There is a conflict between requirements in NFPA 99 and NEC 70 in regard to the suitability of tamper-resistant cover plates used in lieu of tamper resistant devices. This change will allow for uniformity of application between other sections of the Code (Article 401.6 and Article 210.

Submitter Information Verification

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Submittal Date: Thu Sep 07 16:37:17 EDT 2017

Public Input No. 1791-NFPA 70-2017 [Section No. 517.19(A)]

(A) Patient Bed Location Branch Circuits.

Each patient bed location shall be supplied by at least two branch circuits, one or more from the critical branch and one or more circuits from the normal system. At least one branch circuit from the critical branch shall supply an outlet(s) only at that bed location.

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. [**99:**6.4.2.2.6.2(C)]

All branch circuits from the normal system shall be from a single panelboard. Critical branch receptacles shall be identified and shall also indicate the panelboard and circuit number supplying them.

The branch circuit serving patient bed locations shall not be part of a multiwire branch circuit.

Exception No. 1: Branch circuits serving only special-purpose receptacles or equipment in critical care (Category 1) spaces shall be permitted to be served by other panelboards.

Exception No. 2: Critical care (Category 1) spaces served from two separate critical branch transfer switches shall not be required to have circuits from the normal system.

Statement of Problem and Substantiation for Public Input

I have found during remodels and renovations in hospitals, painters remove the standard colored plates (normal branch) and red plates (life safety or critical branches) to paint. They then sometimes forget where they go when they reinstall them. The "distinctive color" plates sometimes are installed on the normal branch receptacles and the standard color plates sometimes end up being installed on the life safety or critical branch receptacles. Requiring the receptacles to be a distinctive color will prevent unqualified people from unknowingly creating a violation of the electrical code with the use of a simple screwdriver.

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Public Input No. 3815-NFPA 70-2017 [Section No. 517.19(C)]

(C) ~~Operating Room Receptacles~~ Receptacles in Operating Rooms .

(1)

~~Minimum Number and Supply.~~

~~Each operating room shall be provided with a minimum of (36~~

~~receptacles divided between at least two branch circuits. At least 12 receptacles, but no more than 24,~~

) 125-volt, 15- or 20- ampere receptacles, at least 12 of which shall be connected to either

~~of~~

the

~~following: The~~

normal

~~system~~

branch circuit

~~required in 517.19(A) A critical branch circuit~~

supplied by a different transfer switch other than the

~~other~~

receptacles at the same location . They shall be permitted to be of the single, duplex or quadraplex 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 of the locking or non-locking type [99-2018:6.3.2.2.2 (C)].

(2) ~~Receptacle Requirements.~~

~~The receptacles shall be permitted to be of the locking or nonlocking type, single, duplex, or quadruplex types or any combination of the three.~~

~~All nonlocking-type receptacles shall be listed hospital grade and so identified. The grounding terminal of each receptacle shall be connected to the reference grounding point by means of an insulated copper equipment grounding conductor.~~

Statement of Problem and Substantiation for Public Input

As the Chair of NFPA 99 Electrical Systems Committee (HEA-ELS), I am submitting this proposal to improve the correlation between NFPA 99 and NFPA 70. The substantiation of this proposal is as follows: 517.19(C)(1) and NFPA 99 6.3.2.2 contain similar requirements pertaining to receptacles in the operating rooms, using different language. To avoid ongoing correlation issues this requirement should be extracted from 99. PLEASE NOTE: The proposed 517.19 (C) (1) Should read as follows:

"(C) Receptacles in Operating Rooms.
(1) 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 the normal branch circuit or a critical branch circuit supplied by a different transfer switch other than the receptacles at the same location. They shall be permitted to be of the 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 of the locking or non-locking-type. [99-2018: 6.3.2.2.2 (C)] "

The Public Input automatically revised formatting in a manner that is difficult to read.

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Copyright Assignment

I, Jason DAntona, hereby irrevocably grant and assign to the National Fire Protection Association (NFPA) all and full rights in copyright in this Public Input (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 Input in this or another similar or derivative form is used. I hereby warrant that I am the author of this Public Input and that I have full power and authority to enter into this copyright assignment.

☑ By checking this box I affirm that I am Jason DAntona, 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 Input No. 2402-NFPA 70-2017 [Section No. 517.19(G)]

(G) Isolated Power System Equipment Grounding.

Where an isolated ungrounded power source is used and limits the first-fault current to a low magnitude, the equipment grounding conductor associated with the secondary circuit shall be permitted to be run outside of the enclosure of the power conductors in the same circuit.

Informational Note: Although it is permitted to run the equipment grounding conductor outside of the conduit, it is safer to run it with the power conductors to provide better protection in case of a second ground fault.

Statement of Problem and Substantiation for Public Input

Grounding and bonding still continues to be one of the most misunderstood and misapplied sections of the NEC. Most of the problems can be traced back to using undefined terminology (trade slang in many cases) or incorrect terminology. The term “grounding conductor” is one that is no longer defined. As part of a Correlating Committee Task Force activity on grounding and bonding in general, this term and its related definition was removed from the NEC during the 2008 NEC cycle. The term had been found to be misapplied in a number of instances and the definition of “grounding conductor” was determined to be very close to the definition of “grounding electrode conductor” yet, many uses of the term in previous editions of the NEC were found to be more correctly to be either “equipment grounding conductor”, “grounding electrode conductor” or one of the several types of “bonding jumper”.

The revised text uses terms defined in the Code and is consistent with the context of the meaning of the section where the revisions are made. The revisions are made to provide clarity, and consistency in terminology usage.

It is requested the Correlating Committee consider a policy or procedures that require a review when a term under the responsibility of a specific Code panel is used by another Code panel. The panel responsible for the term is to review the application to ensure correct usage. It is further requested that when new terms are created that would be identified as under the responsibility of another Code panel that the new term and application be reviewed by the Code panel that would have responsibility for use and application.

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Public Input No. 2403-NFPA 70-2017 [Section No. 517.19(H)]

(H) Special-Purpose Receptacle Grounding.

The equipment grounding conductor for special-purpose receptacles, such as the operation of mobile X-ray equipment, shall be extended to the reference grounding points of branch circuits for all locations likely to be served from such receptacles. Where such a circuit is served from an isolated ungrounded system, the equipment grounding conductor shall not be required to be run with the power conductors; however, the equipment grounding terminal of the special-purpose receptacle shall be connected to the reference grounding point.

Statement of Problem and Substantiation for Public Input

Grounding and bonding still continues to be one of the most misunderstood and misapplied sections of the NEC. Most of the problems can be traced back to using undefined terminology (trade slang in many cases) or incorrect terminology. The term “grounding conductor” is one that is no longer defined. As part of a Correlating Committee Task Force activity on grounding and bonding in general, this term and its related definition was removed from the NEC during the 2008 NEC cycle. The term had been found to be misapplied in a number of instances and the definition of “grounding conductor” was determined to be very close to the definition of “grounding electrode conductor” yet, many uses of the term in previous editions of the NEC were found to be more correctly to be either “equipment grounding conductor”, “grounding electrode conductor” or one of the several types of “bonding jumper”.

The revised text uses terms defined in the Code and is consistent with the context of the meaning of the section where the revisions are made. The revisions are made to provide clarity, and consistency in terminology usage.

It is requested the Correlating Committee consider a policy or procedures that require a review when a term under the responsibility of a specific Code panel is used by another Code panel. The panel responsible for the term is to review the application to ensure correct usage. It is further requested that when new terms are created that would be identified as under the responsibility of another Code panel that the new term and application be reviewed by the Code panel that would have responsibility for use and application.

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Public Input No. 3833-NFPA 70-2017 [New Part after II.]

517.22

(A) Feeder and Service Load Calculations. A unit load of not less than that specified in Table 517.22 for healthcare facility occupancies shall constitute the minimum receptacle load. The floor area for each floor shall be calculated from the outside dimensions of the building, or other area involved. The calculated floor area shall not include open atriums, or unfinished spaces not adaptable for future use.

Table 571.22 *Receptacle Loads by Clinical Care Space*

	Unit Load	
Clinical Care Space	Volt-amperes/m^2	Volt-amperes/ft^2
Critical Care (Category 1) Spaces	32.3	3.0
General Care (Category 2) Spaces	21.5	2.0

(B) Branch-circuits in Category 1 and Category 2 spaces shall serve a maximum 8 receptacles.

Statement of Problem and Substantiation for Public Input

Due to the requirements of NFPA 99 and FGI Guidelines (which are enforced through the Federal Centers of Medicare & Medicaid Services) the outlet quantity in health care facilities are mandated to be far higher than normally encountered in other occupancies. This high density of outlets is intended to allow clinicians the flexibility to provide care in multiple case scenarios within the same space. In addition, many of these spaces are required to have a set of completely redundant electrical outlets to accommodate medical equipment in the event of an isolated electrical failure. In nearly all of these spaces, the outlets are not intended for simultaneous use.

Currently the calculated sizing of the distribution systems serving these outlets fall under the 180VA requirement outlined in NFPA 70 Article 220.12(L). Adherence to this requirement necessitates the calculation of exceedingly high load densities for typical clinical spaces. For example:

Article 517.19(C) (1) requires that a minimum of 36 receptacles be provided in each operating room. Per Article 220.12(L) a 400-square foot operating room will have a plug load density of 8.1VA / square foot (if duplex receptacles are used) or as high as 16.2VA / square foot if simplex receptacles are used. These load densities are significantly higher than the actual loads that are encountered in these spaces. 3VA / square foot.

Several recent comprehensive studies including; Plug and Process Loads in Medical Office Buildings, Quantifying Hospital Cord Connected Plug Loads in Inpatient Areas, and Healthcare Energy End-Use Monitoring, have concluded that the receptacle load densities in even the most acute healthcare spaces are far less than the presently mandated load densities. These studies have been provided as reference in this proposal.

The requirements of 220.12(L) lead to mandatory oversizing of the distribution components including, feeders, transformers and overcurrent protective devices. This larger equipment introduces several operational issues including higher arc-flash hazards in the clinical care environment.

This proposal is intended to relieve healthcare facilities from the mandatory requirements of Article 220.12(L) and place the minimum calculated load densities under the purview of Article 517. This Public Input proposal is intended to be

accepted with a companion proposal to Article 220 which will refer plug loading calculations to this new 517.22 for healthcare facilities.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 3831-NFPA 70-2017 [Section No. 220.14]	Related Section in article 220 whic references this nre 517 article

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Public Input No. 3565-NFPA 70-2017 [New Section after 517.21]

TITLE OF NEW CONTENT

517.22 Health Care Facilities. Rating of feeders, busses, transformers, generators, and services shall be calculated in accordance with Table 517.22, with respect to receptacles and cord-connected equipment.

For continuation of this new section and substantiation, please see attached documentation.

Additional Proposed Changes

File Name	Description	Approved
NFPA_70_New_Section_517.22_Bourgault_Submission.pdf	Complete new section 517.22 and Table 517.22	✓
NFPA_70_Article_220.44_for_New_Section_517.22_Bourgault_Submission.pdf	Necessary change to Section 220.44 to eliminate conflict with new section 517.22	✓

Statement of Problem and Substantiation for Public Input

Substantiation provided in uploaded documents. Related studies sent to NFPA in Quincy.

Submitter Information Verification

Submitter Full Name: Ron Bourgault
Organization: Mazzetti
Street Address:
City:
State:
Zip:
Submittal Date: Wed Sep 06 13:50:16 EDT 2017

New Section

517.22 **Health Care Facilities.** Rating of feeders, busses, transformers, generators, and services shall be calculated in accordance with Table 517.22, with respect to receptacles and cord-connected equipment.

Table 517.22 Receptacle Outlet and Cord Connected Equipment Demand Factors for Health Care Facilities

Portion of Receptacle Load to Which Demand Factor Applies (Volt-Amperes)	Demand Factor (%)
First 5.0 kVA or less at	100
Second 5.0 kVA to 10 kVA at	50
Remainder over 10 kVA at	25

Substantiation

Due to the requirements of NFPA 99 and FGI Guidelines (which are enforced through the Federal Centers of Medicare & Medicaid Services) the outlet quantity in health care facilities are mandated to be far higher than normally encountered in other occupancies. This high density of outlets is intended to allow clinicians the flexibility to provide care in multiple case scenarios within the same space. In addition, many of these spaces are required to have a set of completely redundant electrical outlets to accommodate medical equipment in the event of an isolated electrical failure. In nearly all of these spaces, the outlets are not intended for simultaneous use.

Currently the calculated sizing of the distribution systems serving these outlets fall under the 180VA requirement outlined in NFPA 70 Article 220.14(L). Adherence to this requirement necessitates the calculation of exceedingly high load densities for typical clinical spaces. For example:

Article 517.19(C) (1) requires that a minimum of 36 receptacles be provided in each operating room. Per Article 220.14(L) a 400-square foot operating room will have a plug load density of 8.1VA / square foot (if duplex receptacles are used) or as high as 16.2VA / square foot if simplex receptacles are used. These load densities are significantly higher than the actual loads that are encountered in these spaces.

Several recent comprehensive studies including; *Plug and Process Loads in Medical Office Buildings* , *Quantifying Hospital Cord Connected Plug Loads in Inpatient Areas* , and *Healthcare Energy End-Use Monitoring'* have concluded that the receptacle load densities in even the most acute healthcare spaces are far less than the presently mandated load densities. These studies have been provided as reference in this proposal.

The requirements of 220.14(L) lead to mandatory oversizing of the distribution components including, feeders, transformers and overcurrent protective devices. This larger equipment introduces several operational issues including higher arc-flash hazards in the clinical care environment.

This proposal is intended to seek relieve healthcare facilities from the mandatory requirements of Article 220.14(L) and place the minimum calculated load densities under the purview of Article 517. This Public Input proposal is intended to be accepted with a companion proposal to Article 517 which will introduce a new section 517.22 which will provide plug load densities for healthcare facilities.

Additional Input:

Change to 220.44: Receptacle Loads -- Other Than Dwelling Units and **Health Care Facilities.** A separate submission has been made to Article 220 for this change.

Substantiation:

By adding Health Care Facilities to the title of this section, this table no longer applies to health care facilities and it allows for different demand factors as identified in new section 517.22.

Section 220.44

Change title of 220.44: Receptacle Loads -- Other Than Dwelling Units and **Health Care Facilities.**

Substantiation

By adding Health Care Facilities to the title, this table no longer applies to health care facilities and it allows for different demand factors as identified in new section 517.22.

Due to the requirements of NFPA 99 and FGI Guidelines (which are enforced through the Federal Centers of Medicare & Medicaid Services) the outlet quantity in health care facilities are mandated to be far higher than normally encountered in other occupancies. This high density of outlets is intended to allow clinicians the flexibility to provide care in multiple case scenarios within the same space. In addition, many of these spaces are required to have a set of completely redundant electrical outlets to accommodate medical equipment in the event of an isolated electrical failure. In nearly all of these spaces, the outlets are not intended for simultaneous use.

Currently the calculated sizing of the distribution systems serving these outlets fall under the 180VA requirement outlined in NFPA 70 Article 220.14(L). Adherence to this requirement necessitates the calculation of exceedingly high load densities for typical clinical spaces. For example:

Article 517.19(C) (1) requires that a minimum of 36 receptacles be provided in each operating room. Per Article 220.14(L) a 400-square foot operating room will have a plug load density of 8.1VA / square foot (if duplex receptacles are used) or as high as 16.2VA / square foot if simplex receptacles are used. These load densities are significantly higher than the actual loads that are encountered in these spaces.

Several recent comprehensive studies including; *Plug and Process Loads in Medical Office Buildings* , *Quantifying Hospital Cord Connected Plug Loads in Inpatient Areas* , and *Healthcare Energy End-Use Monitoring'* have concluded that the receptacle load densities in even the most acute healthcare spaces are far less than the presently mandated load densities. These studies have been provided as reference in this proposal.

The requirements of 220.14(L) lead to mandatory oversizing of the distribution components including, feeders, transformers and overcurrent protective devices. This larger equipment introduces several operational issues including higher arc-flash hazards in the clinical care environment.

This proposal is intended to seek relieve healthcare facilities from the mandatory requirements of Article 220.14(L) and place the minimum calculated load densities under the purview of Article 517. This Public Input proposal is intended to be accepted with a companion proposal to Article 517 which will introduce a new section 517.22 which will provide plug load densities for healthcare facilities.

Public Input No. 3573-NFPA 70-2017 [New Section after 517.21]

TITLE OF NEW CONTENT

517.23 (A) Health Care Facilities, Rating of feeders, busses, transformers, generators, and services shall be calculated in accordance with Table 517.23(A), with respect to receptacles and cord-connected equipment.

For continuation of this new section and substantiation, please see attached documentation.

517.23 (B) Receptacle Outlets. The maximum number of receptacle outlets connected to a 15 ampere branch circuit shall not exceed 6 outlets. The maximum number of receptacle outlets connected to a 20 ampere branch circuit shall not exceed 8 outlets.

For continuation of this new section and substantiation, please see attached documentation.

Additional Proposed Changes

File Name	Description	Approved
NFPA_70_New_Section_517.23_A_Bourgault_Submission.pdf	Complete new section 517.23 (A) and Table 517.23	✓
NFPA_70_New_Section_517.23_B_Bourgault_Submission.pdf	Complete new section 517.23 (B)	✓
NFPA_70_Article_220..14_I_for_New_Section_517.23_Bourgault_Submission.pdf	Required changes to 220.14 (I) to eliminate conflict with new section 517.23	✓

Statement of Problem and Substantiation for Public Input

Substantiation provided in uploaded documents. Related studies sent to NFPA in Quincy.

Submitter Information Verification

Submitter Full Name: Ron Bourgault
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New Section

517.23 (A) **Health Care Facilities,** Rating of feeders, busses, transformers, generators, and services shall be calculated in accordance with Table 517.23(A), with respect to receptacles and cord-connected equipment.

Table 517.23(A) Receptacle Outlet Loads and Cord Connected Equipment for Health Care Facilities

A unit load of not less that the specified in Table 517.23 for health care facility occupancies shall constitute the minimum receptacle load. The floor area for each floor shall be calculated from the outside dimensions of the building, or other area involved, the calculated floor area shall not include atriums, or unfinished spaces not adaptable for future use.

Table 517.23 Health Care Facility Receptacle Outlet and Cord Connected Loads by Occupancy

Type of Occupancy	Unit Load	
	Volt-amperes/m^2	Volt-amperes/ft^2
Category 1 (Critical Care)	32.30	3.00
Category 2 (General Care)	21.50	2.00
Category 3 (Basic Care)	16.10	1.50
Category 4 (Support Space)	13.50	1.25

Substantiation

Due to the requirements of NFPA 99 and FGI Guidelines (which are enforced through the Federal Centers of Medicare & Medicaid Services) the outlet quantity in health care facilities are mandated to be far higher than normally encountered in other occupancies. This high density of outlets is intended to allow clinicians the flexibility to provide care in multiple case scenarios within the same space. In addition, many of these spaces are required to have a set of completely redundant electrical outlets to accommodate medical equipment in the event of an isolated electrical failure. In nearly all of these spaces, the outlets are not intended for simultaneous use.

Currently the calculated sizing of the distribution systems serving these outlets fall under the 180VA requirement outlined in NFPA 70 Article 220.14(L). Adherence to this requirement necessitates the calculation of exceedingly high load densities for typical clinical spaces. For example:

Several recent comprehensive studies including; *Plug and Process Loads in Medical Office Buildings* , *Quantifying Hospital Cord Connected Plug Loads in Inpatient Areas* , and *Healthcare Energy End-Use Monitoring'* have concluded that the receptacle load densities in even the most acute healthcare spaces are far less than the presently mandated load densities. These studies have been provided as reference in this proposal.

The requirements of 220.14(L) lead to mandatory oversizing of the distribution components including, feeders, transformers and overcurrent protective devices. This larger equipment introduces several operational issues including higher arc-flash hazards in the clinical care environment.

This proposal is intended to seek relieve healthcare facilities from the mandatory requirements of Article 220.14(L) and place the minimum calculated load densities under the purview of Article 517. This Public Input proposal is intended to be accepted with a companion proposal to Article 517 which will introduce a new section 517.23 which will provide plug load densities for healthcare facilities.

Additional Input:

Change to 220.14 (I) Add 517.23 to paragraph. A separate submission has been made to Article 220 for this change.

Substantiation:

This change breaks the tie of 180 VA for health care facilities allowing 517.23 to dictate the load calculation

New Section

517.23 (B) **Receptacle Outlets.** The maximum number of receptacle outlets connected to a 15 ampere branch circuit shall not exceed 6 outlets. The maximum number of receptacle outlets connected to a 20 ampere branch circuit shall not exceed 8 outlets.

Substantiation

This section is needed to support new section 517.23 (A). It establishes necessary limits for the number of receptacles permitted on a branch circuit.

Due to the requirements of NFPA 99 and FGI Guidelines (which are enforced through the Federal Centers of Medicare & Medicaid Services) the outlet quantity in health care facilities are mandated to be far higher than normally encountered in other occupancies. This high density of outlets is intended to allow clinicians the flexibility to provide care in multiple case scenarios within the same space. In addition, many of these spaces are required to have a set of completely redundant electrical outlets to accommodate medical equipment in the event of an isolated electrical failure. In nearly all of these spaces, the outlets are not intended for simultaneous use.

Currently the calculated sizing of the distribution systems serving these outlets fall under the 180VA requirement outlined in NFPA 70 Article 220.14(L). Adherence to this requirement necessitates the calculation of exceedingly high load densities for typical clinical spaces. For example:

Article 517.19(C) (1) requires that a minimum of 36 receptacles be provided in each operating room. Per Article 220.14(L) a 400-square foot operating room will have a plug load density of 8.1VA / square foot (if duplex receptacles are used) or as high as 16.2VA / square foot if simplex receptacles are used. These load densities are significantly higher than the actual loads that are encountered in these spaces.

Several recent comprehensive studies including; *Plug and Process Loads in Medical Office Buildings*, *Quantifying Hospital Cord Connected Plug Loads in Inpatient Areas*, and *Healthcare Energy End-Use Monitoring'* have concluded that the receptacle load densities in even the most acute healthcare spaces are far less than the presently mandated load densities. These studies have been provided as reference in this proposal.

The requirements of 220.14(L) lead to mandatory oversizing of the distribution components including, feeders, transformers and overcurrent protective devices. This larger equipment introduces several operational issues including higher arc-flash hazards in the clinical care environment.

This proposal is intended to seek relieve healthcare facilities from the mandatory requirements of Article 220.14(L) and place the minimum calculated load densities under the purview of Article 517. This Public Input proposal is intended to be accepted with a companion proposal to Article 517 which will introduce a new section 517.25 which will provide plug load densities for healthcare facilities.

Section 220.14 (I)

Change to 220.14 (I) Add new section 517.23 to paragraph. And Table 220.12: Delete Hospitals from table.

Substantiation

This change breaks the tie of 180 VA for health care facilities allowing 517.23 to dictate the load calculation

Due to the requirements of NFPA 99 and FGI Guidelines (which are enforced through the Federal Centers of Medicare & Medicaid Services) the outlet quantity in health care facilities are mandated to be far higher than normally encountered in other occupancies. This high density of outlets is intended to allow clinicians the flexibility to provide care in multiple case scenarios within the same space. In addition, many of these spaces are required to have a set of completely redundant electrical outlets to accommodate medical equipment in the event of an isolated electrical failure. In nearly all of these spaces, the outlets are not intended for simultaneous use.

Currently the calculated sizing of the distribution systems serving these outlets fall under the 180VA requirement outlined in NFPA 70 Article 220.14(L). Adherence to this requirement necessitates the calculation of exceedingly high load densities for typical clinical spaces. For example:

Article 517.19(C) (1) requires that a minimum of 36 receptacles be provided in each operating room. Per Article 220.14(L) a 400-square foot operating room will have a plug load density of 8.1VA / square foot (if duplex receptacles are used) or as high as 16.2VA / square foot if simplex receptacles are used. These load densities are significantly higher than the actual loads that are encountered in these spaces.

Several recent comprehensive studies including; *Plug and Process Loads in Medical Office Buildings* , *Quantifying Hospital Cord Connected Plug Loads in Inpatient Areas* , and *Healthcare Energy End-Use Monitoring'* have concluded that the receptacle load densities in even the most acute healthcare spaces are far less than the presently mandated load densities. These studies have been provided as reference in this proposal.

The requirements of 220.14(L) lead to mandatory oversizing of the distribution components including, feeders, transformers and overcurrent protective devices. This larger equipment introduces several operational issues including higher arc-flash hazards in the clinical care environment.

This proposal is intended to seek relieve healthcare facilities from the mandatory requirements of Article 220.14(L) and place the minimum calculated load densities under the purview of Article 517. This Public Input proposal is intended to be accepted with a companion proposal to Article 517 which will introduce a new section 517.23 which will provide plug load densities for healthcare facilities.

Public Input No. 3577-NFPA 70-2017 [New Section after 517.21]

TITLE OF NEW CONTENT

Type your content here ...

517.24 (A) Health Care Facilities. Rating of feeders, busses, transformers, generators, and services shall be calculated in accordance with Table 517.24 (A), with respect cord-connected equipment.

For continuation of this new section and substantiation, please see attached documentation.

517.24 (B) Receptacle Outlets. The maximum number of receptacle outlets connected to a 15 ampere branch circuit shall not exceed 6 outlets. The maximum number of receptacle outlets connected to a 20 ampere branch circuit shall not exceed 8 outlets.

For continuation of this new section and substantiation, please see attached documentation.

Additional Proposed Changes

File Name	Description	Approved
NFPA_70_New_Section_517.24_A_Bourgault_Submission.pdf	Full description of new section 517.24 (A) and table 517.24	✓
NFPA_70_New_Section_517.24_B_Bourgault_Submission.pdf	Full description of 517.24 (B)	✓
NFPA_70_Article_220.44_for_New_Section_517.22_Bourgault_Submission.pdf	This change is needed to avoid conflict with new section 517.24, attached for reference.	✓

Statement of Problem and Substantiation for Public Input

Substantiation provided in uploaded documents. Related studies sent to NFPA in Quincy.

Submitter Information Verification

Submitter Full Name: Ron Bourgault
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New Section

517.24 (A) **Health Care Facilities.** Rating of feeders, busses, transformers, generators, and services shall be calculated in accordance with Table 517.24 (A), with respect cord-connected equipment.

Table 517.24(A) Cord Connected Equipment Demand Factors for Health Care Facilities

Number of Cord Connected Equipment	Percent of Full Load
1 to 5	100
5 to 10	50
More Than 10	25

Substantiation

Due to the requirements of NFPA 99 and FGI Guidelines (which are enforced through the Federal Centers of Medicare & Medicaid Services) the outlet quantity in health care facilities are mandated to be far higher than normally encountered in other occupancies. This high density of outlets is intended to allow clinicians the flexibility to provide care in multiple case scenarios within the same space. In addition, many of these spaces are required to have a set of completely redundant electrical outlets to accommodate medical equipment in the event of an isolated electrical failure. In nearly all of these spaces, the outlets are not intended for simultaneous use.

Currently the calculated sizing of the distribution systems serving these outlets fall under the 180VA requirement outlined in NFPA 70 Article 220.14(L). Adherence to this requirement necessitates the calculation of exceedingly high load densities for typical clinical spaces. For example:

Article 517.19(C) (1) requires that a minimum of 36 receptacles be provided in each operating room. Per Article 220.14(L) a 400-square foot operating room will have a plug load density of 8.1VA / square foot (if duplex receptacles are used) or as high as 16.2VA / square foot if simplex receptacles are used. These load densities are significantly higher than the actual loads that are encountered in these spaces.

Several recent comprehensive studies including; *Plug and Process Loads in Medical Office Buildings* , *Quantifying Hospital Cord Connected Plug Loads in Inpatient Areas* , and *Healthcare Energy End-Use Monitoring* ' have concluded that the receptacle load densities in even the most acute healthcare spaces are far less than the presently mandated load densities. These studies have been provided as reference in this proposal.

The requirements of 220.14(L) lead to mandatory oversizing of the distribution components including, feeders, transformers and overcurrent protective devices. This larger equipment introduces several operational issues including higher arc-flash hazards in the clinical care environment.

This proposal is intended to seek relieve healthcare facilities from the mandatory requirements of Article 220.14(L) and place the minimum calculated load densities under the purview of Article 517. This Public Input proposal is intended to be accepted with a companion proposal to Article 517 which will introduce a new section 517.24 which will provide plug load densities for healthcare facilities.

By adding Health Care Facilities to the title , the table no longer applies to health care facilites and it allows for different demand factors as identified in 517.24.

Additional Input:

Change to 220.44: Receptacle Loads -- Other Than Dwelling Units and **Health Care Facilities.** A separate submission has been made to Article 220 for this change.

Substantiation:

By adding Health Care Facilities to the title , the table no longer applies to health care facilites and it allows for different demand factors as identified in 517.24.

New Section

517.24 (B) **Receptacle Outlets.** The maximum number of receptacle outlets connected to a 15 ampere branch circuit shall not exceed 6 outlets. The maximum number of receptacle outlets connected to a 20 ampere branch circuit shall not exceed 8 outlets.

Substantiation

This section is needed to support new section 517.24 (A). It establishes necessary limits for the number of receptacles permitted on a branch circuit.

Due to the requirements of NFPA 99 and FGI Guidelines (which are enforced through the Federal Centers of Medicare & Medicaid Services) the outlet quantity in health care facilities are mandated to be far higher than normally encountered in other occupancies. This high density of outlets is intended to allow clinicians the flexibility to provide care in multiple case scenarios within the same space. In addition, many of these spaces are required to have a set of completely redundant electrical outlets to accommodate medical equipment in the event of an isolated electrical failure. In nearly all of these spaces, the outlets are not intended for simultaneous use.

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Article 517.19(C) (1) requires that a minimum of 36 receptacles be provided in each operating room. Per Article 220.14(L) a 400-square foot operating room will have a plug load density of 8.1VA / square foot (if duplex receptacles are used) or as high as 16.2VA / square foot if simplex receptacles are used. These load densities are significantly higher than the actual loads that are encountered in these spaces.

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The requirements of 220.14(L) lead to mandatory oversizing of the distribution components including, feeders, transformers and overcurrent protective devices. This larger equipment introduces several operational issues including higher arc-flash hazards in the clinical care environment.

This proposal is intended to seek relieve healthcare facilities from the mandatory requirements of Article 220.14(L) and place the minimum calculated load densities under the purview of Article 517. This Public Input proposal is intended to be accepted with a companion proposal to Article 517 which will introduce a new section 517.25 which will provide plug load densities for healthcare facilities.

Section 220.44

Change title of 220.44: Receptacle Loads -- Other Than Dwelling Units and **Health Care Facilities.**

Substantiation

By adding Health Care Facilities to the title, this table no longer applies to health care facilities and it allows for different demand factors as identified in new section 517.22.

Due to the requirements of NFPA 99 and FGI Guidelines (which are enforced through the Federal Centers of Medicare & Medicaid Services) the outlet quantity in health care facilities are mandated to be far higher than normally encountered in other occupancies. This high density of outlets is intended to allow clinicians the flexibility to provide care in multiple case scenarios within the same space. In addition, many of these spaces are required to have a set of completely redundant electrical outlets to accommodate medical equipment in the event of an isolated electrical failure. In nearly all of these spaces, the outlets are not intended for simultaneous use.

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Several recent comprehensive studies including; *Plug and Process Loads in Medical Office Buildings* , *Quantifying Hospital Cord Connected Plug Loads in Inpatient Areas* , and *Healthcare Energy End-Use Monitoring'* have concluded that the receptacle load densities in even the most acute healthcare spaces are far less than the presently mandated load densities. These studies have been provided as reference in this proposal.

The requirements of 220.14(L) lead to mandatory oversizing of the distribution components including, feeders, transformers and overcurrent protective devices. This larger equipment introduces several operational issues including higher arc-flash hazards in the clinical care environment.

This proposal is intended to seek relieve healthcare facilities from the mandatory requirements of Article 220.14(L) and place the minimum calculated load densities under the purview of Article 517. This Public Input proposal is intended to be accepted with a companion proposal to Article 517 which will introduce a new section 517.22 which will provide plug load densities for healthcare facilities.

Public Input No. 3818-NFPA 70-2017 [Section No. 517.26]

517.26 Application of Other Articles.

The life safety branch of the essential electrical system shall meet the requirements of Article 700, except as amended by Article 517.

A) T he provisions for emergency systems in Article 700 of *NFPA 70, National Electrical Code* , shall be applied only to the life safety branch.

(B) The following portions of Article 700 of *NFPA 70* shall be amended as follows:

(1) 700.3 (F) shall not apply.

(2) 700.4 shall not apply.

(3) 700.8 shall not apply.

(4) 700.10 (D) 1 through 3 shall not apply.

(5) 700.17 Branch Circuits for Emergency Lighting. Branch circuits that supply emergency lighting shall be installed to provide service from a source complying with 700.12 when the normal supply for lighting is interrupted or where single circuits supply luminaires containing secondary batteries.

(6) 700.32 shall not apply. [**99** : 6.7.5.1.2.2.]

Informational Note No. 1: For additional information, see NFPA 110-2013, *Standard for Emergency and Standby Power Systems*.

Informational Note No. 2: For additional information, see 517.29 andNFPA 99-2015, *Health Care Facilities Code*.

Statement of Problem and Substantiation for Public Input

As the Chair of NFPA 99 Electrical Systems Committee (HEA-ELS), I am submitting this proposal to improve the correlation between NFPA 99 and NFPA 70. The substantiation of this proposal is as follows: It has been established by the NFPA Standards Council that NFPA 99 has jurisdiction over performance requirements for electrical systems in health care facilities while NFPA 70 has jurisdiction over the installation requirements. The proposed addition is the result of the 99 HEA-ELS TC agreeing that the life safety branch is required to conform to Article 700 with the exception of several performance requirements. Section 700.4 speaks to capacity of the system which NFPA 99 already addresses in detail. Section 700.10(D)(1) can possibly impose fire protection requirements in excess of what a building code might require for the rest of the structure. Section 700.17 is slightly modified and 700.32 is also identified as not applying due to the documented decision that selective coordination is a performance issue under the jurisdiction of NFPA 99.

Submitter Information Verification

Submitter Full Name: Jason DAntona
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Affilliation: TC Chair of 99 HEA-ELS
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Submittal Date: Wed Sep 06 22:59:24 EDT 2017

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Public Input No. 3819-NFPA 70-2017 [Section No. 517.29(B)]

(B)

~~Critical care (~~ Category 1 ~~)~~ spaces shall be served ~~only~~ by a Type 1 essential electrical system. [**99:**6.3.2.2.10.1]

Statement of Problem and Substantiation for Public Input

As the Chair of NFPA 99 Electrical Systems Committee (HEA-ELS), I am submitting this proposal to improve the correlation between NFPA 99 and NFPA 70. The substantiation of this proposal is as follows: The revised 519.29 (B) will correlate with current text in 2018 NFPA 99.

Submitter Information Verification

Submitter Full Name: Jason DAntona
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Submittal Date: Wed Sep 06 23:03:50 EDT 2017

Public Input No. 3611-NFPA 70-2017 [New Section after 517.30(B)]

(3) Energy Storage Systems. Energy storage systems shall be permitted to serve as the alternate power source for all or part of the essential electrical system, provided the following conditions apply:

(1) The installation shall comply with the requirements in Parts I through IV of article 706.

(2) Energy storage systems shall be listed for emergency use.

(3) The installation shall comply with the requirements of NFPA 99-2018, Health Care Facilities Code.

Statement of Problem and Substantiation for Public Input

Energy storage systems are an alternate power source capable of supplying an essential electrical system.

Submitter Information Verification

Submitter Full Name:	Peter Diamond
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Submittal Date:	Wed Sep 06 15:09:43 EDT 2017

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Public Input No. 3826-NFPA 70-2017 [Section No. 517.30(B)]

(B) Types of Power Sources.

(1) Generating Units.

Where the normal source consists of generating units on the premises, the alternate source shall be either another generating set or an external utility service. [**99:**6.4.1.1.5]

(2) Fuel Cell Systems.

Fuel cell systems shall be permitted to serve as the alternate source for all or part of an essential electrical system, provided the following conditions apply:

(1) Installation of fuel cells shall comply with the requirements in Parts I through VII of Article 692 for 1000 volts or less and Part VIII for over 1000 volts.

Informational Note: For information on installation of stationary fuel cells, see NFPA 853-2015, *Standard for Installation of Stationary Fuel Cell Power Systems*. [**99:**6.4.1.1.7]

(2) N + 1 units shall be provided where N units have sufficient capacity to supply the demand loads of the portion of the system served. [**99:**6.4.1.7.2]

(3) System shall be able to assume loads within 10 seconds of loss of normal power source.

(4) System shall have a continuing source of fuel supply, together with sufficient on-site fuel storage for the essential system type.

(5) A connection shall be provided for a portable diesel generator to supply life safety and critical portions of the distribution system. [**99:**6.4.1.1.7.5(1) through (5)]

(6) Fuel cell systems shall be listed for emergency system use.

(3) Battery Systems.

Battery systems shall be permitted to serve as the alternate source for all or part of an essential electrical system in accordance with the requirements of NFPA 99 6.4.1.2.

Statement of Problem and Substantiation for Public Input

As the Chair of NFPA 99 Electrical Systems Committee (HEA-ELS), I am submitting this proposal to improve the correlation between NFPA 99 and NFPA 70. The substantiation of this proposal is as follows: Battery systems are an accepted Essential Electrical System Source in accordance with NFPA 99 6.4.1.2. This proposal will provide correlation between Article 517 and NFPA 99.

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Public Input No. 3669-NFPA 70-2017 [Section No. 517.30(B)(2)]

(2) Fuel Cell Systems.

Fuel cell systems shall be permitted to serve as the alternate source for all or part of an essential electrical system, provided the following conditions apply:

(1) Installation of fuel cells shall comply with the requirements in Parts I through VII of Article 692 for 1000 volts or less and Part VIII for over 1000 volts.

Informational Note: For information on installation of stationary fuel cells, see NFPA 853-2015, *Standard for Installation of Stationary Fuel Cell Power Systems*. [**99:**6.4.1.1.7]

(2) N + 1 units shall be provided where N units have sufficient capacity to supply the demand loads of the portion of the system served. [**99:**6.4.1.7.2]

(3) ~~System~~ Fuel Cells operating as the essential source shall be ~~able to assume loads within 10 seconds of loss of normal power~~ permitted to run continuously and shall not be considered the normal source.

(4) System shall have a continuing source of fuel supply, together with sufficient on-site fuel storage for the essential system type.

(5) A connection shall be provided for a portable diesel generator to supply life safety and critical portions of the distribution system. [**99:**6.4.1.1.7.5(1) through (5)]

(6) Fuel cell systems shall be listed for emergency system use.

Statement of Problem and Substantiation for Public Input

Fuel cells are not an instantaneous source, they operate continuously even when the normal source is available. They are always available and can be maintained without interruption to the load served. Consequently, they can always serve the essential load without interruption. The utility is the normal source while the fuel cells are the essential source.

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Public Input No. 3677-NFPA 70-2017 [Section No. 517.30(B)(2)]

(2) Fuel Cell Systems.

Fuel cell systems shall be permitted to serve as the alternate source for all or part of an essential electrical system, provided the following conditions apply:

(1) Installation of fuel cells shall comply with the requirements in Parts I through VII of Article 692 for 1000 volts or less and Part VIII for over 1000 volts.

Informational Note: For information on installation of stationary fuel cells, see NFPA 853-2015, *Standard for Installation of Stationary Fuel Cell Power Systems*. [**99:**6.4.1.1.7]

(2) N + 1 units shall be provided where N units have sufficient capacity to supply the demand loads of the portion of the system served. [**99:**6.4.1.7.2]

(3) System shall be able to assume loads within 10 seconds of loss of normal power source.

(4) System shall have a continuing source of fuel supply, together with sufficient on-site fuel storage for the essential system type.

(5) ~~A connection shall be provided for a portable diesel generator to supply life safety and critical portions of the distribution system. [**99:** 6.4.1.1.7.5(1) through (5)]~~

(6)

(7) Fuel cell systems shall be listed for emergency system use.

Statement of Problem and Substantiation for Public Input

Utility is the normal source, fuels cells are the essential source. Fuel cells can be maintained while on-line. There is no need for a generator connection. It would never be needed.

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Public Input No. 407-NFPA 70-2017 [Section No. 517.30(C)]

(C) Location of Essential Electrical System Components.

~~Essential~~ Installation of essential electrical system components shall be located so as to minimize ~~interruptions caused by natural forces common to the area (e.g., storms, floods, earthquakes,~~ hazards that might cause complete failure due to storms, flooding, fires, icing, earthquakes, vandalism, or hazards created by adjoining structures or activities.

(C)(1) Services . ~~Installations~~ Installation of electrical services shall be located to reduce possible interruption of normal ~~electrical services resulting from similar causes~~ electrical power resulting from natural or man made causes as well as possible disruption of normal electrical service due to internal wiring and equipment failures.

(C)(2) Feeders. Installation of feeders shall be located to provide physical separation of the feeders of the alternate source and from the feeders of the normal electrical source to prevent possible simultaneous interruption.

Informational Note: Facilities in which the normal source of power is supplied by two or more separate central station-fed services experience greater than normal electrical service reliability than those with only a single feed. Such a dual source of normal power consists of two or more electrical services fed from separate generator sets or a utility distribution network that has multiple power input sources and is arranged to provide mechanical and electrical separation so that a fault between the facility and the generating sources is not likely to cause an interruption of more than one of the facility service feeders.

Statement of Problem and Substantiation for Public Input

Based on data from recent hurricanes, super storms, and other disasters that affect electrical power distribution systems, this requirement is essential for installers and inspectors when considering the location for installation of the essential electrical system components. When a disaster strikes a community, the local hospital becomes the epicenter of care for the sick and injured and can become a point of gathering for the community. It is vital that clear instructions are given for the installation of the essential electrical systems to provide protection for all viable threats.
This revision to the text is intended to provide clarity for installers and inspectors as they interpret the design applications shown on drawings. Installers and inspectors should be vigilant and mindful of catastrophic events that may occur from time-to-time in healthcare facilities and install essential electrical systems in locations that provide the most protection.

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Public Input No. 242-NFPA 70-2017 [New Section after 517.31(A)]

TITLE OF NEW CONTENT

Type your content here ...

(A)(1) Identification.

Raceways, cables or enclosures of the essential circuit system shall be permanantly marked so they will be readily identified a component of an essential circuit or system

Statement of Problem and Substantiation for Public Input

In 2014, CMP 15 removed both life safety & critical branch out of the emergency system and lumped all 3 branches into “essential electrical systems” I believe the unintended consequence of this change greatly impacted the ability to require identifications which importantly distinguishes these systems. Health care facilities are overrun with conduits, both power and low voltage, making it very difficult to distinguish them for installers, inspectors & hospital maintenance. Placing this section in 517.30 would give needed direction. I have inspected 2 hospitals under the 2014 NEC and plead with you to take this under consideration. Thank you

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Public Input No. 1460-NFPA 70-2017 [New Section after 517.31(B)]

TITLE OF NEW CONTENT

Type your content here ...

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

Statement of Problem and Substantiation for Public Input

based on the 2017 NEC, only transfer equipment governed by article 700,5(E), 701.5(D), 702.5 & 708.24(E) are required to be field marked with the available SCCR from the OCPD's of the normal & alternate sources. In a hospital's Essential Electrical System that only includes the Life Safety Branch but not the Critical or Equipment branch, I believe these are very important (especially the critical branch that may have life support equipment in ICU's and operating rooms) to be able to see if the SCCR of the transfer equipment is sufficient to withstand the SCCR of the sources.

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Public Input No. 3820-NFPA 70-2017 [Section No. 517.31(A)]

(A) Separate Branches.

Type 1 Essential electrical systems ~~for hospitals~~ shall be comprised of three separate branches capable of supplying a limited amount of lighting and power service that is considered essential for life safety and effective hospital operation during the time the normal electrical service is interrupted for any reason. The three branches are life safety, critical, and equipment.

The division between the branches shall occur at transfer switches where more than one transfer switch is required [**99:**6.4.2.2.1.2]

Statement of Problem and Substantiation for Public Input

As the Chair of NFPA 99 Electrical Systems Committee (HEA-ELS), I am submitting this proposal to improve the correlation between NFPA 99 and NFPA 70. The substantiation of this proposal is as follows: This proposal removes the reference to the specific facility type. The NFPA 99 already defines what facilities need to be provided with a Type 1 EES and that is based on the risk present in the facility.

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Public Input No. 3829-NFPA 70-2017 [Section No. 517.31(B)]

(B) Transfer Switches.

The number of transfer switches to be used shall be based on reliability and design. Each branch of the essential electrical system shall have one or more transfer switches.

~~One~~ Where the Essential Electrical System demand is 150kVA or less, one transfer switch and downstream distribution system shall be permitted ~~to serve one~~ . Separation in to two or more branches ~~in a facility with a maximum demand on the essential electrical system of 150 kVA~~ is not required .

Informational Note No. 1: See NFPA 99-2015, *Health Care Facilities Code*, 6.4.3.2, Transfer Switches; 6.4.2.1.5, Automatic Transfer Switch Features; 6.4.2.1.5.15, Nonautomatic Transfer Switch Features; and 6.4.2.1.7, Nonautomatic Transfer Device Features.

Informational Note No. 2: See Informational Note Figure 517.31(a).

Informational Note No. 3: In consideration of future growth, multiple branches should be considered. See Informational Note Figure 517.31(b).

Figure Informational Note Figure 517.31(a) Hospital — Minimum Requirement (greater than 150 kVA) for Transfer Switch Arrangement.

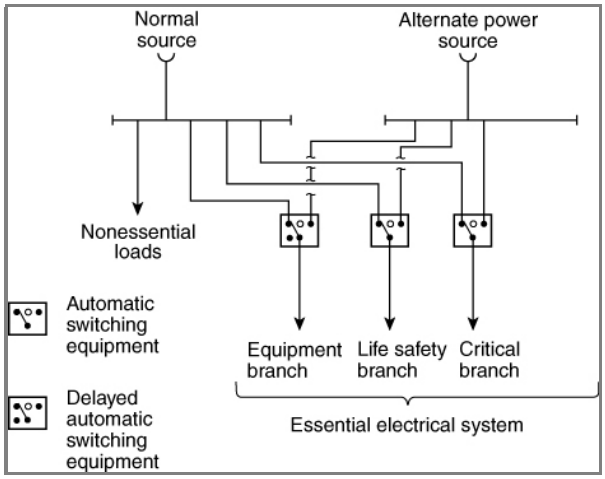
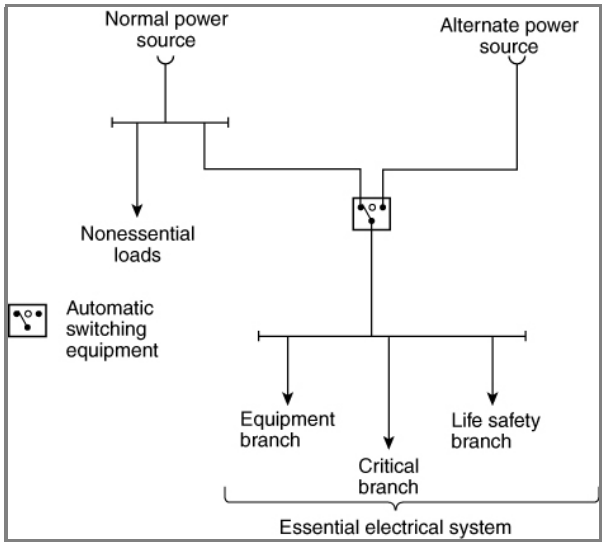


Figure Informational Note Figure 517.31(b) Hospital — Minimum Requirement (150 kVA or less) for Transfer Switch Arrangement.



(1) Optional Loads.

Loads served by the generating equipment not specifically named in Article 517 shall be served by their own transfer switches such that the following conditions apply:

(1) These loads shall not be transferred if the transfer will overload the generating equipment.

(2) These loads shall be automatically shed upon generating equipment overloading.

(2) Contiguous Facilities.

Hospital power sources and alternate power sources shall be permitted to serve the essential electrical systems of contiguous or same site facilities.

Statement of Problem and Substantiation for Public Input

As the Chair of NFPA 99 Electrical Systems Committee (HEA-ELS), I am submitting this proposal to improve the correlation between NFPA 99 and NFPA 70. The substantiation of this proposal is as follows: It was never the intent that two or more branches be separated downstream of a single ATS, since there is no proven increase in reliability in naming multiple systems downstream of a single switch. This proposal will clarify this and provide unambiguous interpretation which agrees with NFPA 99 and the referenced figures.

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Public Input No. 3647-NFPA 70-2017 [Section No. 517.31(B) [Excluding any Sub-Sections]]

The number of transfer switches to be used shall be based on reliability and design. Each branch of the essential electrical system shall have one or more transfer switches.

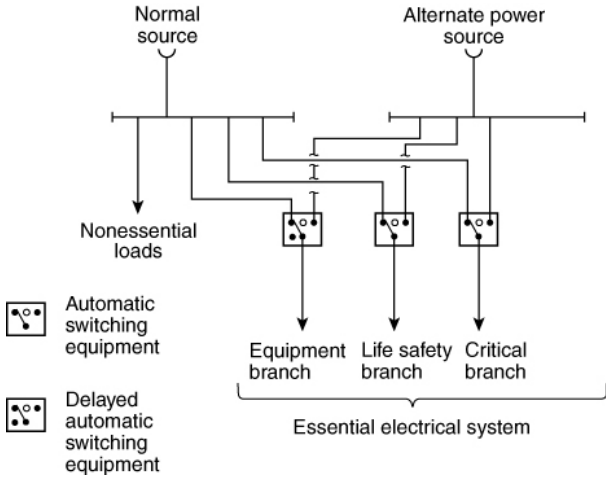
~~One transfer switch and downstream distribution system shall be permitted to serve one or more branches in a facility with a maximum demand on the essential electrical system of 150 kVA.~~

Informational Note No. 1: See NFPA 99-2015, *Health Care Facilities Code* , 6.4.3.2, Transfer Switches; 6.4.2.1.5, Automatic Transfer Switch Features; 6.4.2.1.5.15, Nonautomatic Transfer Switch Features; and 6.4.2.1.7, Nonautomatic Transfer Device Features.

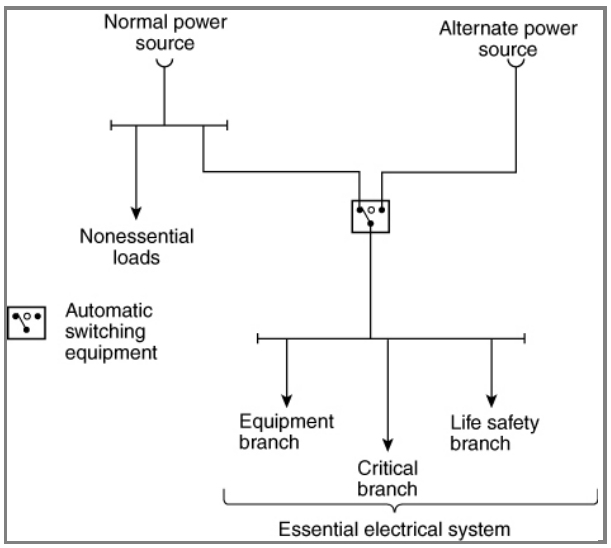
Informational Note No. 2: See Informational Note Figure 517.31(a) .

~~Informational Note No. 3: See Informational Note Figure 517.31(b) .~~

Figure Informational Note Figure 517.31(a) Hospital — Minimum Requirement (greater than 150 kVA) for Transfer Switch Arrangement.



~~**Figure Informational Note Figure 517.31(b) Hospital — Minimum Requirement (150 kVA or less) for Transfer Switch Arrangement.**~~



Statement of Problem and Substantiation for Public Input

NEC 700.10(B)(5) requires all "Emergency", "Legally Required Standby", and "Optional Standby" loads be segregated from each other. The people in facilities covered by Articles 700 are typically able to exit the building under their own power. Yet in a Health Care facility, where it is common that we have people potentially unable to exit the building under their own power, we are relaxing the requirements related to the segregation of loads when the load on the Essential Electrical System is less than 150 kVA. This change would bring the requirements in article 517 in harmony with the same requirements of NEC 700.10(B)(5) for all conditions.

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Public Input No. 3821-NFPA 70-2017 [Section No. 517.31(B) [Excluding any Sub-Sections]]

The number of transfer switches to be used shall be based on reliability and design. Each branch of the essential electrical system shall have one or more transfer switches.

One transfer switch and downstream distribution system shall be permitted to serve one or more branches in a facility with a maximum demand on the essential electrical system of 150 kVA.

Informational Note No. 1: See NFPA 99-2015, *Health Care Facilities Code*, 6.4.3.2, Transfer Switches; 6.4.2.1.5, Automatic Transfer Switch Features; 6.4.2.1.5.15, Nonautomatic Transfer Switch Features; and 6.4.2.1.7, Nonautomatic Transfer Device Features.

Informational Note No. 2: See Informational Note Figure 517.31(a).

Informational Note No. 3: See Informational Note Figure 517.31(b).

Figure Informational Note Figure 517.31(a) ~~Hospital~~ Type 1 Essential Electrical System — Minimum Requirement (greater than 150 kVA) for Transfer Switch Arrangement.

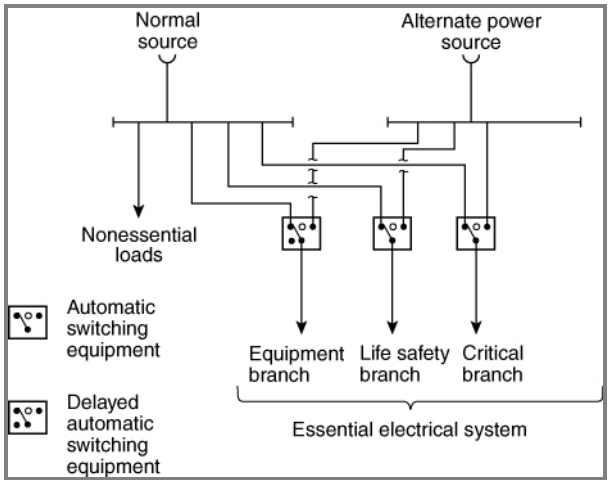
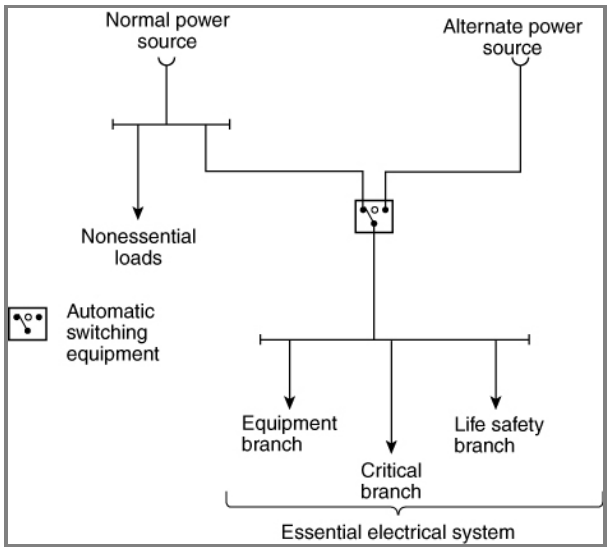


Figure Informational Note Figure 517.31(b) ~~Hospital~~ Type 1 Essential Electrical System — Minimum Requirement (150 kVA or less) for Transfer Switch Arrangement.



Statement of Problem and Substantiation for Public Input

As the Chair of NFPA 99 Electrical Systems Committee (HEA-ELS), I am submitting this proposal to improve the correlation between NFPA 99 and NFPA 70. The substantiation of this proposal is as follows: Remove the reference to the specific facility type. NFPA 99 already defines what facilities need to be provided with a Type 1 EES and that is based on the risk present in the facility.

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Public Input No. 1077-NFPA 70-2017 [Section No. 517.31(C)(3)]

(3) Mechanical Protection of the Essential Electrical System.

The wiring of the life safety and critical branches shall be mechanically protected. Where installed as branch circuits in patient care spaces, the installation shall comply with the requirements of 517.13(A) and (B). Only the following wiring methods shall be permitted:

(1) Nonflexible metal raceways, Type MI cable, Type RTRC marked with the suffix –XW, or Schedule 80 PVC conduit. Nonmetallic raceways shall not be used for branch circuits that supply patient care areas.

(2) Where encased in not less than 50 mm (2 in.) of concrete, Schedule 40 PVC conduit, flexible nonmetallic or jacketed metallic raceways, or jacketed metallic cable assemblies listed for installation in concrete. Nonmetallic raceways shall not be used for branch circuits that supply patient care areas.

(3) Listed flexible metal raceways and listed metal sheathed cable assemblies in any of the following:

(4) Where used in listed prefabricated medical headwalls

(5) In listed office furnishings

(6) Where fished into existing walls or ceilings, not otherwise accessible and not subject to physical damage

(7) Where necessary for flexible connection to equipment

(8) For equipment that requires a flexible connection due to movement, vibration, or operation

(9) Luminaires installed in

~~rigid~~

a. ceiling structures

~~where there is no access above the ceiling space after the luminaire is installed~~

a.

(10) Flexible power cords of appliances or other utilization equipment connected to the emergency system.

(11) Cables for Class 2 or Class 3 systems permitted by Part VI of this Article, with or without raceways.

Informational Note: See 517.13 for additional grounding requirements in patient care areas.

Statement of Problem and Substantiation for Public Input

Statement of Problem: Where luminaires are installed with hard-piped connections in ceilings, replacement or maintenance of the fixture can be extremely difficult. The problem is even more difficult as a result of the number of other electrical (line and low voltage) and non-electrical systems (ductwork, sprinkler piping, other piped systems, etc.) installed above the ceiling. This difficulty exists regardless of whether or not the ceiling is a rigid structure or a lay-in type.

The initial installation of luminaires and future access to these fixtures would be enhanced and provide a safer work environment with the proposed change.

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Public Input No. 3718-NFPA 70-2017 [Section No. 517.31(C)(3)]

(3) ~~Mechanical Protection of~~ Protection Against Physical Damage of the Essential Electrical System.

The wiring of the life safety and critical branches shall be mechanically protected. Where installed as branch circuits in patient care spaces, the installation shall comply with the requirements of 517.13(A) and (B). Only the following wiring methods shall be permitted:

(1) Nonflexible metal raceways, Type MI cable, Type RTRC marked with the suffix –XW, or Schedule 80 PVC conduit. Nonmetallic raceways shall not be used for branch circuits that supply patient care areas.

(2) Where encased in not less than 50 mm (2 in.) of concrete, Schedule 40 PVC conduit, flexible nonmetallic or jacketed metallic raceways, or jacketed metallic cable assemblies listed for installation in concrete. Nonmetallic raceways shall not be used for branch circuits that supply patient care areas.

(3) Listed flexible metal raceways and listed metal sheathed cable assemblies in any of the following:

(4) Where used in listed prefabricated medical headwalls

(5) In listed office furnishings

(6) Where fished into existing walls or ceilings, not otherwise accessible and not subject to physical damage

(7) Where necessary for flexible connection to equipment

(8) For equipment that requires a flexible connection due to movement, vibration, or operation

(9) Luminaires installed in rigid ceiling structures where there is no access above the ceiling space after the luminaire is installed

(10) Flexible power cords of appliances or other utilization equipment connected to the emergency system.

(11) Cables for Class 2 or Class 3 systems permitted by Part VI of this Article, with or without raceways.

Informational Note: See 517.13 for additional grounding requirements in patient care areas.

Statement of Problem and Substantiation for Public Input

The term ‘mechanical protection’ is not defined in the NEC Article 100 Definitions. The NEC Style Manual prefers use of the standardized term ‘protection against physical damage’ rather than ‘mechanical protection’. An example would be Article 230.50. The revised title of 517.30(C)(3) will provide a clearer intent over the current wording. Additionally a Informational Note per 90.5(C) could be included to explain the intent and importance of the limitation on wiring methods permitted for these systems. NEC Style Manual 3.2.5.5 Provisions on Protection Against Physical Damage. If protection against physical damage is to be one of the requirements, this can be standardized by the use of this terminology instead of using the phrase provided with mechanical protection to mean the same thing. In many cases, one or two acceptable methods of providing the intended protection can be stated as examples for better understanding without restricting the rule to a specification-type requirement. There have been some cases, such as in the instance of grounding electrode conductors, where the means provided by the installer for protection against physical damage has impaired the electrical function of the conductor or equipment. This can be largely avoided by an explanatory note if the intent cannot be otherwise made sufficiently clear.

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I, Michael Farrell III, hereby irrevocably grant and assign to the National Fire Protection Association (NFPA) all and full rights in copyright in this Public Input (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 Input in this or another similar or derivative form is used. I hereby warrant that I am the author of this Public Input and that I have full power and authority to enter into this copyright assignment.

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Public Input No. 3825-NFPA 70-2017 [Section No. 517.31(D)]

(D) Capacity of Systems.

The essential electrical system shall have the capacity and rating to meet the maximum actual demand likely to be produced by the connected load.

Feeders shall be sized in accordance with 215.2 and Part III of Article 220. The ~~generator set(s)~~ alternate source shall have the capacity and rating to meet the demand produced by the load at any given time.

Demand calculations for sizing of the generator set(s) shall be based on any of the following:

(1) Prudent demand factors and historical data

(2) Connected load

(3) Feeder calculation procedures described in Article 220

(4) Any combination of the above

The sizing requirements in 700.4 and 701.4 shall not apply to hospital generator set(s).

Statement of Problem and Substantiation for Public Input

As the Chair of NFPA 99 Electrical Systems Committee (HEA-ELS), I am submitting this proposal to improve the correlation between NFPA 99 and NFPA 70. The substantiation of this proposal is as follows: 517.30 Allows multiple alternate sources [517.30(B)(1) Generators and 517.30(B)(2) Fuel Cell Systems]. This section "(D) Capacity of Systems" as it relates to the "517.31 Requirements of the Essential Electrical System" outlined in 517.31 should apply to all alternate sources outlined in 517.30.

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Public Input No. 1316-NFPA 70-2017 [Section No. 517.31(G)]

(G) – Selective Coordination.

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~~ selectively coordinated with all supply-side overcurrent protective devices.

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

Exception No. 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.

Exception No. 2: Between overcurrent protective devices of the same size (ampere rating) in series.

~~Informational Note: The terms *coordination* and *coordinated* as used in this section do not cover the full range of overcurrent conditions.~~

Statement of Problem and Substantiation for Public Input

Article 700 and 701 apply to all other "non-health care" type building occupancies. Articles 700 and 701 require the "Emergency" and "Legally Required Standby" systems be fully coordinated for all times and currents, NEC 700.32, 701.27, and Article 100 – "Coordination, Selective". The people in facilities covered by Articles 700 and 701 are typically able to exit the building under their own power. Yet in a Health Care facility, where it is common that we have people potentially unable to exit the building under their own power, we have relaxed the rules for the Essential systems by allowing the Life Safety Branch, Critical Branch, and Equipment System to be coordinated for all times longer than 0.1 seconds instead of for all times. This change would bring the requirements in article 517 in harmony with the same Selective Coordination requirements of other National Electrical Code sections that are applicable to other occupancies.

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Public Input No. 3123-NFPA 70-2017 [Section No. 517.34(A)]

(A) – **Fixed Equipment,** Task Illumination and Selected Receptacles.

The critical branch of the essential electrical system shall supply power for task illumination, fixed equipment, selected receptacles, and special power circuits serving the following areas and functions related to patient care:

(1) Critical care (Category 1) spaces that utilize anesthetizing gases, task illumination, selected receptacles, and fixed equipment

(2) The isolated power systems in special environments

(3) Patient care spaces, task illumination, and selected receptacles in the following:

(4) Infant nurseries

(5) Medication preparation areas

(6) Pharmacy dispensing areas

(7) Selected acute nursing areas

(8) Psychiatric bed areas (omit receptacles)

(9) Ward treatment rooms

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

(11) Additional specialized patient care task illumination and receptacles, where needed

(12) Nurse call systems

(13) Blood, bone, and tissue banks

(14) Telephone and data equipment rooms and closets

(15) Task illumination, selected receptacles, and selected power circuits for the following:

(16) General care (Category 2) beds (at least one duplex receptacle in each patient bedroom)

(17) Angiographic labs

(18) Cardiac catheterization labs

(19) Coronary care units

(20) Hemodialysis rooms or areas

(21) Emergency room treatment areas (selected)

(22) Human physiology labs

(23) Intensive care units

(24) Postoperative recovery rooms (selected)

(25) Additional task illumination, receptacles, and selected power circuits needed for effective facility operation, including single-phase fractional horsepower motors, shall be permitted to be connected to the critical branch. [**99:**6.4.2.2.4.2(9)]

Statement of Problem and Substantiation for Public Input

The existing title to this section infers small loads with "Task Illumination and Selected Receptacles." when in fact this section also incorporates mush larger power equipment. This section is encapsulating many different pieces of OR procedural equipment that can have circuits sized at 480V, 3ph., 150A and more. Far more substantial power and load than would almost ever be considered when reading the current title. It is misleading not to include at least a reference

to this other, and much larger power requiring equipment in the title sentence, especially when there is no definition in the code for 'fixed equipment', which is a second issue.
It may be difficult to clearly define all that would fit under this term (fixed equipment) but even a 'ball park' effort to help those who are trying to understand terminology used in this code would be of far greater aid to get people headed in the correct direction when trying to understand this term than nothing.

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Public Input No. 3822-NFPA 70-2017 [Section No. 517.34(A)]

(A) Task Illumination and Selected Receptacles.

The critical branch of the essential electrical system shall supply power for task illumination, fixed equipment, selected receptacles, and special power circuits serving the following areas and functions related to patient care:

(1) Critical care (Category 1) spaces that utilize anesthetizing gases, task illumination, selected receptacles, and fixed equipment

(2) The isolated power systems in special environments

(3) Patient care spaces, task illumination, and selected receptacles in the following:

(4) Infant nurseries

(5) Medication preparation areas

(6) Pharmacy dispensing areas

(7) Selected acute nursing areas

(8) Psychiatric bed areas (omit receptacles)

(9) Ward treatment rooms

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

(11) Additional specialized patient care task illumination and receptacles, where needed

(12) Nurse call systems

(13) Blood, bone, and tissue banks

(14) Telephone and data equipment rooms and closets

(15) Clinical IT-network equipment

(16) Wireless phone and paging equipment for clinical staff comminications

(17) Task illumination, selected receptacles, and selected power circuits for the following:

(18) General care (Category 2) beds (at least one duplex receptacle in each patient bedroom)

(19) Angiographic labs

(20) Cardiac catheterization labs

(21) Coronary care units

(22) Hemodialysis rooms or areas

(23) Emergency room treatment areas (selected)

(24) Human physiology labs

(25) Intensive care units

(26) Postoperative recovery rooms (selected)

(27) Additional task illumination, receptacles, and selected power circuits needed for effective facility operation, including single-phase fractional horsepower motors, shall be permitted to be connected to the critical branch. [**99:**6.4.2.2.4.2(9)]

Statement of Problem and Substantiation for Public Input

As the Chair of NFPA 99 Electrical Systems Committee (HEA-ELS), I am submitting this proposal to improve the

correlation between NFPA 99 and NFPA 70. The substantiation of this proposal is as follows: This update will align 517.34 with these systems now addressed in Chapter 7 of NFPA 99 and permitted by Chapter 6 of NFPA 99 to be included on the critical branch.

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Public Input No. 2321-NFPA 70-2017 [Section No. 517.35(C)]

~~**(C)** AC Equipment for Nondelayed Automatic Connection.~~

~~Generator accessories, including but not limited to, the transfer fuel pump, electrically operated louvers, and other generator accessories essential for generator operation shall be arranged for automatic connection to the alternate power source. [**99:** 6.5.2.2.3.2]~~

Statement of Problem and Substantiation for Public Input

This requirement should be removed from 517.35(C) for two reasons:
- The extracted material contained in this rule is extracted from NFPA 99. NFPA 99 section 6.5 speaks to Type 2 EES, 517.35 speaks to Type 1 EES.
- The current language is in conflict with section 517.33(F), which directs that generator accessories and other like equipment shall be placed on the Life Safety Branch of the Essential Electrical System, rather than the Equipment Branch of the EES as directed in 517.35(C).

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Public Input No. 3658-NFPA 70-2017 [Section No. 517.42(B)]

(B) Transfer Switches.

The number of transfer switches to be used shall be based on reliability, design, and load considerations. [**99:**6.5.2.2.1.4]

(1) Each branch of the essential electrical system shall have one or more transfer switches. [**99:**6.5.2.2.1.4(A)]

(2) ~~One transfer switch shall be permitted to serve one or more branches or systems in a facility with a continuous load on the switch of 150 kVA (120 kW) or less. [**99:** 6.5.2.2.1.4(B)]~~

(3)

Informational Note No. 1: See NFPA 99-2015, *Health Care Facilities Code*, 6.5.3.2, Transfer Switch Operation Type II; 6.4.2.1.5, Automatic Transfer Switch Features; and 6.4.2.1.7, Nonautomatic Transfer Device Features.

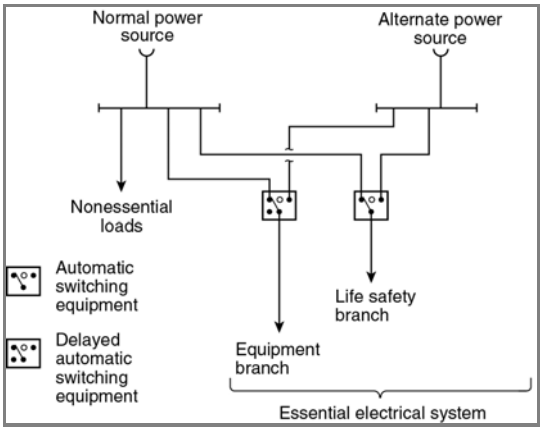
Informational Note No. 2: See Informational Note Figure 517.42(a).

~~Informational Note No. 3: See Informational Note Figure 517.42(b) .~~

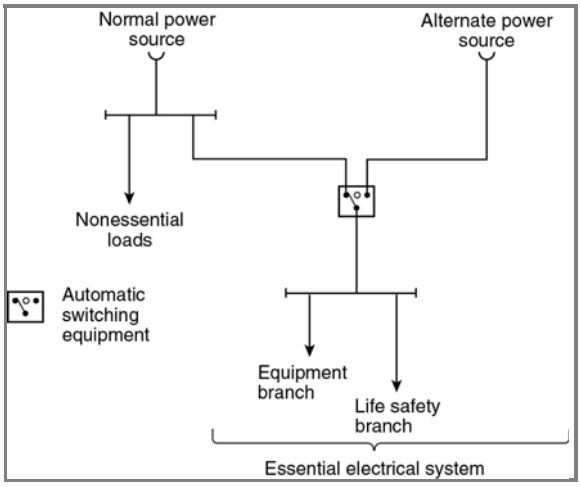
Figure Informational Note Figure 517.42(a) Nursing Home and Limited Health Care Facilities — Minimum Requirement

~~(greater than 150 kVA)~~

for Transfer Switch Arrangement.



~~**Figure Informational Note Figure 517.42(b) Nursing Home and Limited Health Care Facilities — Minimum Requirement (150 kVA or less) for Transfer Switch Arrangement.**~~



Statement of Problem and Substantiation for Public Input

NEC 700.10(B)(5) requires all "Emergency", "Legally Required Standby", and "Optional Standby" loads be segregated

from each other. The people in facilities covered by Articles 700 are typically able to exit the building under their own power. Yet in a Health Care facility, where it is common that we have people potentially unable to exit the building under their own power, we are relaxing the requirements related to the segregation of loads when the load on the Essential Electrical System is less than 150 kVA. This change would bring the requirements in article 517 in harmony with the same requirements of NEC 700.10(B)(5) for all conditions.

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Public Input No. 2919-NFPA 70-2017 [New Section after 517.43]

New Subseciton (I)

(I) AC Equipment for Automatic Connection. Generator accessories, including but not limited to, transfer fuel pump, electrically operated louvers, and other generator accessories critical essential for generator operation shall be arranged for automatic conneciton to the alternate power source. (**99** :6.5.2.2.3.2)

Statement of Problem and Substantiation for Public Input

This public input aligns 517.43 with the performance requirements of NFPA 99 6.5.2.2.3.2.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 2321-NFPA 70-2017 [Section No. 517.35(C)]	Sister Propsal

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Public Input No. 1740-NFPA 70-2017 [Section No. 517.44(B)]

(B) Delayed Automatic or Manual Connection to the Equipment Branch.

The following equipment shall be permitted to be connected to ~~the critical equipment~~ the equipment branch and shall be arranged for either delayed automatic or manual connection to the alternate power source:

(1) Heating equipment to provide heating for patient rooms.

Exception: Heating of general patient rooms during disruption of the normal source shall not be required under any of the following conditions:

(1) The outside design temperature is higher than -6.7°C (20°F).

(2) The outside design temperature is lower than -6.7°C (20°F) and where a selected room(s) is provided for the needs of all confined patients, only such room(s) need be heated.

(3) The facility is served by a dual source of normal power as described in 517.41(C), Informational Note.

Informational Note: The outside design temperature is based on the 97.5 percent design values, as shown in Chapter 24 of the ASHRAE Handbook of Fundamentals(2013).

(4) Elevator service — in instances where disruption 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. For elevator cab lighting, control, and signal system requirements, see 517.43(G).

(5) Additional illumination, receptacles, and equipment shall be permitted to be connected only to the critical branch.

[**99:**6.5.2.2.3.4(A), (B), and (C)]

Statement of Problem and Substantiation for Public Input

The term "critical equipment branch" is not found in Article 517. This may have been a typographical error due to the re-arrangement of this section in the 2017 edition. If it is intended that this section refer to equipment connected to the equipment branch, the work "critical" should be deleted.

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Public Input No. 1314-NFPA 70-2017 [Section No. 517.45(D)]

(D) General Care (Category 2) ~~Patent~~ Patient Care Spaces.

Where general care (Category 2) ~~patent~~ patient care spaces are present, the essential electrical distribution system shall be as described in 517.40 through 517.45.

Statement of Problem and Substantiation for Public Input

"Patient" was mispelled as 'Patent"

Submitter Information Verification

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Public Input No. 1053-NFPA 70-2017 [Section No. 517.61(B)(5)]

(5) Receptacles and Attachment Plugs.

Receptacles and attachment plugs located above hazardous (classified) anesthetizing locations shall be listed ~~for hospital use for~~ "Hospital Grade" for services of prescribed voltage, frequency, rating, and number of conductors with provision for the connection of the grounding conductor. This requirement shall apply to attachment plugs and receptacles of the 2-pole, 3-wire grounding type for single-phase, 120-volt, nominal, ac service.

Statement of Problem and Substantiation for Public Input

The current text in this section is the only place in the document that reads "listed for hospital use". All other sections that have the same requirement reads listed "hospital grade". The proposed revised text would provide consistency and clarity rather than a change in the requirement. Please refer to 517.18 (B); 517.19 (B) (2); 517.61 (C) (2).

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Public Input No. 2405-NFPA 70-2017 [Section No. 517.61(B)(5)]

(5) Receptacles and Attachment Plugs.

Receptacles and attachment plugs located above hazardous (classified) anesthetizing locations shall be listed for hospital use for services of prescribed voltage, frequency, rating, and number of conductors with provision for the connection of the equipment grounding conductor. This requirement shall apply to attachment plugs and receptacles of the 2-pole, 3-wire grounding type for single-phase, 120-volt, nominal, ac service.

Statement of Problem and Substantiation for Public Input

Grounding and bonding still continues to be one of the most misunderstood and misapplied sections of the NEC. Most of the problems can be traced back to using undefined terminology (trade slang in many cases) or incorrect terminology. The term “grounding conductor” is one that is no longer defined. As part of a Correlating Committee Task Force activity on grounding and bonding in general, this term and its related definition was removed from the NEC during the 2008 NEC cycle. The term had been found to be misapplied in a number of instances and the definition of “grounding conductor” was determined to be very close to the definition of “grounding electrode conductor” yet, many uses of the term in previous editions of the NEC were found to be more correctly to be either “equipment grounding conductor”, “grounding electrode conductor” or one of the several types of “bonding jumper”.

The revised text uses terms defined in the Code and is consistent with the context of the meaning of the section where the revisions are made. The revisions are made to provide clarity, and consistency in terminology usage.

It is requested the Correlating Committee consider a policy or procedures that require a review when a term under the responsibility of a specific Code panel is used by another Code panel. The panel responsible for the term is to review the application to ensure correct usage. It is further requested that when new terms are created that would be identified as under the responsibility of another Code panel that the new term and application be reviewed by the Code panel that would have responsibility for use and application.

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Public Input No. 2406-NFPA 70-2017 [Section No. 517.61(C)(2)]

(2) Receptacles and Attachment Plugs.

Receptacles and attachment plugs installed and used in other-than-hazardous (classified) locations shall be listed “hospital grade” for services of prescribed voltage, frequency, rating, and number of conductors with provision for connection of the equipment grounding conductor. This requirement shall apply to 2-pole, 3-wire grounding type for single-phase, 120-, 208-, or 240-volt, nominal, ac service.

Statement of Problem and Substantiation for Public Input

Grounding and bonding still continues to be one of the most misunderstood and misapplied sections of the NEC. Most of the problems can be traced back to using undefined terminology (trade slang in many cases) or incorrect terminology. The term “grounding conductor” is one that is no longer defined. As part of a Correlating Committee Task Force activity on grounding and bonding in general, this term and its related definition was removed from the NEC during the 2008 NEC cycle. The term had been found to be misapplied in a number of instances and the definition of “grounding conductor” was determined to be very close to the definition of “grounding electrode conductor” yet, many uses of the term in previous editions of the NEC were found to be more correctly to be either “equipment grounding conductor”, “grounding electrode conductor” or one of the several types of “bonding jumper”.

The revised text uses terms defined in the Code and is consistent with the context of the meaning of the section where the revisions are made. The revisions are made to provide clarity, and consistency in terminology usage.

It is requested the Correlating Committee consider a policy or procedures that require a review when a term under the responsibility of a specific Code panel is used by another Code panel. The panel responsible for the term is to review the application to ensure correct usage. It is further requested that when new terms are created that would be identified as under the responsibility of another Code panel that the new term and application be reviewed by the Code panel that would have responsibility for use and application.

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Public Input No. 2404-NFPA 70-2017 [Sections 517.61(A)(5), 517.61(A)(6)]

Sections 517.61(A)(5), 517.61(A)(6)

(5) Receptacles and Attachment Plugs.

Receptacles and attachment plugs in a hazardous (classified) location(s) shall be listed for use in Class I, Group C hazardous (classified) locations and shall have provision for the connection of ~~a~~ an equipment grounding conductor.

(6) Flexible Cord Type.

Flexible cords used in hazardous (classified) locations for connection to portable utilization equipment, including lamps operating at more than 8 volts between conductors, shall be of a type approved for extra-hard usage in accordance with Table 400.4 and shall include an additional equipment grounding conductor ~~for grounding~~ .

Statement of Problem and Substantiation for Public Input

Grounding and bonding still continues to be one of the most misunderstood and misapplied sections of the NEC. Most of the problems can be traced back to using undefined terminology (trade slang in many cases) or incorrect terminology. The term “grounding conductor” is one that is no longer defined. As part of a Correlating Committee Task Force activity on grounding and bonding in general, this term and its related definition was removed from the NEC during the 2008 NEC cycle. The term had been found to be misapplied in a number of instances and the definition of “grounding conductor” was determined to be very close to the definition of “grounding electrode conductor” yet, many uses of the term in previous editions of the NEC were found to be more correctly to be either “equipment grounding conductor”, “grounding electrode conductor” or one of the several types of “bonding jumper”.

The revised text uses terms defined in the Code and is consistent with the context of the meaning of the section where the revisions are made. The revisions are made to provide clarity, and consistency in terminology usage.

It is requested the Correlating Committee consider a policy or procedures that require a review when a term under the responsibility of a specific Code panel is used by another Code panel. The panel responsible for the term is to review the application to ensure correct usage. It is further requested that when new terms are created that would be identified as under the responsibility of another Code panel that the new term and application be reviewed by the Code panel that would have responsibility for use and application.

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Public Input No. 3099-NFPA 70-2017 [Section No. 518.4(A)]

(A) General.

The fixed wiring methods shall be metal raceways, flexible metal raceways, nonmetallic raceways encased in not less than 50 mm (2 in.) of concrete, Type MI, MC, or AC cable. The wiring method shall itself qualify as an equipment grounding conductor according to 250.118 or shall contain an ~~insulated~~ equipment grounding conductor sized in accordance with Table 250.122.

Exception: Fixed wiring methods shall be as provided in

(a) Audio signal processing, amplification, and reproduction equipment — Article 640

(b) Communications ~~circuits~~ systems — ~~Article~~ ~~800~~ Chapter 8

(c) Class 2 and Class 3 remote-control and signaling circuits — Article 725

(d) Fire alarm circuits — Article 760

Statement of Problem and Substantiation for Public Input

Many feeder size MC cables use a bare equipment grounding conductor, and there is no technical reason that an insulated equipment grounding conductor would be required within a cable assembly.

There are communications systems requirements contained in other articles within Chapter 8.

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Public Input No. 1892-NFPA 70-2017 [Section No. 518.4(B)]

(B) Nonrated Construction.

In addition to the wiring methods of 518.4(A), nonmetallic-sheathed cable, ~~Type AC cable,~~ electrical nonmetallic tubing, and rigid nonmetallic conduit shall be permitted to be installed in those buildings or portions thereof that are not required to be of fire-rated construction by the applicable building code.

Informational Note: Fire-rated construction is the fire-resistive classification used in building codes.

Statement of Problem and Substantiation for Public Input

Type AC is already permitted in 518.4(A) and there is no need to list it in 518.4(B) as a wiring method that is permitted in addition to the wiring methods permitted in (A).

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Public Input No. 3101-NFPA 70-2017 [Section No. 518.4(B)]

(B) Nonrated Construction.

In addition to the wiring methods of 518.4(A), nonmetallic-sheathed cable, ~~Type AC~~ service-entrance cable, tray cable, electrical nonmetallic tubing, and rigid nonmetallic conduit shall be permitted to be installed in those buildings or portions thereof that are not required to be of fire-rated construction by the applicable building code.

Informational Note: Fire-rated construction is the fire-resistive classification used in building codes.

Statement of Problem and Substantiation for Public Input

Type AC cable is already included in 518.4(A), so there is no need to repeat it in (B). Service-entrance cable and tray cable both have nonmetallic coverings similar to nonmetallic sheathed cable and would be similarly acceptable in nonrated constructions.

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Public Input No. 3102-NFPA 70-2017 [Section No. 518.4(C)]

(C) Spaces with Finish Rating.

Electrical nonmetallic tubing ~~and~~ , rigid nonmetallic conduit, nonmetallic sheathed cable, service-entrance cable, and tray cable shall be permitted to be installed in club rooms, conference and meeting rooms in hotels or motels, courtrooms, dining facilities, restaurants, mortuary chapels, museums, libraries, and places of religious worship where the following apply:

(1) The ~~electrical nonmetallic tubing or rigid nonmetallic conduit~~ wiring method is installed concealed within walls, floors, and ceilings where the walls, floors, and ceilings provide a thermal barrier of material that has at least a 15-minute finish rating as identified in listings of fire-rated assemblies.

(2) The ~~electrical nonmetallic tubing or rigid nonmetallic conduit~~ wiring method is installed above suspended ceilings where the suspended ceilings provide a thermal barrier of material that has at least a 15-minute finish rating as identified in listings of fire-rated assemblies.

Electrical nonmetallic tubing and rigid nonmetallic conduit are not recognized for use in other space used for environmental air in accordance with 300.22(C).

Informational Note: A finish rating is established for assemblies containing combustible (wood) supports. The finish rating is defined as the time at which the wood stud or wood joist reaches an average temperature rise of 121°C (250°F) or an individual temperature rise of 163°C (325°F) as measured on the plane of the wood nearest the fire. A finish rating is not intended to represent a rating for a membrane ceiling.

Statement of Problem and Substantiation for Public Input

Nonmetallic cable wiring methods should be allowed in these spaces along with the permitted nonmetallic conduit/tubing methods. Nonmetallic-sheathed cable is permitted in structures of Type III, IV, or V construction when concealed within walls, floors or ceilings that provide at least a 15-minute finish rating per 334.10(3).

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Public Input No. 3164-NFPA 70-2017 [New Section after 518.5]

Illumination.

Illumination shall be provided for all working spaces about service equipment, switchboards, switchgear, panelboards, or motor control centers that serve assembly occupancies. Control by automatic means only shall not be permitted. Additional lighting outlets shall not be required where the workspace is illuminated by an adjacent light source.

Statement of Problem and Substantiation for Public Input

The Scope of Assembly Occupancies is provided in Section 518.1, and Examples of General Classifications are provided in Section 518.2.
These are locations designed or intended for the gathering together of 100 or more persons for such purposes as deliberation, worship, entertainment, eating, drinking, amusement, awaiting transportation, or similar purposes.
Service equipment, etc., is not required by Code to be installed outdoors. This equipment is often installed indoors, and kept under lock and key to minimize public access.
However, when the service equipment, switchboards, switchgear, panelboards, or motor control centers are installed outdoors, and large groups of persons may be affected, illumination of the disconnecting means to make it quickly visible for maintenance personnel for access, locate, and operate is a reasonable, low-impact requirement that makes sense. For example - an electrician or maintenance person may need to locate and open a disconnect switch at night or early morning to protect people's safety - to shut off power to a person being electrocuted - is a good reason for maintenance personnel to not be in the dark, and require the light. at present, there is no requirement.
Parking lot or other adjacent lighting that is already in place can be accepted by the AHJ where he or she believes that the purpose of the Code is being met.
Providing this illumination will contribute to better safety.

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Public Input No. 1902-NFPA 70-2017 [Section No. 520.2]

520.2 Definitions. The definitions in this section shall apply only within this article.

Adapter.

A device used to adapt a circuit from one configuration of an attachment plug or receptacle to another configuration with the same current rating.

Border Light.

A permanently installed overhead strip light.

Breakout Assembly.

An adapter used to connect a multipole connector containing two or more branch circuits to multiple individual branch-circuit connectors.

Bundled.

Cables or conductors that are tied, wrapped, taped, or otherwise periodically bound together.

Connector Strip.

A metal wireway containing pendant or flush receptacles.

Drop Box.

A box containing pendant- or flush-mounted receptacles attached to a multiconductor cable via strain relief or a multipole connector.

Footlight.

A border light installed on or in the stage.

Grouped.

Cables or conductors positioned adjacent to one another but not in continuous contact with each other.

Performance Area.

The stage and audience seating area associated with a temporary stage structure, whether indoors or outdoors, constructed of scaffolding, truss, platforms, or similar devices, that is used for the presentation of theatrical or musical productions or for public presentations.

Portable Equipment.

Equipment fed with portable cords or cables intended to be moved from one place to another.

Portable Power Distribution Unit.

A power distribution box containing receptacles and overcurrent devices.

Proscenium.

The wall and arch that separates the stage from the auditorium (house).

Solid-State Phase-Control Dimmer.

A solid-state dimmer where the wave shape of the steady-state current does not follow the wave shape of the applied voltage, such that the wave shape is nonlinear.

Solid-State Sine Wave Dimmer.

A solid-state dimmer where the wave shape of the steady-state current follows the wave shape of the applied voltage such that the wave shape is linear.

Stage Equipment.

Equipment at any location on the premises integral to the stage production including, but not limited to, equipment for lighting, audio, special effects, rigging, motion control, projection, or video.

Stage Lighting Hoist.

A motorized lifting device that contains a mounting position for one or more luminaires, with wiring devices for connection of luminaires to branch circuits, and integral flexible cables to allow the luminaires to travel over the lifting range of the hoist while energized.

Stage Switchboard.

A permanently installed switchboard, panelboard, or rack containing dimmers or relays with associated overcurrent protective devices, or overcurrent protective devices alone, used primarily to feed stage equipment.

Stage Switchboard, Portable.

A portable rack or pack containing dimmers or relays with associated overcurrent protective devices, or overcurrent protective devices alone that are used to feed stage equipment.

Stand Lamp (Work Light).

A portable stand that contains a general-purpose luminaire or lampholder with guard for the purpose of providing general illumination on the stage or in the auditorium.

Strip Light.

A luminaire with multiple lamps arranged in a row.

Two-Fer.

An assembly containing one male plug and two female cord connectors used to connect two loads to one branch circuit.

Statement of Problem and Substantiation for Public Input

This public input is submitted on behalf of task group appointed by the NEC Correlating Committee. This task group was appointed to identify potential issues in the NEC with respect to how definitions in both Article 100 and the XXX.2 sections of this Code apply. The member of the task group are: David Hittinger, Rich Holub, Chris Hunter, Dave Williams, Chris Porter, Alan Manche, Ken Boyce, John Kovacik, Donny Cook, Dave Kendall and Jim Dollard.

Section 2.2.2.1 of the NEC Style Manual requires that in general definitions that appear in two or more articles be located in Article 100. Section 2.2.2.2 requires that where an individual article contains definition(s), they be located in the second section (XXX.2) of the article. It is extremely important to note that the style manual does not prohibit a definition in the second section of an article from applying elsewhere in the NEC. The style manual clearly states that in general definitions that appear in two or more articles shall be located in Article 100. This has confused many code users in the past. This style manual requirement is accurate and these public inputs are simply an attempt to provide needed clarity. See the example below:

344.2 Definition.
Rigid Metal Conduit (RMC). A threadable raceway of circular cross section designed for the physical protection and routing of conductors and cables and for use as an equipment grounding conductor when installed with its integral or associated coupling and appropriate fittings.

The definition of the term “rigid metal conduit” is appropriately located in the article that contains general, installation and construction specifications for this raceway. It is commonly understood that the term “rigid metal conduit” is used in more than one article. There are many articles that contain a single definition that is necessary for application of the contained requirements but will apply elsewhere in the NEC. This occurs in articles that address cable assemblies, raceways, systems and more.
This public input seeks to delete the last sentence in the first paragraph, as it is unnecessary. A new sentence is proposed to simply inform the user of the code that definitions are also found in the second section (XXX.2) of other articles.
This public input is supplemented with proposed revisions to the second section (XXX.2) of articles that contain definitions. New parent text is proposed for these sections to increase clarity and usability. There are two different scenarios that will be addressed. First, any second section (XXX.2) that contains definitions that apply only within that article will contain parent text as follows:

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Second, any second section (XXX.2) that contains definitions that apply within the individual article and throughout the code will contain parent text as follows:

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In a few cases, in the second section (XXX.2) of an Article there are definitions that will apply only in that Article and some that will apply in that Article and throughout the code. New parent text and first level subdivisions are proposed to achieve clarity and usability The combination of these proposed revisions will provide necessary clarity and usability with respect to application of definitions. These actions will also achieve compliance with the NEC Style Manual

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1202-NFPA 70-2017 [Article 100 [Excluding any Sub-Sections]]	

Submitter Information Verification

Submitter Full Name: James Dollard
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Submittal Date: Tue Aug 08 12:39:16 EDT 2017

Public Input No. 1479-NFPA 70-2017 [Section No. 520.25(B)]

~~**(B)** Resistance- or Reactor-Type Dimmers.~~

~~Resistance- or series reactor-type dimmers shall be permitted to be placed in either the grounded or the ungrounded conductor of the circuit. Where designed to open either the supply circuit to the dimmer or the circuit controlled by it, the dimmer shall then comply with 404.2(B) . Resistance- or reactor-type dimmers placed in the grounded neutral conductor of the circuit shall not open the circuit.~~

Statement of Problem and Substantiation for Public Input

Resistance and reactor type dimmers for theatrical use have not been manufactured or installed for at least 50 years. It is now time to delete this obsolete section of the Code.

Submitter Information Verification

Submitter Full Name: Steven Terry
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Submittal Date: Mon Jul 31 20:18:42 EDT 2017

Public Input No. 2013-NFPA 70-2017 [Section No. 520.44(C)(3)]

(3) Identification of Conductors in Multiconductor Extra-Hard-Usage Cords and Cables.

Grounded ~~(neutral)~~ conductors shall be white without stripe or shall be identified by a distinctive white marking at their terminations. ~~Grounding~~ Equipment grounding conductors shall be green with or without yellow stripe or shall be identified by a distinctive green marking at their terminations.

Table 520.44(C)(3) Ampacity of Listed Extra-Hard-Usage Cords and Cables with Temperature Ratings of 75°C (167°F) and 90°C (194°F)* [Based on Ambient Temperature of 30°C (86°F)]

Size (AWG)	Temperature Rating of Cords and Cables		Maximum Rating of Overcurrent Device
	75°C (167°F)	90°C (194°F)	
14	24	28	15
12	32	35	20
10	41	47	25
8	57	65	35
6	77	87	45
4	101	114	60
2	133	152	80

*Ampacity shown is the ampacity for multiconductor cords and cables where only three copper conductors are current-carrying as described in 400.5. If the number of current-carrying conductors in a cord or cable exceeds three and the load diversity is 50 percent or less, the ampacity of each conductor shall be reduced as shown in the following table:

Table 520.44(C)(3)(a) Ampacity Adjustment Factors for More Than Three Current-Carrying Conductors in a Cord or Cable Where Load Diversity Is 50% or Less

Number of Conductors	Percent of Ampacity Value in Table 520.44(C)(3)
4–6	80
7–24	70
25–42	60
43 and above	50

Note: Ultimate insulation temperature. In no case shall conductors be associated together in such a way with respect to the kind of circuit, the wiring method used, or the number of conductors such that the temperature limit of the conductors is exceeded.

A neutral conductor that carries only the unbalanced current from other conductors of the same circuit need not be considered as a current-carrying conductor.

In a 3-wire circuit consisting of two-phase conductors and the neutral conductor of a 4-wire, 3-phase, wye-connected system, the neutral conductor carries approximately the same current as the line-to-neutral currents of the other conductors and shall be considered to be a current-carrying conductor.

On a 4-wire, 3-phase wye circuit where the major portion of the load consists of nonlinear loads, there are harmonic currents in the neutral conductor. Therefore, the neutral conductor shall be considered to be a current-carrying conductor.

> Informational Note: For the purposes of Table 520.44(C)(3)(a), load diversity is the percentage of the total current of all simultaneously energized circuits fed by the cable to the sum of the ampacity ratings of all circuits in that cable.

Statement of Problem and Substantiation for Public Input

Add 'equipment' so that it reads EGC; and delete "(neutral)" since it is redundant with grounded.

Submitter Information Verification

Submitter Full Name: Mike Holt
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Submittal Date: Wed Aug 09 14:30:50 EDT 2017

Public Input No. 2142-NFPA 70-2017 [Section No. 520.44(C)(3)]

(3) Identification of Conductors in Multiconductor Extra-Hard-Usage Cords and Cables.

Grounded (neutral) conductors shall be white without stripe or shall be identified by a distinctive white marking at their terminations. Grounding conductors shall be green with or without yellow stripe or shall be identified by a distinctive green marking at their terminations.

Table 520.44(C)(3) Ampacity of Listed Extra-Hard-Usage Cords and Cables with Temperature Ratings of 75°C (167°F) and 90°C (194°F)* [Based on Ambient Temperature of 30°C (86°F)]

Size (AWG)	Temperature Rating of Cords and Cables		Maximum Rating of Overcurrent Device
	75°C (167°F)	90°C (194°F)	
14	24	28	15
12	32	35	20
10	41	47	25
8	57	65	35
6	77	87	45
4	101	114	60
2	133	152	80

*Ampacity shown is the ampacity for multiconductor cords and cables where only three copper conductors are current-carrying as described in 400.5. If the number of current-carrying conductors in a cord or cable exceeds three and the load diversity is 50 percent or less, the ampacity of each conductor shall be reduced as shown in the following table:

Table 520.44(C)(3)(a) Ampacity Adjustment Factors for More Than Three Current-Carrying Conductors in a Cord or Cable Where Load Diversity Is 50% or Less

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On a 4-wire, 3-phase wye circuit where the major portion of the load consists of nonlinear loads, there are harmonic currents in the neutral conductor. Therefore, the neutral conductor shall be considered to be a current-carrying conductor.

> Informational Note: For the purposes of Table 520.44(C)(3)(a), load diversity is the percentage of the total current of all simultaneously energized circuits fed by the cable to the sum of the ampacity ~~ratings~~ of all circuits in that cable.

Statement of Problem and Substantiation for Public Input

This public input is the work of an Ampacity Task Group. The task group consisted of the following members: Thomas Domitrovich, Dave Mercier, Christine Porter, Derrick Atkins, and Christel Hunter.

The Task Group identified the use of the word rated to describe ampacity is not appropriate when addressing the ampacity of a conductor. The use of the term "rating" generally applies to equipment where as ampacity applies to conductors.

Ampacity of a conductor is defined as part of Article 100 as "The maximum current, in amperes, that a conductor can carry continuously under the conditions of use without exceeding its temperature rating." Tables 310.15(B)(16) through (21) establish the ampacity of conductors under specified conditions of use.

Submitter Information Verification

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Submittal Date: Fri Aug 11 15:36:03 EDT 2017

Public Input No. 1478-NFPA 70-2017 [New Section after 520.68(A)(1)]

(2) Protected Applications.

Listed, hard usage (junior hard service) cord shall be permitted where all of the following conditions are met:

(1) The cord is protected from physical damage by attachment over its entire length to a pipe, tower, truss, scaffold, or other substantial support structure, or installed in a location that inherently prevents physical damage to the cord.

(2) The cord is connected to a branch circuit protected by an overcurrent protective device rated at not over 20 amperes.

(3) The cord is not over 30m (100') in length.

Statement of Problem and Substantiation for Public Input

Since the 1999 edition of the NEC, listed hard usage cord has been allowed in limited applications in article 520 occupancies:

1. Breakout assembles not over 20' in length, per 520.68(A)(5)
2. Adapters and two-fers not over 2m in length per 520.69(C)
3. Stand lamp supply cords per 520.68(A)(2).

The intervening period of use between 1999 and 2017 (18 years) has proven that hard usage cord performs safely in limited applications where not subject to physical damage. Based on this track record, there is no longer a reason to require extra-hard usage cord in such protected applications. While extra-hard usage cord still has a valid application in theatres where it is subject to damage from rolling or flying scenery, the additional weight, larger diameter, and lower flexibility of extra-hard usage cord provides no material safety advantage in the protected applications of this proposal, which represent a large portion of portable cable applications in article 520 occupancies.

Submitter Information Verification

Submitter Full Name: Steven Terry
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Submittal Date: Mon Jul 31 20:07:08 EDT 2017

Public Input No. 3649-NFPA 70-2017 [Section No. 520.74]

520.74 Pilot Lights Required.

Each switch required in 520.73 shall be provided with a pilot light located outside of and adjacent to the door of the room being controlled to indicate when the circuit is energized. Each pilot light shall be permanently identified indicating a description of the circuit controlled. Pilot lights shall be neon, LED, or other extended-life lamp. Pilot lights shall be recessed or provided with a mechanical guard.

520.75 Receptacles.

15 and 20-ampere 125-volt single phase receptacles installed as a permanent installation and located adjacent to the mirrors or makeup counters installed in dressing or makeup rooms shall be required to be arc-fault-cicuit-interrupter protected.

Statement of Problem and Substantiation for Public Input

I strongly support electrical safety, but am concerned with the vigorous expansion of AFCI and GFCI requirements in the Code. However, theaters or motion picture studios are a location where AFCI protection - in a limited application - would make sense.
Where 15 and 20-ampere 125-volt receptacles are permanently installed in a theatre dressing rooms, considering that curling irons and other heating appliances are used there, and personnel are often in a hurry to change from costume to costume, is an appropriate place to add a requirement for AFCI protection of personnel and property.

Submitter Information Verification

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Submittal Date: Wed Sep 06 16:05:29 EDT 2017

Public Input No. 2015-NFPA 70-2017 [Sections Part VII., 520.81]

Sections Part VII., 520.81

Part VII. Equipment Grounding Conductor

520.81 Equipment Grounding Conductor .

All metal raceways and metal-sheathed cables shall be connected to an equipment grounding conductor. The metal frames and enclosures of all equipment, including border lights and portable luminaires, shall be connected to an equipment grounding conductor.

Statement of Problem and Substantiation for Public Input

Change title to reflect the rule.

Submitter Information Verification

Submitter Full Name: Mike Holt
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Submittal Date: Wed Aug 09 14:34:20 EDT 2017

Public Input No. 1903-NFPA 70-2017 [Section No. 522.2]

522.2 Definitions. The definitions in this section shall apply only within this article.

Entertainment Device.

A mechanical or electromechanical device that provides an entertainment experience.

Informational Note: These devices may include animated props, show action equipment, animated figures, and special effects, coordinated with audio and lighting to provide an entertainment experience.

Permanent Amusement Attraction.

Ride devices, entertainment devices, or combination thereof, that are installed so that portability or relocation is impracticable.

Ride Device.

A device or combination of devices that carry, convey, or direct a person(s) over or through a fixed or restricted course within a defined area for the primary purpose of amusement or entertainment.

Statement of Problem and Substantiation for Public Input

The only proposed revision is the following new parent text: "The definitions in this section shall apply only within this article."
Terraview chose to underline everything.

This public input is submitted on behalf of task group appointed by the NEC Correlating Committee. This task group was appointed to identify potential issues in the NEC with respect to how definitions in both Article 100 and the XXX.2 sections of this Code apply. The member of the task group are: David Hittinger, Rich Holub, Chris Hunter, Dave Williams, Chris Porter, Alan Manche, Ken Boyce, John Kovacik, Donny Cook, Dave Kendall and Jim Dollard.

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344.2 Definition.
Rigid Metal Conduit (RMC). A threadable raceway of circular cross section designed for the physical protection and routing of conductors and cables and for use as an equipment grounding conductor when installed with its integral or associated coupling and appropriate fittings.

The definition of the term “rigid metal conduit” is appropriately located in the article that contains general, installation and construction specifications for this raceway. It is commonly understood that the term “rigid metal conduit” is used in more than one article. There are many articles that contain a single definition that is necessary for application of the contained requirements but will apply elsewhere in the NEC. This occurs in articles that address cable assemblies, raceways, systems and more.
This public input seeks to delete the last sentence in the first paragraph, as it is unnecessary. A new sentence is proposed to simply inform the user of the code that definitions are also found in the second section (XXX.2) of other articles.
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Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1202-NFPA 70-2017 [Article 100 [Excluding any Sub-Sections]]	

Submitter Information Verification

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Submittal Date: Tue Aug 08 12:41:43 EDT 2017

Public Input No. 2143-NFPA 70-2017 [Section No. 522.22]

522.22 Conductor Ampacity.

Conductors sized 16 AWG and smaller shall not ~~exceed the continuous current~~ have an ampacity that exceeds the values provided in Table 522.22.

Table 522.22 Conductor Ampacity Based on Copper Conductors with 60°C and 75°C Insulation in an Ambient Temperature of 30°C

Conductor Size (AWG)	Ampacity 60°C	Ampacity 75°C
30	–	0.5
28	–	0.8
26	–	1
24	2	2
22	3	3
20	5	5
18	7	7
16	10	10

Notes:

1. For ambient temperatures other than 30°C, use Table 310.15(B)(2)(a) temperature correction factors.

2. Ampacity adjustment for conductors with 90°C or greater insulation shall be based on ampacities in the 75°C column.

Statement of Problem and Substantiation for Public Input

The proposed language changes to this section adds clarity to the requirement to help the user of the NEC understand that the ampacity of the the specified conductors must not exceed those given in the associated table.

Submitter Information Verification

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Submittal Date: Fri Aug 11 16:07:33 EDT 2017

Copyright Assignment

I, Thomas Domitrovich, hereby irrevocably grant and assign to the National Fire Protection Association (NFPA) all and full rights in copyright in this Public Input (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 Input in this or another similar or derivative form is used. I hereby warrant that I am the author of this Public Input and that I have full power and authority to enter into this copyright assignment.

☑ By checking this box I affirm that I am Thomas Domitrovich, 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 Input No. 4200-NFPA 70-2017 [Section No. 525.10]

525.10 Services.

Services shall comply with 525.10(A) and (B).

(A) Guarding.

Service equipment shall not be installed in a location that is accessible to unqualified persons, unless the equipment is lockable.

(B) Mounting and Location.

Service equipment shall be securely fastened to a solid backing and be installed so as to be protected from the weather, unless of weatherproof construction.

525.11 Illumination.

Illumination meeting the requirements of Section 700.12 shall be provided at all service equipment or trailer-mounted electrical power generators. The illumination shall be located to provide for ready access to disconnecting means and protection of personnel from burn hazards.

Statement of Problem and Substantiation for Public Input

Carnivals and traveling shows bring enjoyment to millions of people every year, but have some inherent hazards. Many carnivals operate at night.
Most power generators are diesel engines. Many I have seen as an AHJ have been installed inside an old semi-truck trailer where there is no lighting at all. The exhaust manifold on a diesel power generator can reach temperatures over 1100 degrees Fahrenheit. This represents a severe burn hazard to personnel.
Illumination with a battery-backed emergency light unit equipment accomplishes two important safety goals:
1. The requirement for some type of illumination at the large power locations helps to provide quick location and identification of the disconnecting means. In an emergency situation, where seconds count, it can mean the difference between life and death.
2. The requirement also helps to protect circus maintenance personnel, who have be required to work on or around very hot surfaces of indoor power generators.
A simple requirement for some type of lighting at least at the major equipment for a circus or traveling show will improve safety for the public and Circus personnel.

Submitter Information Verification

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Submittal Date: Thu Sep 07 16:23:36 EDT 2017

Public Input No. 1905-NFPA 70-2017 [Section No. 525.2]

525.2 Definitions. The definitions in this section shall apply only within this article.

Operator.

The individual responsible for starting, stopping, and controlling an amusement ride or supervising a concession.

Portable Structures.

Units designed to be moved including, but not limited to, amusement rides, attractions, concessions, tents, trailers, trucks, and similar units.

Statement of Problem and Substantiation for Public Input

This public input is submitted on behalf of task group appointed by the NEC Correlating Committee. This task group was appointed to identify potential issues in the NEC with respect to how definitions in both Article 100 and the XXX.2 sections of this Code apply. The member of the task group are: David Hittinger, Rich Holub, Chris Hunter, Dave Williams, Chris Porter, Alan Manche, Ken Boyce, John Kovacik, Donny Cook, Dave Kendall and Jim Dollard.

Section 2.2.2.1 of the NEC Style Manual requires that in general definitions that appear in two or more articles be located in Article 100. Section 2.2.2.2 requires that where an individual article contains definition(s), they be located in the second section (XXX.2) of the article. It is extremely important to note that the style manual does not prohibit a definition in the second section of an article from applying elsewhere in the NEC. The style manual clearly states that in general definitions that appear in two or more articles shall be located in Article 100. This has confused many code users in the past. This style manual requirement is accurate and these public inputs are simply an attempt to provide needed clarity. See the example below:

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Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1202-NFPA 70-2017 [Article 100 [Excluding any Sub-Sections]]	

Submitter Information Verification

Submitter Full Name: James Dollard
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Submittal Date: Tue Aug 08 12:45:00 EDT 2017

Copyright Assignment

I, James Dollard, hereby irrevocably grant and assign to the National Fire Protection Association (NFPA) all and full rights in copyright in this Public Input (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 Input in this or another similar or derivative form is used. I hereby warrant that I am the author of this Public Input and that I have full power and authority to enter into this copyright assignment.

☑ By checking this box I affirm that I am James Dollard, 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 Input No. 3263-NFPA 70-2017 [Section No. 525.20(G)]

(G) Protection.

Flexible cords or cables accessible to the public shall be arranged to minimize the tripping hazard and shall be ~~permitted to be~~ covered with secured nonconductive matting, provided that the matting does not constitute a greater tripping hazard than the uncovered cables. It shall be permitted to bury cables. The requirements of 300.5 shall not apply.

Statement of Problem and Substantiation for Public Input

This proposal is to ensure and to require the covering of extension cords in carnivals or fairs. Uncovered cord that are installed in the path of people will cause tripping hazards. Additionally, the cover must be secured in place ot prevent people slipping or sliding of the cords' covers.

Submitter Information Verification

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Submittal Date: Tue Sep 05 00:10:24 EDT 2017

Public Input No. 2272-NFPA 70-2017 [Section No. 525.23(A)]

(A) Where GFCI Protection Is Required.

GFCI protection for personnel shall be provided for the following:

(1) All 125-volt, single-phase, 15- and 20-ampere non-locking-type receptacles used for disassembly and reassembly or readily accessible to the general public

(2) Equipment that is readily accessible to the general public and supplied from a 125-volt, single-phase, 15- or 20-ampere branch circuit

The GFCI shall be permitted to be an integral part of the attachment plug or located in the power-supply cord within 300 mm (12 in.) of the attachment plug. Listed cord sets incorporating GFCI for personnel shall be permitted. Any additional ground-fault requirements of 210.8(B) shall not apply.

Statement of Problem and Substantiation for Public Input

The change would clarify that ground-fault protection would not include other receptacles, found at a carnival, fair or concession booth that are rated at 150 volts to ground, 50 amperes or less and three phase receptacles rated 150 volts to ground or less,100 amperes or less.

Typically, the distribution (generators) used at these festivals and events is 208/120Y. The use of equipment such as portable air compressors, welders during set-up and maintenance would cause nuisance tripping and be very inconvenient. Vendor trailers and concession stands would need GFCI protection on the cooking appliances used which would create a financial hardship for these small operators and owners.

Submitter Information Verification

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Submittal Date: Tue Aug 15 18:37:20 EDT 2017

Public Input No. 1459-NFPA 70-2017 [Definition: Single-Pole Separable Connector.]

~~**Single-Pole Separable Connector.**~~

~~A device that is installed at the ends of portable, flexible, single-conductor cable that is used to establish connection or disconnection between two cables or one cable and a single-pole, panel-mounted separable connector.~~

Statement of Problem and Substantiation for Public Input

This Public Input (PI), along with its companion PI, would relocate the definition for “Single-Pole Separable Connector” from Section 530.2 to Article 100, in accordance with 2.2.2.1 of the NEC Style Manual. This definition appears in Section 530.2 (definitions) and is also a term used in Article 520 (refer to Section 520.53(C)). As this term appears in two or more Articles, its definition should be located in Article 100.

Submitter Information Verification

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Submittal Date: Mon Jul 31 11:43:59 EDT 2017

Public Input No. 1906-NFPA 70-2017 [Section No. 530.2]

530.2 Definitions. The definitions in this section shall apply only within this article.

Alternating-Current Power Distribution Box (Alternating-Current Plugging Box, Scatter Box).

An ac distribution center or box that contains one or more grounding-type polarized receptacles that may contain overcurrent protective devices.

Bull Switch.

An externally operated wall-mounted safety switch that may or may not contain overcurrent protection and is designed for the connection of portable cables and cords.

Location (Shooting Location).

A place outside a motion picture studio where a production or part of it is filmed or recorded.

Location Board (Deuce Board).

Portable equipment containing a lighting contactor or contactors and overcurrent protection designed for remote control of stage lighting.

Motion Picture Studio (Lot).

A building or group of buildings and other structures designed, constructed, or permanently altered for use by the entertainment industry for the purpose of motion picture or television production.

Plugging Box.

A dc device consisting of one or more 2-pole, 2-wire, nonpolarized, nongrounding-type receptacles intended to be used on dc circuits only.

Portable Equipment.

Equipment intended to be moved from one place to another.

Single-Pole Separable Connector.

A device that is installed at the ends of portable, flexible, single-conductor cable that is used to establish connection or disconnection between two cables or one cable and a single-pole, panel-mounted separable connector.

Spider (Cable Splicing Block).

A device that contains busbars that are insulated from each other for the purpose of splicing or distributing power to portable cables and cords that are terminated with single-pole busbar connectors.

Stage Effect (Special Effect).

An electrical or electromechanical piece of equipment used to simulate a distinctive visual or audible effect such as wind machines, lightning simulators, sunset projectors, and the like.

Stage Property.

An article or object used as a visual element in a motion picture or television production, except painted backgrounds (scenery) and costumes.

Stage Set.

A specific area set up with temporary scenery and properties designed and arranged for a particular scene in a motion picture or television production.

Stand Lamp (Work Light).

A portable stand that contains a general-purpose luminaire or lampholder with guard for the purpose of providing general illumination in the studio or stage.

Television Studio or Motion Picture Stage (Sound Stage).

A building or portion of a building usually insulated from the outside noise and natural light for use by the entertainment industry for the purpose of motion picture, television, or commercial production.

Statement of Problem and Substantiation for Public Input

This public input is submitted on behalf of task group appointed by the NEC Correlating Committee. This task group was appointed to identify potential issues in the NEC with respect to how definitions in both Article 100 and the XXX.2

sections of this Code apply. The member of the task group are: David Hittinger, Rich Holub, Chris Hunter, Dave Williams, Chris Porter, Alan Manche, Ken Boyce, John Kovacik, Donny Cook, Dave Kendall and Jim Dollard.

Section 2.2.2.1 of the NEC Style Manual requires that in general definitions that appear in two or more articles be located in Article 100. Section 2.2.2.2 requires that where an individual article contains definition(s), they be located in the second section (XXX.2) of the article. It is extremely important to note that the style manual does not prohibit a definition in the second section of an article from applying elsewhere in the NEC. The style manual clearly states that in general definitions that appear in two or more articles shall be located in Article 100. This has confused many code users in the past. This style manual requirement is accurate and these public inputs are simply an attempt to provide needed clarity. See the example below:

344.2 Definition.
Rigid Metal Conduit (RMC). A threadable raceway of circular cross section designed for the physical protection and routing of conductors and cables and for use as an equipment grounding conductor when installed with its integral or associated coupling and appropriate fittings.

The definition of the term “rigid metal conduit” is appropriately located in the article that contains general, installation and construction specifications for this raceway. It is commonly understood that the term “rigid metal conduit” is used in more than one article. There are many articles that contain a single definition that is necessary for application of the contained requirements but will apply elsewhere in the NEC. This occurs in articles that address cable assemblies, raceways, systems and more.
This public input seeks to delete the last sentence in the first paragraph, as it is unnecessary. A new sentence is proposed to simply inform the user of the code that definitions are also found in the second section (XXX.2) of other articles.
This public input is supplemented with proposed revisions to the second section (XXX.2) of articles that contain definitions. New parent text is proposed for these sections to increase clarity and usability. There are two different scenarios that will be addressed. First, any second section (XXX.2) that contains definitions that apply only within that article will contain parent text as follows:

XXX.2 Definitions. The definitions in this section shall apply only within this article.

Second, any second section (XXX.2) that contains definitions that apply within the individual article and throughout the code will contain parent text as follows:

XXX.2 Definitions. The definitions in this section shall apply within this article and throughout the code.

In a few cases, in the second section (XXX.2) of an Article there are definitions that will apply only in that Article and some that will apply in that Article and throughout the code. New parent text and first level subdivisions are proposed to achieve clarity and usability The combination of these proposed revisions will provide necessary clarity and usability with respect to application of definitions. These actions will also achieve compliance with the NEC Style Manual

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1202-NFPA 70-2017 [Article 100 [Excluding any Sub-Sections]]	

Submitter Information Verification

Submitter Full Name: James Dollard
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Submittal Date: Tue Aug 08 12:47:19 EDT 2017

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Public Input No. 2019-NFPA 70-2017 [Section No. 530.20]

530.20 Equpment Grounding Conductor.

Type MC cable, Type MI cable, Type AC cable containing an insulated equipment grounding conductor, metal raceways, and all non–current-carrying metal parts of appliances, devices, and equipment shall be connected to an equipment grounding conductor. This shall not apply to pendant and portable lamps, to portable stage lighting and stage sound equipment, or to other portable and special stage equipment operating at not over 150 volts dc to ground.

Statement of Problem and Substantiation for Public Input

Revise title to reflect the rule.

Submitter Information Verification

Submitter Full Name: Mike Holt
Organization: Mike Holt Enterprises Inc
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State:
Zip:
Submittal Date: Wed Aug 09 14:42:08 EDT 2017

Public Input No. 922-NFPA 70-2017 [Section No. 530.18(E)]

(E) Plugging Boxes.

Cables and cords supplied through plugging boxes shall be of copper. Cables and cords smaller than 8 AWG shall be attached to the plugging box by means of a plug containing two cartridge fuses or a 2-pole circuit breaker. The rating of the fuses or the setting of the circuit breaker shall not be over 400 percent of the ~~rated~~ ampacity of the cables or cords as given in the applicable tables of Articles 310 and 400. Plugging boxes shall not be permitted on ac systems.

Statement of Problem and Substantiation for Public Input

This public input is the work of an Ampacity Task Group. The task group consisted of the following members: Thomas Domitrovich, Dave Mercier, Christine Porter, Derrick Atkins, and Christel Hunter.

The Task Group identified the use of the word rated to describe ampacity is not appropriate when addressing the ampacity of a conductor. The use of the term "rating" generally applies to equipment where as ampacity applies to conductors.

Ampacity of a conductor is defined as part of Article 100 as "The maximum current, in amperes, that a conductor can carry continuously under the conditions of use without exceeding its temperature rating." Tables 310.15(B)(16) through (21) establish the ampacity of conductors under specified conditions of use.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 919-NFPA 70-2017 [Definition: Overload.]	Removal of the term "rated" as it pertains to ampacity
Public Input No. 920-NFPA 70-2017 [Section No. 450.6(A)(1)]	Removal of the term "rated" as it pertains to ampacity
Public Input No. 921-NFPA 70-2017 [Section No. 450.6(A)(2)]	Removal of the term "rated" as it pertains to ampacity
Public Input No. 949-NFPA 70-2017 [Section No. 230.23]	Removal of the term "rated" as it pertains to ampacity
Public Input No. 950-NFPA 70-2017 [Section No. 310.15(B)(7)]	Removal of the term "rated" as it pertains to ampacity
Public Input No. 923-NFPA 70-2017 [Section No. 630.31(A)]	Removal of the term "rated" as it pertains to ampacity
Public Input No. 924-NFPA 70-2017 [Section No. 660.6(B)]	Removal of the term "rated" as it pertains to ampacity
Public Input No. 2140-NFPA 70-2017 [Section No. 210.19(A) [Excluding any Sub-Sections]]	Removal of the term "rated" as it pertains to ampacity
Public Input No. 2144-NFPA 70-2017 [Section No. 725.144(A)]	Removal of the term "rated" as it pertains to ampacity

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Public Input No. 2623-NFPA 70-2017 [Section No. 530.31]

~~**530.31** Dressing Rooms.~~

~~Fixed wiring in dressing rooms shall be installed in accordance with the wiring methods covered in Chapter 3. Wiring for portable dressing rooms shall be approved.~~

Statement of Problem and Substantiation for Public Input

This section (which comprises an entire Part) adds no requirements and offers no modification or supplement to the provisions of Chapters 1-4. It does nothing and should therefore be removed.

Submitter Information Verification

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Public Input No. 1907-NFPA 70-2017 [Section No. 540.2]

540.2 Definitions. The definitions in this section shall apply only within this article.

Nonprofessional Projector.

Nonprofessional projectors are those types of projectors that do not comply with the definition of *Professional-Type Projector*.

Professional-Type Projector.

A type of projector using 35- or 70-mm film that has a minimum width of 35 mm (1⅜ in.) and has on each edge 212 perforations per meter (5.4 perforations per inch), or a type using carbon arc, xenon, or other light source equipment that develops hazardous gases, dust, or radiation.

Statement of Problem and Substantiation for Public Input

This public input is submitted on behalf of task group appointed by the NEC Correlating Committee. This task group was appointed to identify potential issues in the NEC with respect to how definitions in both Article 100 and the XXX.2 sections of this Code apply. The member of the task group are: David Hittinger, Rich Holub, Chris Hunter, Dave Williams, Chris Porter, Alan Manche, Ken Boyce, John Kovacik, Donny Cook, Dave Kendall and Jim Dollard.

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Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 1202-NFPA 70-2017 [Article 100 [Excluding any Sub-Sections]]	

Submitter Information Verification

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