



Health Care Facilities Code

- 2012 edition changed from a “Standard” to a “Code”
- What does that mean?
 - A code tells you what you have to do
 - A standard tells you how to do it
 - A code is in mandatory language and can typically be adopted into law more readily



ASHE
Dedicated to optimizing the health care physical environment
American Hospital Association

NFPA 99 Editions

ASHE
Dedicated to optimizing the health care physical environment
American Hospital Association



NFPA 99 Chapters / Document Structure

Chapter 1 Administration	Most NFPA documents follow this format for the first chapters
Chapter 2 Referenced Publications	
Chapter 3 Definitions	
Chapter 4 Fundamentals	
<hr/>	
Chapter 5 Gas and Vacuum Systems	
Chapter 6 Electrical Systems	
Chapter 7 Information Technology and Communication Systems	
Chapter 8 Plumbing	
Chapter 9 Heating Ventilating and Air Conditioning	
Chapter 10 Electrical Equipment	
Chapter 11 Gas Equipment	
Chapter 12 Emergency Management	
Chapter 13 Security Management	
Chapter 14 Hyperbaric Facilities	
Chapter 15 Features of Fire Protections	

 Dedicated to optimizing the health care physical environment 



New and existing facilities

- NFPA 99 does not have occupancy chapters or specific chapters for new and existing facilities.
- At the beginning of each chapter, items that apply to existing facilities are identified.

 Dedicated to optimizing the health care physical environment 

Example from Chapter 6


6.1* Applicability.
6.1.1 This chapter shall apply to new health care facilities as specified in Section 1.3.

 Dedicated to optimizing the health care physical environment 


6.1.2 The following paragraphs of this chapter shall apply to new and existing health care facilities:

- (1) 6.3.2.2.4.2
- (2) 6.3.2.2.6.1
- (3) 6.3.2.2.6.2(F)


Etc...




Dedicated to optimizing the health care physical environment



- **6.1.3** Paragraph 6.3.2.2.2.3 shall apply only to existing facilities.




Dedicated to optimizing the health care physical environment




Most inspection, testing and maintenance requirements apply to new and existing facilities.

Most requirements for documentation apply to new and existing facilities.



Dedicated to optimizing the health care physical environment



1.3.2.3 An existing system that is not in strict compliance with the provisions of this code shall be permitted to be continued in use, unless the authority having jurisdiction has determined that such use constitutes a distinct hazard to life.



Dedicated to optimizing the health care physical environment



Category 1

4.1.1* Category 1. Facility Systems in which failure of such equipment or system is likely to cause major injury or death of patients or caregivers shall be designed to meet system Category 1 requirements as defined in this code"

Systems are expected to work or be available at all times to support patient needs.



Dedicated to optimizing the health care physical environment



Category 2

4.1.2* Category 2. Facility systems in which failure of such equipment is likely to cause minor injury to patients or caregivers shall be designed to meet system Category 2 requirements as defined in this code."






Dedicated to optimizing the health care physical environment




Category 3

“4.1.3 Category 3. Facility systems in which failure of such equipment is not likely to cause injury to patients or caregivers, but can cause patient discomfort, shall be designed to meet system Category 3 requirements as defined in this code.”







Dedicated to optimizing the health care physical environment



Category 4

“4.1.4 Category 4. Facility systems in which failure of such equipment would have no impact on patient care shall be designed to meet system Category 4 requirements as defined in this code.”




Dedicated to optimizing the health care physical environment




Category Risk Table

Category	Risk	System Expectations
1	Failure is likely to cause major injury or death	Expected to work and be available at all times
2	Failure is likely to cause minor injury	Systems should have high level of reliability but can be down for short periods. Systems support patient needs but not critical for life support
3	Failure is likely to cause no injury but can cause discomfort	Systems should have normal reliability of standard building systems but can be down without immediate impact on patients. Systems not critical for life support
4	Failure is likely to cause no impact on patient care	Systems have no impact on patient needs and would not be noticed if failed.




Dedicated to optimizing the health care physical environment




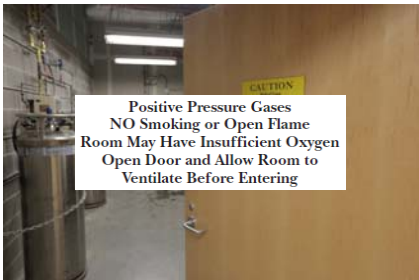
Med Gas Requirements




Dedicated to optimizing the health care physical environment



Door labels - Positive pressure gases other than oxygen and medical air (5.1.3.1.8)




Dedicated to optimizing the health care physical environment




Door labels - Oxygen and medical air (5.1.3.1.9)

Medical Gases
NO Smoking or Open Flame




Dedicated to optimizing the health care physical environment




Central supply systems cylinder storage

(5.1.3.2.3 & 5.1.3.2.4)

- Only cylinders, reusable shipping containers and accessories allowed in room
- No flammable materials, gases or liquids in the room





Dedicated to optimizing the health care physical environment




Location of central/bulk supply equipment

- Indoor locations (5.1.3.3.2(4))
 - 1-hour fire resistance rating of the enclosure
 - Non-combustible or limited combustible finishes
- New in the 2012 edition
 - Outdoor installations require 2 entry/exits (5.1.3.3.2 (3))





Dedicated to optimizing the health care physical environment




Securing cylinders


- 2002 Individually secure all cylinders
- 2005 –Secure all cylinders
- 2012 – “...secure all cylinders from falling...”
5.1.3.3.2(7)




Dedicated to optimizing the health care physical environment



Demand check fittings (5.1.8.2.4)



ASHE Dedicated to optimizing the health care physical environment American Hospital Association



ASHE Dedicated to optimizing the health care physical environment American Hospital Association

Master Alarms (5.1.9.2)


Two separate alarm panel locations required



1. An area of continuous operation
2. In the office or workspace of the individual responsible system maintenance
 - A BAS system can be used for one of the two master alarm locations if it meets the NFPA 99 requirements

ASHE Dedicated to optimizing the health care physical environment American Hospital Association

Brazing
(5.1.10.4)

- Continuous purge with oil free, dry nitrogen
- **Source of the purge is monitored.** Installer is audibly alerted when the source content is low
 - Monitor could be an automated device, or a person





 Dedicated to optimizing the health care physical environment 




 Dedicated to optimizing the health care physical environment 

Examples of requirements easily overlooked


- Evaluate the capacity of bulk systems annually
- Testing flexible connectors
 - Examples:
 - The hose on relocatable med gas and/or vacuum outlets in headwall systems
 - Ceiling booms containing med gas and/or vacuum outlets
- Permanent retention of installation and verification documentation
- Nitrogen purge audible alarm when brazing

 Dedicated to optimizing the health care physical environment 

Electrical Systems




Dedicated to optimizing the
health care physical environment




Chapter overview

- 6.1 Application
- 6.2 Nature of Hazards
- 6.3 Electrical system
- 6.4 Essential Electrical Systems - Type 1
- 6.5 Essential Electrical Systems – Type 2
- 6.6 Essential Electrical Systems – Type 3




Dedicated to optimizing the
health care physical environment




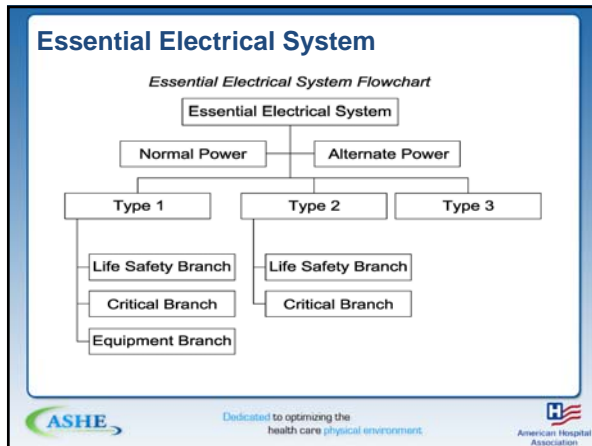
Acronyms

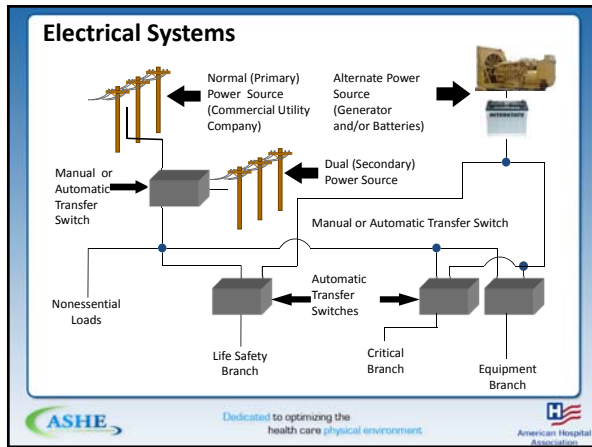
- EPSS – Essential Power Supply System
- EPS – Emergency Power Supply
- EES – Essential Electrical System
- AHJ – Authority Having Jurisdiction
- FGI Guidelines – Facility Guidelines Institute
*Guidelines for the Design and Construction of
Health Care Facilities*



Dedicated to optimizing the
health care physical environment







Power source for circuits NFPA 99-2012

Area type	Normal Power Circuits	Essential Power Circuits
Patient bed location	Fed from not more than one normal branch-circuit distribution panel	When required, permitted to be fed from more than one critical branch-circuit panel
Critical Areas	A minimum of one circuit served by normal power, or by a system originating from a second critical branch automatic transfer switch	Circuits from a critical branch panel served from a single automatic transfer switch


Special purpose outlets, such as x-ray, for critical areas does not have to comply with the above

ASHE logo: Dedicated to optimizing the health care physical environment. American Hospital Association logo.


Access to overcurrent protective devices

Added language in NFPA 99-2012

- Category 1 and 2 rooms
 - Only authorized personnel have access to overcurrent protective devices
 - Overcurrent protective devices not permitted to be located in public access space
 - Isolated power panels can be in critical care areas




Dedicated to optimizing the health care physical environment




Minimum number of receptacles

Use or area	NFPA 99-2012	NFPA 99-2005
Patient bed locations - general care areas	8	4
Patient bed locations - critical areas	14	6
Operating rooms (Category 1)	36	Not specified
Bathrooms or toilets	Not required	Not required
Special rooms (examples -psychiatric, pediatric, hydrotherapy)	Not required where medical requirements mandate otherwise	Not required where medical requirements mandate otherwise
Laboratories	Outlets with 2 or 4 receptacles, or an equivalent power strip every 1.6 to 3.3 feet in instrument use areas	Outlets with 2 or 4 receptacles, or an equivalent power strip every 1.6 to 3.3 feet in instrument use areas

Receptacles in designated general care pediatric locations, other than nurseries shall be listed as tamper resistant or shall have a tamper resistant cover




Dedicated to optimizing the health care physical environment




Minimum number of receptacles

FGI Guidelines Table 2.1-3

- More detailed than NFPA 99
- Includes minimum number of receptacles as well as guidance regarding the location





Dedicated to optimizing the health care physical environment





Wet procedure location

<p>NFPA 99-2005</p> <p>“Wet location patient care areas shall be provided with special protection against electric shock.”</p> <p>4.3.2.2.8.1</p>	<p>NFPA 99-2012</p> <p>“Wet procedure locations shall be provided with special protection against electric shock”</p> <p>6.3.2.2.8.1</p>
---	--

 Dedicated to optimizing the health care physical environment 



Wet locations – definition

<p>NFPA 99-2005</p> <p>“Patient beds, toilets, bidets, and wash basins shall not be required to be considered wet locations.”</p> <p>4.3.2.2.8.2</p>	<p>NFPA 99-2012</p> <p>“Patient beds, toilets, bidets, and wash basins shall not be required to be considered wet locations.”</p> <p>6.3.2.2.8.3</p>
---	---

 Dedicated to optimizing the health care physical environment 

Wet locations – definition

<p>NFPA 99-2005</p>	<p>NFPA 99-2012</p> <p>“Operating rooms shall be considered to be a wet procedure locations unless a risk assessment conducted by the health care governing body determines otherwise”</p> <p>6.3.2.2.8.4</p>
----------------------------	--

 Dedicated to optimizing the health care physical environment 

Wet procedure locations – special protection

<p style="text-align: center;">NFPA 99-2005</p> <p>Special protection required</p> <ol style="list-style-type: none">1. Power distribution system that inherently limits the possible ground fault current to a low value with out interrupting the power (such as an isolated power system)2. Power system that interrupts the supply of power if the fault current exceeds 6 ma (such as a GFCI)	<p style="text-align: center;">NFPA 99-2012</p> <p>Special protection required</p> <ol style="list-style-type: none">1. Power distribution system that inherently limits the possible ground fault current to a low value with out interrupting the power (such as an isolated power system)2. Power system that interrupts the supply of power if the fault current exceeds the trip value of a Class A GFCI (trip between 4 ma and 6 ma)
--	--

Dedicated to optimizing the health care physical environment

Wet locations –existing construction

Wet location protection not required if the following are met:

- Written inspection procedure acceptable to the AHJ is enforced by an individual at the health facility
- Equipment grounding conductors for 120-V single phase 15 and 20 amp receptacles, connected equipment and fixed equipment are installed and maintained as per NFPA 70, *National Electrical Code*

Dedicated to optimizing the health care physical environment

Wet procedure locations –existing construction
Inspection and testing instead of protection

- Electrical continuity test of of all required equipment, grounding conductors and their connections
- Test frequency
 - When first installed
 - Where there is evidence of damage
 - After any repairs
 - At intervals not exceeding 6 months

Dedicated to optimizing the health care physical environment

Battery power lights

- One or more provided in locations where deep sedation or general anesthesia is performed
- Sensor unit connected to the branch circuit providing lighting in the room
- Provide lighting for 90 minutes
- Tested monthly for 30 seconds and annually for 30 minutes

ASHE Dedicated to optimizing the health care physical environment American Hospital Association

Maintenance and testing of electrical systems

Where hospital grade receptacles are required at patient bed locations and in locations where deep sedation or anesthesia occurs, test receptacles after installation, replacement or servicing.


Additional testing interval defined by performance data

ASHE Dedicated to optimizing the health care physical environment American Hospital Association

Electrical receptacles

Testing

- Physical integrity
- Continuity of grounding
- Correct polarity
- Retention force of the grounding blade



ASHE Dedicated to optimizing the health care physical environment American Hospital Association

Maintenance and testing of electrical systems

Non-hospital grade receptacles in patient bed locations and in locations where deep sedation or general anesthesia takes place – test at intervals not exceeding 12 months.



Dedicated to optimizing the health care physical environment



Line isolation monitor (LIM) testing

Monthly activate test switch

Test can be performed at not more than 12 month interval if the LIM has a self calibration feature



Dedicated to optimizing the health care physical environment





Dedicated to optimizing the health care physical environment







ASHE On-Line E-learning Courses
Application of NFPA 99 in Health Care Facilities
Electrical Systems for Health Care Facilities

ASHE On-Demand Webinars
<http://www.ashe.org/education/ondemand.shtml>
Chapter 43 of 101 Impact on Health Care Facilities
CMS and 2012 LSC – Planning your Compliance Strategy
Focus on Compliance

ASHE Dedicated to optimizing the health care physical environment American Hospital Association
