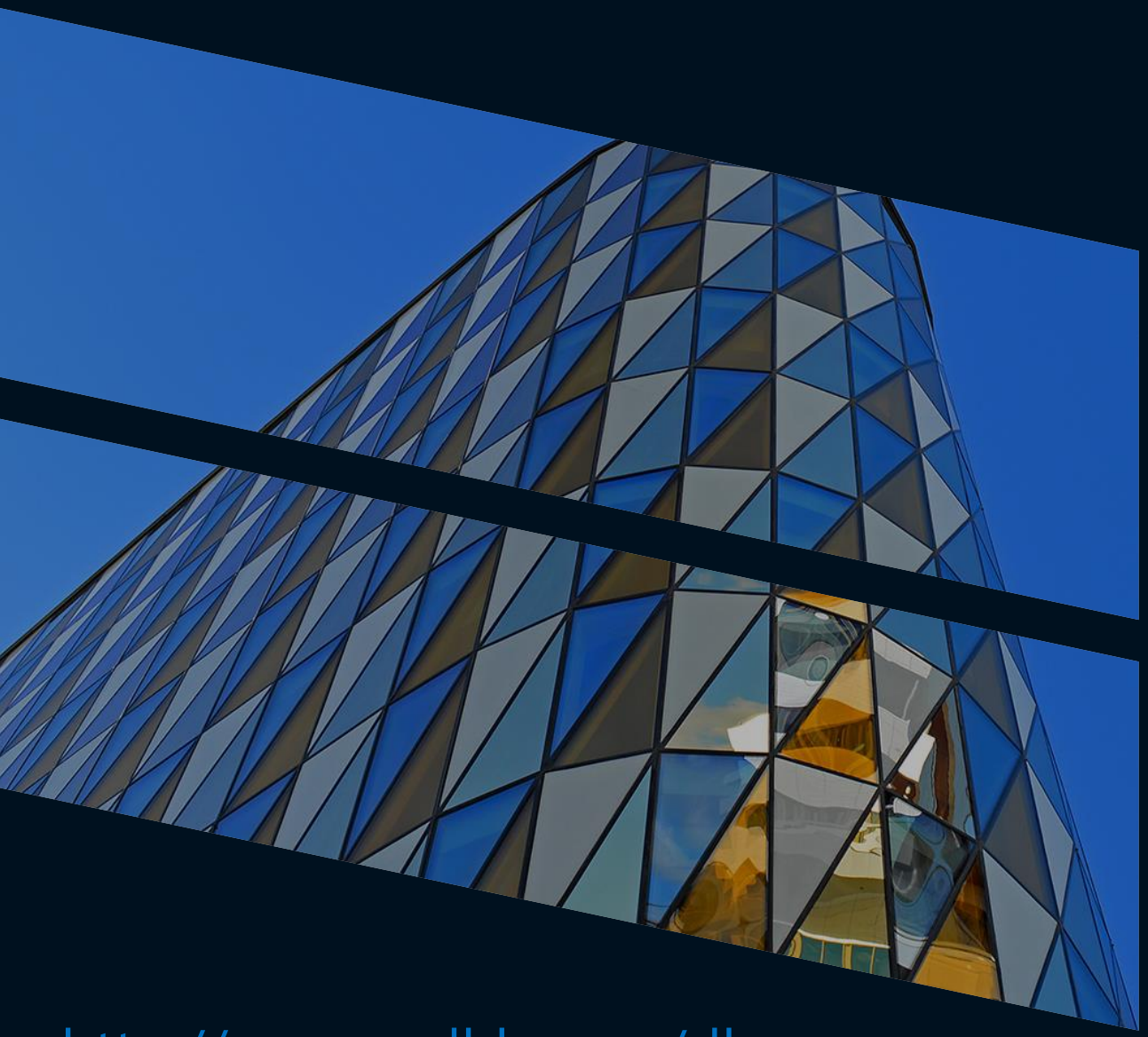
DHSR
Division of Health Service Regulation

Construction Section Update

NCHEA 2018 Wilmington Conference

August 10, 2018



PRESENTERS

Jeff Harms
Engineering Supervisor

Bob Strother
Life Safety Supervisor

Don Schlagle
Engineering Plans Reviewer

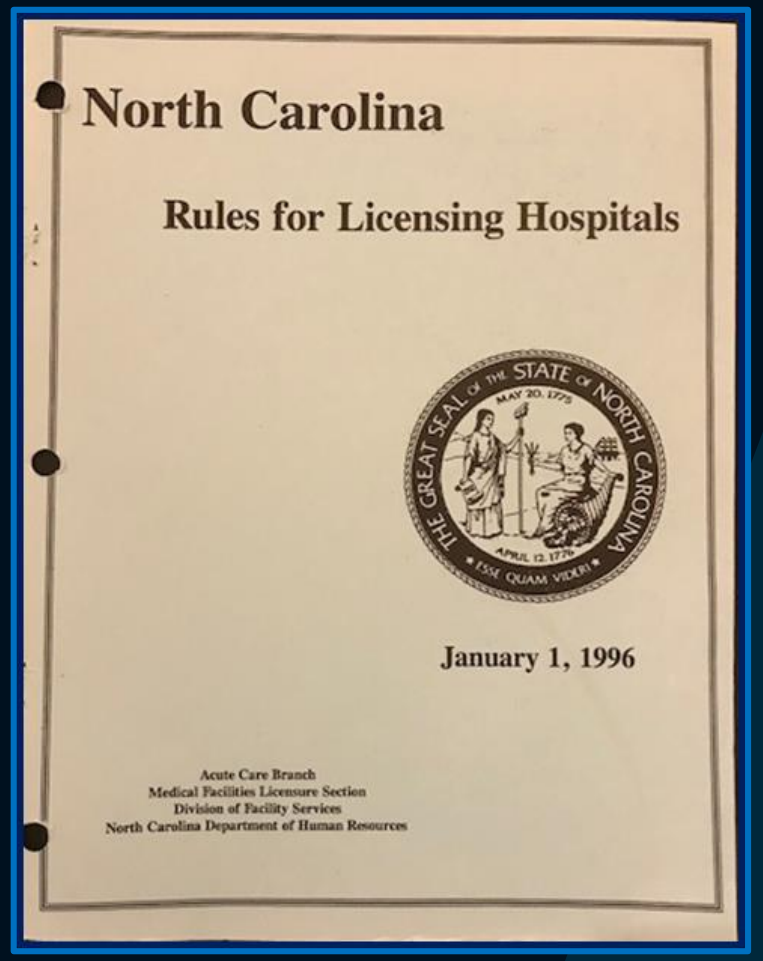
http://www.ncdhhs.gov/dhsr/

- Please Hold Questions Until the End of the Session

To ensure that the construction and operation of buildings regulated by the Division provide a safe, healthy and suitable environment for residents, patients and inmates using those facilities.

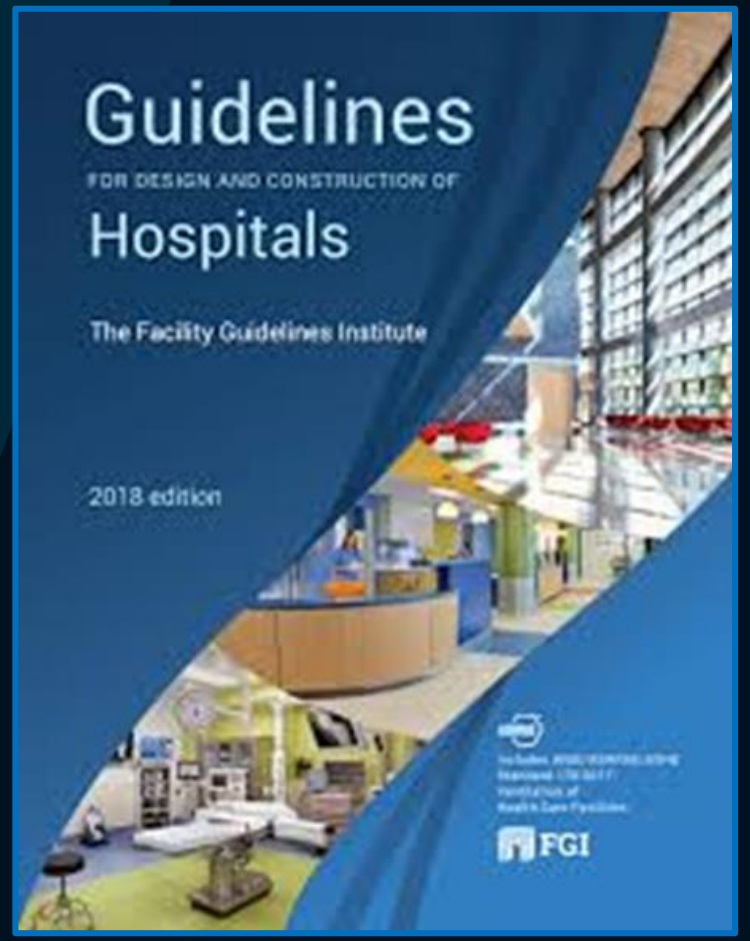
Call 919 855-3893 to ask a general question. - or -
Use the initials on the review letter to ask for the architect or engineer that did the review. HL-11206-MAS/DWS

Send FGI questions in writing so Supervisor can work with reviewer to get uniform answers.



1996

2014



2018

Why FGI Guidelines?

Comprehensive – 314 pages vs 25

Consensus Based – Multidisciplinary Process

Credible – HGRC (112 Member Health Guidelines Revision Committee – Who's Who of Experts)

Current – 4 year cycle (Evolutionary)

Continually Improving – Solicit Public Comments Worldwide

Research – Funds Clinical/Evidence Based to Validate Requirements

FGI Guidelines 2018

Hospitals

Outpatient Facilities

Residential Health, Care, and Support Facilities

Three Separate Books

FGI Website

https://www.fgiguidelines.org/faqs/

Info About the HGRC

About the Health Guidelines Revision Committee

Q: What is the Health Guidelines Revision Committee (HGRC)?

A: The HGRC is the multidisciplinary group responsible for revising the *Guidelines* documents every four years. The *Guidelines* are consensus documents, and HGRC reviews and votes on every proposal and comment submitted during the *Guidelines* revision cycle. The HGRC also votes to accept or reject each new *Guidelines* document prior to publication.

Q: Who serves on the HGRC?

A: Composed of approximately 100 clinicians, administrators, architects, engineers, and representatives from authorities having jurisdiction, HGRC members are subject matter experts in health care design and practice.

Q: Are manufacturers represented on the HGRC?

A: No, to avoid possible conflicts of interest, manufacturers are not represented on the HGRC. However, vendor representatives do sometimes assist as subject matter experts on a particular topic. For example, at the beginning of the 2018 cycle, Hill-Rom hosted a workshop to help FGI determine the clearances necessary when treating patients of size.

Comments or Questions to FGI

FAQs

Answers to frequently asked questions are provided here. If you have a topic you'd like addressed, please write to us at info@fgiguidelines.org.

Questions about the *Guidelines* requirements

Q: How do I get answers to my questions about applying the *Guidelines* requirements?

A: You can submit a request for an advisory opinion from the contact page on the FGI website. First, though, please review the downloadable errata sheets and interpretation files for each edition to see if your question has been addressed there.

FGI Interpretations

Guidelines Interpretations

FGI offers a forum for obtaining interpretations of the *Guidelines* text. This process gives designers, owners, and authorities having jurisdiction the opportunity to seek insight from HGRC members on language that may be ambiguous or conflict with other sections of the document.

To ask a question:

Before submitting a request for an interpretation, please read the **rules**. Many of the requests we receive are actually requests for an advisory opinion, which we are usually able to provide more quickly.

- Request a formal interpretation.
- Request an advisory opinion.

Formal Interpretation

FGI

Formal Interpretations

***Guidelines for Design and Construction of Hospitals*, 2018 edition**

Decisions published here were rendered after a multi-person panel of Health Guidelines Revision Committee (HGRC) members reviewed the request and consensus was achieved. These decisions are considered formal interpretations of the HGRC, but they are not binding for states that reference the *Guidelines*. Rather, they are advisory in nature and are intended to help users and adopting authorities having jurisdiction (AHJ) maximize the value of the *Guidelines*.

Further comments from members of the Interpretations Committee have been added to some interpretations. These comments are intended as explanatory information for users of the *Guidelines* and are not to be considered part of the formal interpretation.

Formal interpretations are rendered on the text of the requested edition of the *Guidelines*. However, any interpretation issued shall apply to all editions in which the text is identical, except when deemed inappropriate by the HGRC.

In all cases, it is important to remember that the ultimate interpretation of information contained in the *Guidelines* is the responsibility of the authority having jurisdiction.

Yes or No?

Can anyone make suggestions to FGI for future content consideration?

Yes

Pamela Blumgart (Managing Editor) will open the comment period at the end of August for the 2022 edition.

Yes or No?

The book is called Guidelines for Design and Construction of Hospitals. Are these best practice suggestions for designing facilities?

No

The Guidelines for Design and Construction of Hospitals (current edition) has been adopted by the Legislature to be the physical plant portion of existing 10A NCAC 13B N.C. Hospital Licensure Rules.

They are minimum fundamental requirements, not suggestions.

Every 4 years the newest published edition will be used.

Yes or No?

The Guidelines apply to new construction and major renovations.

Yes

- A change in function of existing space
- a series of planned changes
- a renovation modifying an entire building or area of a building to create a new use or occupancy…

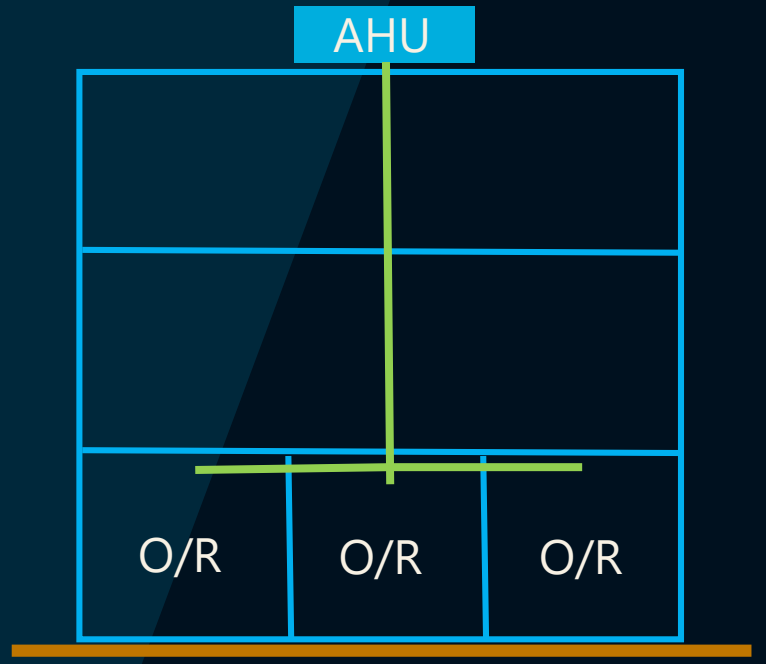
must comply with the Guidelines.

Examples of Use of Guidelines

The 1990 AHU needs to be replaced but only achieves 15 ACH in the O/Rs. Will current ASHRAE 170 requirements of 20 ACH have to be met?

YES

1.1-3.1.1.4 (1)
Only the altered, renovated, or modernized portion of an existing building system or individual component shall be required to meet the installation and equipment requirements in the *Guidelines*.

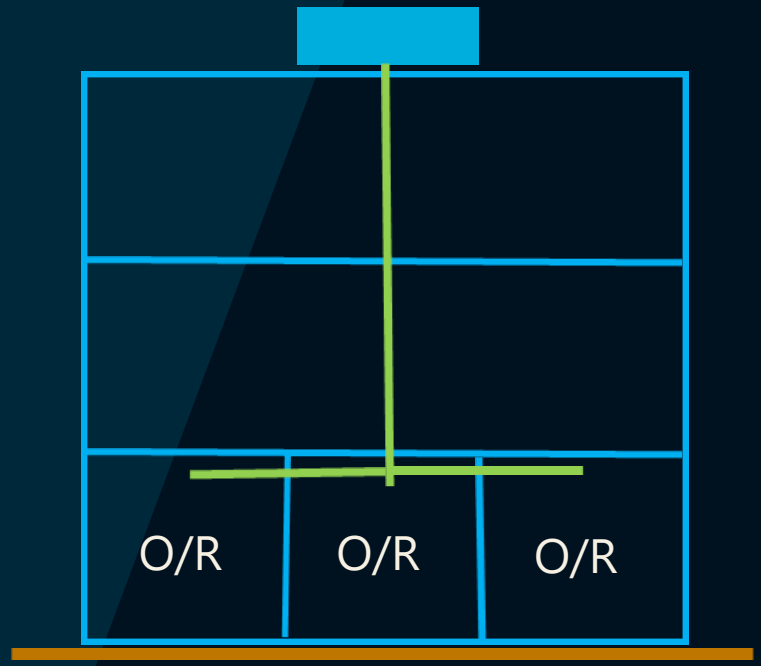


Use of Guidelines

The O/Rs are old and do not have non-aspirating supply diffusers. Only replacing the AHU. Ducts to remain. O/Rs not renovated. Must the array be provided?

Maybe Not

- Do a risk and infection control assessment for patient caseload and types of procedures to be done now and in the future.
- Only the altered, renovated, or modernized portions of an existing building system (or component) are required to meet FGI req'mts.

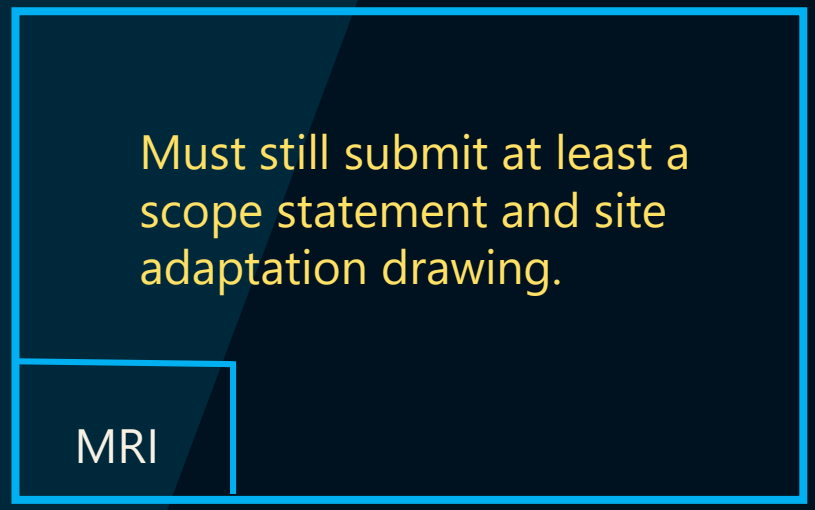


Use of Guidelines

Existing MRI to be replaced with a new one. There is no hand washing sink in the room and less than 4’ of space is provided about the machine. Must the sink and greater clearance be provided?

No

- Strictly speaking, not mandatory with just replacement of the magnet.
- Do a risk assessment for patient handling (clearance) and ICRA (hand washing) to make the determination.
- If *patients of size* are to use the machine, provide necessary clearance.



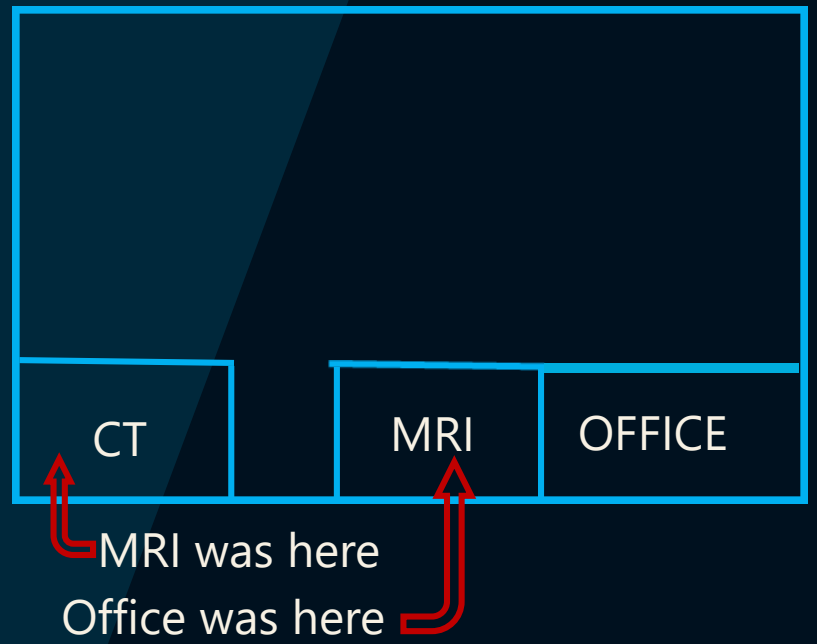
Hospital Plan View

Use of Guidelines

A hospital is planning on replacing an existing MRI with a CT and installing a new MRI across the corridor in space previously used for offices. Will they have to comply with FGI requirements for new construction?

Yes

1.1-2.3
A change in function is taking place in existing spaces.



Yes or No?

The Functional Program and Safety Risk Assessments are the responsibility of the owner.

Yes

Often owners assign a design team to formalize their facility desires and decisions and lead through it.

DHSR does not regulate the contents of the functional program but reviews it to see what services will be provided, expanded, or eliminated by the proposed project.

Yes or No?

Functional Programs are only done to specify architectural planning, space allocation, and details and finishes.

No

Facility design engineers should produce a relevant functional program and summary description for their portions of the project also.

Please review chapter 1 for the parameters of a functional program and safety risk assessment.

Yes or No?

FGI HGRC members create the ventilation requirements for hospitals.

No

In 2010, FGI got out of writing hospital ventilation requirements and adopted/partnered with ASHRAE 170.

Certain key FGI members do participate in 170 work.

Yes or No?

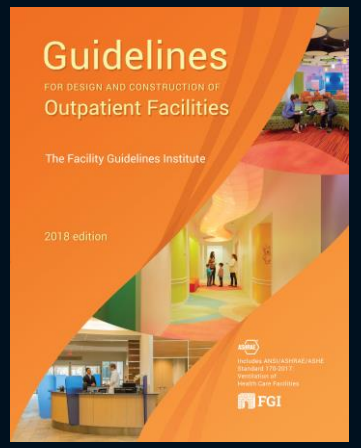
Are outpatient surgical centers in NC being held to the FGI standards?

No

Guidelines for Hospitals is currently the only FGI document NC has adopted for use as licensure rules.

For ambulatory surgery centers use 10A NCAC 13 C Rules.

Use Now



Maybe in Future

How to Find Licensure Rules

http://www.ncdhhs.gov/dhsr/ 1

North Carolina

Division of Health Service Regulation

What We Do | Citizens | Providers | A-Z Index | DHSR SharePoint

The Division of Health Service Regulation oversees medical, mental health and adult care facilities, emergency medical services, and local jails. We check to see that people receiving care in these facilities are safe and receive appropriate care. We make certain that medical buildings are built only when there is a need for them.

What's New?

- Declaratory Rulings
- Legislative Actions
- Public Notices
- Reports
- Rule Actions

Quick Links

- Adult Care Facility Inspections, Ratings and Penalties
- Adult Care Home Violations and Penalties
- Adult Care Star Rating Program
- Adult Care Training Resources
- Certificate of Public Advantage
- Customer Service Surveys
- File a Complaint
- Forms and Applications
- How to Start a Facility
- Licensed Facilities
- Mental Health Public Records
- NC State Medical Facilities Plan
- Rules and Regulations 2
- Special Care Unit Moratorium Exception Request Process
- Transparency in Health Care Costs
- Verify Registry Listings
- Volunteer Health Services Act

Sections

- Complaint Intake and Health Care Personnel Investigations
- Construction
  - Jails and Detention
- Healthcare Planning and Certificate of Need
- Office of Emergency Medical Services
- Radiation Protection

Licensure and Certification

- Acute and Home Care
- Adult Care
- Mental Health
- Nursing Home

Commissions/Council

- NC Medical Care Commission
- NC Radiation Protection Commission
- NC State Health Coordinating Council

How to Find Licensure Rules

NC Division of Health Service Regulation

Rules and Regulations

What We Do | Citizens | Providers | A-Z Index | DHSR SharePoint

Home Rules and Regulations

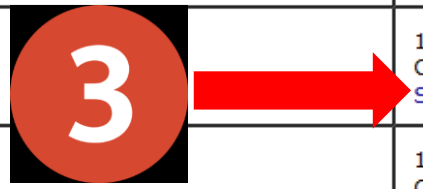
The following rules apply to the agencies within the Division of Health Service Regulation:

You can find both permanent and temporary rules on the N.C. Office of Administrative Hearing's website. You can find the Medicare rules on the website for the Centers for Medicare & Medicaid Services (PDF, 57 KB).

Proposed changes to DHSR rules can be found on the Rule Actions page.

N.C. Medical Care Commission Review of Existing Rules in Accordance with Executive Order 70

	State Rules	Medicare Regulations
Adult Care Homes	10A NCAC Chapter 13 Subchapter F Subchapter G	
Ambulatory Surgical	10A NCAC Chapter 13 Subchapter C	Appendix L (PDF, 263 KB) Emergency Preparedness Final Rule (PDF, 783 KB)
Cardiac Rehabilitation	10A NCAC Chapter 14 Subchapter F	
Certificate of Need	10A NCAC Chapter 14 Subchapter C	



Yes or No?

As stated in the Guidelines for Hospitals Errata: 2.1-1.1.4 *Outpatient projects located in hospitals shall meet the requirements of the FGI Guidelines for Design and Construction of Outpatient Facilities*. Does this hold true for N.C. hospitals?

No

N.C. has not yet adopted FGI Guidelines for Outpatient Facilities. Currently, outpatient services operated under the hospital's license must meet the requirements of FGI Guidelines for Hospitals that are applicable to the treatments or services being provided.

Key Items

Bob

Yes or No?

Can Outpatient Surgery Centers be Business Occupancies if fewer than 4 patients are rendered incapable of self preservation?

No

CFR 482.41 (b)(i) requires "outpatient surgical departments must meet the provisions applicable to Ambulatory Health Care Occupancies, regardless of the number of patients served."

Yes or No?

The type and location of hospital equipment comes under the purview of FGI.

No

Owners determine the equipment they want to use and the Guidelines provide requirements for certain clearances within the space.

Yes or No?

FGI prescribes the number of patient beds, patient lifts, chairs in waiting rooms, etc. for bariatric patients.

No and

No

This patient population is now referred to as Patients of Size, not bariatric.

During the planning phases owners look at area demographics, and safety risk assessments for patient handling. See 1.2-6.4 and 2.1-2.3.

Yes or No?

A hospital observation room is not required to have a window.

Yes

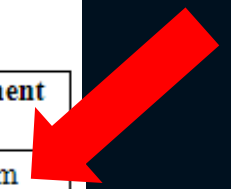
- Windows are required in a patient room in a hospital. The Guidelines do not require a window in an observation room. See 2.1-7.2.2.5.
- In some critical care areas windows per se may not be required. See 2.2-2.6.3 (3)

Yes or No?

Is instrument air now required in O/R's as in T 2.1-3 p.134?

Table 2.1-3 Station Outlets for Oxygen, Vacuum (Suction), Medical Air, and Instrument Air Systems in Hospitals[1]

Section	Location	Oxygen	Vacuum	Medical Air	WAGD[2]	Instrument Air
2.2-3.3.3 Table 2.2-2	Operating room Class 3 imaging room	2/room	5/room	1/room	1/room	1/room



No

"The inclusion of a station outlet for instrument air in an OR was an error in Table 2.1-3 of the 2018 Hospital Guidelines.

It is important to stay up to date on the Guidelines errata sheets as we reissue them whenever an error is discovered. Please see the link in the line below my signature block."

Pamela James Blumgart
Managing Editor
Facility Guidelines Institute | www.fgiguidelines.org

Yes or No?

Can hospital exam rooms use portable med gas cylinders rather than piped?

No

The only allowance for portables is T 2.1-3 Footnotes 7 & 9 which refer to a few very limited applications.

The intent of the entries in the table is for a piped system for hospital patient services.

Why?
The piped source system is likely to be more readily available and less room for error in management of full and empty portables or battery backed up suction units.

Ever Wonder Why DHSR Requires Owner to Test Med Gas for Correct Gas and Pressure?

August 2, 2016

Last month, NSW Health confirmed three newborn babies were affected during incidents with the oxygen supply outlets at Bankstown-Lidcombe Hospital in Sydney's south-west.

One infant died and another suffered suspected brain damaged when they were accidentally given nitrous oxide — also known as laughing gas — instead of oxygen from gas lines installed in the birthing suite.

New Items – Mobile Units

2.8-1.1.1
Applies to mobile/transportable units used on a temporary basis.

Per FGI viewpoint, inpatients and outpatients may use the mobile services as applicable as long as all the requirements of ch. 2.8 are met.
(CMS/101 requirements?)

2.8-1.1.2.1 and 2.8-1.1.2.2
It may be easier tor mobile units to comply as Class 1 and Class 2 Imaging Rooms than Exam/Treatment or Procedure Rooms. Take your choice.

- Class 1: Typ. X-Ray, Mammo CT, MRI
- Class 2: Cath, Angio, etc.
- Class 3: O/R, Hybrid O/R

Mobile Units cont.

Class 3 must meet full text requirements for O/R's.

2.8-1.3.1.8
Physical protection from vehicular impact. Not water filled plastic jersey barriers.
2014 Appendix recommended concrete filled steel bollards. Removable?

2.8-1.3.3.1
If lift platform – must be host or coach EES power.

2.8-1.3.3.2
Patients must have rain, sleet, wind, snow protection bet. host and coach.

Mobile Units cont.

2.8-3.1.2
Hand washing in patient areas with water based sinks (105 – 120 deg.), liquid or foam soap.

2.8-8.4.2.1
Freeze protect water and drain lines.

2.8-8.4.2.4
Waste lines discharge into host or utility sewage system.

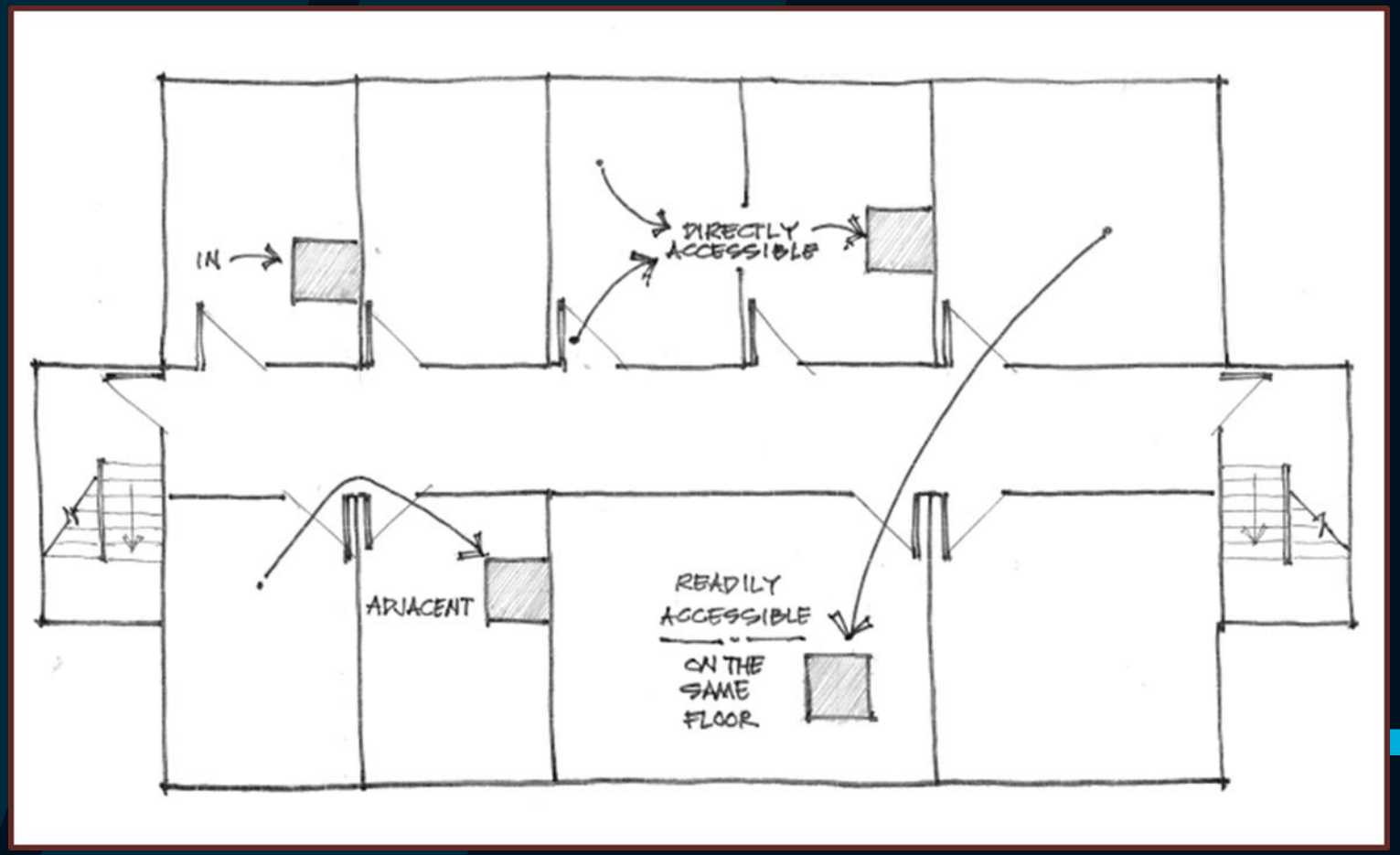
2.8-3.10.2
Patient toilet in the Class 1 & 2 coach or in host readily accessible to coach (on the same floor). 2014 said toilets as close to the unit docking area as possible.

Mobile Units cont.

Toilets – readily accessible
Recovery Area - adjacent to
Support Areas – directly accessible

Location terminology (terms for relationship to an area or room):

In	Located within the identified area or room
Directly accessible	Connected to the identified area or room through a doorway, pass-through, or other opening without going through an intervening room or public space
Adjacent	Located next to but not necessarily connected to the identified area or room
Immediately accessible	Available either in or adjacent to the identified area or room
Readily accessible	Available on the same floor or in the same clinic as the identified area or room
In the same building	Available in the same building or an adjoining building as the identified area or room, but not necessarily on the same floor



Mobile Units cont.

2.8-8.2 HVAC

Class 1 ventilation: + or – procedures follow 170 requirements.
Table 6.4 filtration.

Class 2 ventilation: Meet 170 requirements for the services provided.

25 ft. of separation to coach air intakes. 25 ft. separation to host intakes.

2.8-8.3 Electrical

Class 1 & 2 meet NFPA 99 and NCEC plus Level 1 per 110 for EPSS or be connected to host facility emergency system.

Mobile Units cont.

Testing must be done for every mobile unit at each relocation setup:

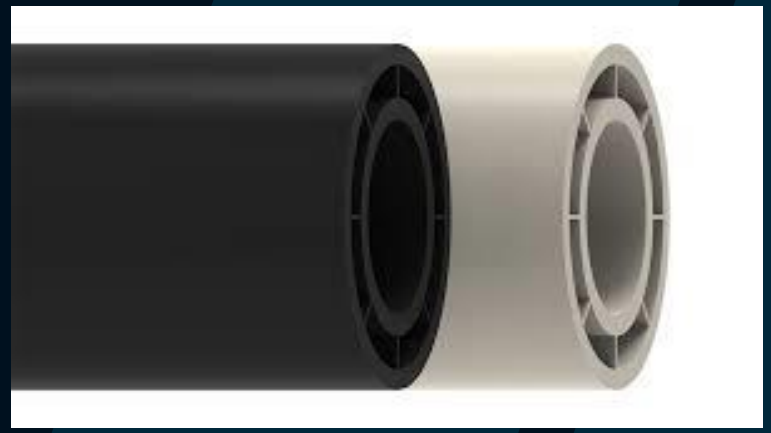
- Grounding system
- Emergency power
- Exit lighting (may be 90 min. battery or generator)
- Fire alarm (coach to hospital and vice versa). Also a pull station
- Nurse call per Table 2.1-2
- IT
- Communication system (incl. telephone direct to host PBX)

New Item - Plumbing

2.1-8.4.2.6

For drainage piping above sensitive areas…

- Double wall containment piping
- Oversize drip pans with a telltale outlet



New Items - Electrical

2.1-8.3.2.2
Life Safety panels now permitted on floors immediately above and below the floor served.

2.1-8.3.2.3
GFCI's in critical care areas must be individually protected by a single GFCI device.

Per Doug Erickson can be a single, duplex or quad GFCI.

Can use GFCI breaker as long as dedicated to the receptacle.

2.1-8.3.5.1
Any hand washing station that depends on electrical power must be connected to the EES.

Bob

Yes or No?

Should every facility fire be reported to DHSR regardless of size, damage, injury/no injury, evacuation or not?

Yes.

Report all and DHSR will decide whether to investigate on site and fill out fire report or discuss with Fire Marshal and take that report. Will advise as to whether repairs have to be submitted as a project.

Bob

Fire Watch Requirements

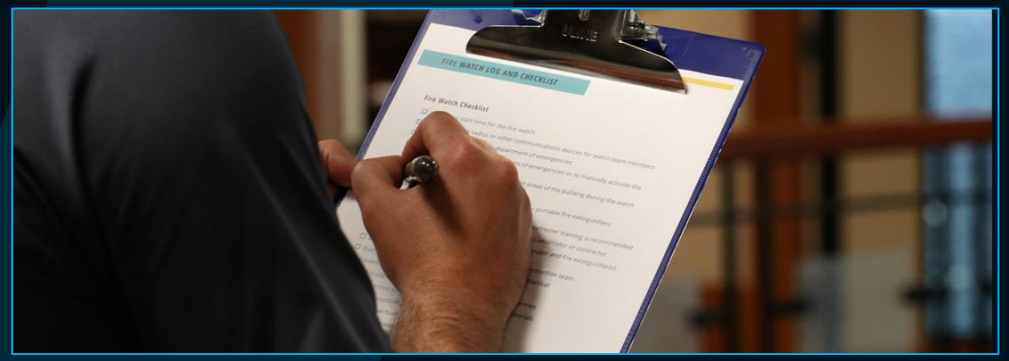
Fire Watch is required per NFPA 101 Life Safety Code [2012 ed.] if either of the following occurs:

- Fire Alarm is not 100% operational for more than 4 hours in a 24 hour period.
- Sprinkler System is not 100% operational for more than 10 hours in a 24 hour period.

If either of these events occur, you are to implement attached Fire Watch Requirements and Contact DHSR and Local Fire Marshal.

Bob

Fire Watch Requirements



Failure of sprinkler or fire alarm system:

1. Local authorities to be notified of equipment failure and subsequent fire watch.
2. The fire watch shall be maintained until the fire alarm and sprinkler systems are properly functioning.
3. Member(s) of a fire watch must thoroughly and regularly check all areas of the facility that are affected by the fire alarm and sprinkler failures. This includes attics, storage rooms, resident rooms, employee break rooms, crawl spaces and concealed spaces if any exist.
4. Fire watcher(s) shall maintain a log sheet of the areas observed on the fire watch.
5. The log shall be maintained in a central area for accessibility and to verify that it is not being tampered.
6. Fire watcher(s) shall be familiar with the building and equipment they are watching.
7. In addition to the facility's established fire emergency plans and procedures, watcher(s) shall know where manual fire alarm stations and fire protection equipment are located – and shall be able to use manual fire alarm stations and fire protection equipment if necessary.
8. Fire watch personnel shall be able to use communication devices, such as walkie-talkies and be trained on filling out fire watch log sheets.
9. During fire watch, a fire watchers only job should be maintaining the fire watch.

Bob

Yes or No?

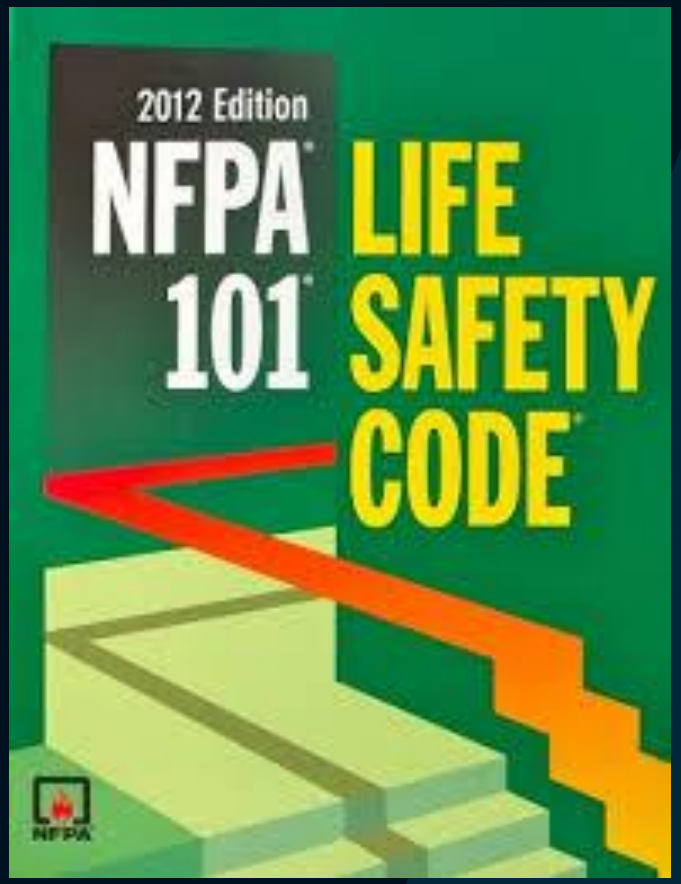
Can an existing 8-foot wide corridor be reduced in width to 4 feet by temporary construction barriers?

No Exits must be maintained and corridors full width.

Bob

Alternative Life Safety Measures?

Can a temporary reduction in corridor width be made during a repair or renovation?



4.6.10 Construction, Repair, and Improvement Operations.

4.6.10.1* Buildings, or portions of buildings, shall be permitted to be occupied during construction, repair, alterations, or additions only where required means of egress and required fire protection features are in place and continuously maintained for the portion occupied or where alternative life safety measures acceptable to the authority having jurisdiction are in place.

?

A.4.6.10.1 Fatal fires have occurred when, for example, a required stair has been closed for repairs or removed for rebuilding, or when a required automatic sprinkler system has been shut off to change piping.

Bob

Annual Inspection of Fire Door Assemblies

DEPARTMENT OF HEALTH & HUMAN SERVICES
Centers for Medicare & Medicaid Services
7500 Security Boulevard, Mail Stop C2-21-16
Baltimore, Maryland 21244-1850

CMS
CENTERS FOR MEDICARE & MEDICAID SERVICES

Center for Clinical Standards and Quality/Survey & Certification Group

Ref: S&C 17-38-LSC

DATE: July 28, 2017

TO: State Survey Agency Directors

FROM: Director
Survey and Certification Group

SUBJECT: Fire and Smoke Door Annual Testing Requirements in Health Care Occupancies

Memorandum Summary

- In health care occupancies, fire door assemblies are required to be annually inspected and tested in accordance with the 2010 National Fire Protection Association (NFPA) 80.
- In health care occupancies, non-rated doors assemblies including corridor doors to patient care rooms and smoke barrier doors are not subject to the annual inspection and testing requirements of either NFPA 80 or NFPA 105.
- Non-rated doors should be routinely inspected as part of the facility maintenance program.
- Full compliance with the annual fire door assembly inspection and testing in accordance with 2010 NFPA 80 is required by January 1, 2018.
- Life Safety Code (LSC) deficiencies associated with the annual inspection and testing of fire doors should be cited under K211 – *Means of Egress - General.*

Background

See 101 [2012] Section 8.3.3.1

The Centers for Medicare & Medicaid Services (CMS) adopted the 2012 edition of the NFPA LSC, which includes requirements for the maintenance, inspection, and testing of fire doors and smoke doors in certain certified health care facilities.

The 2012 LSC added new provisions under Section 7.2.1.15 – *Inspection of Door Openings* for the annual inspection and testing of certain fire doors and smoke doors assemblies in accordance with the 2010 editions of NFPA 80 – *Standard for Fire Doors and Other Opening Protectives*, and NFPA 105 – *Standard for Smoke Door Assemblies and Other Opening Protectives.*

Annual Inspection of Swinging Fire Door Assemblies

Name of Property: _____

Fire Door Assembly Location: _____

Special Locking Arrangement?: _____

Number of Leafs: _____ Fire Rating of Each Leaf: _____ Fire Rating of Frame: _____

Rating of Barrier: _____ Purpose of Rated Barrier: _____

Automatic or Manual Operator?: _____ Hold-open Device?: _____

Inspected By: _____ Affiliation: _____

Inspection Activity:	Yes	No	N/A	Comments
1. Is the door and frame free from holes and breaks in all surfaces?				
2. Are all the glazing, vision light frames and glazing beads intact and securely fastened?				
3. Are the doors, hinges, frame, hardware and threshold secure, aligned and in working order with no visible signs of damage?				
4. Is the door free from missing or broken parts?				
5. Is the clearance from the door edge to the frame no more than 1/8 inch?				

Bob

Change in Elevation – Sidewalks to Pubic Way

Applies to projects from July 2017 going forward.

NC Fire Code Item

Please review NCFC section 105.6.8, Table 105.6.8, and 3006.2.

If > 504 cu. ft. of oxidizing gases are stored, they must be in a 1-hour rated room or rated gas cabinet.

3006.2.2 requires supply and exhaust ducts enclosed in a 1-hour shaft from the room to the exterior.

Shaft vs. wrap?
In writing from LAHJ.

General Item -Fire Dampers

Fusible links SHALL be approximately 50 degrees above the normal temperature in the duct but not less than 160 degrees. [NCSBC 716.3.3.1]

12 x 12 access doors

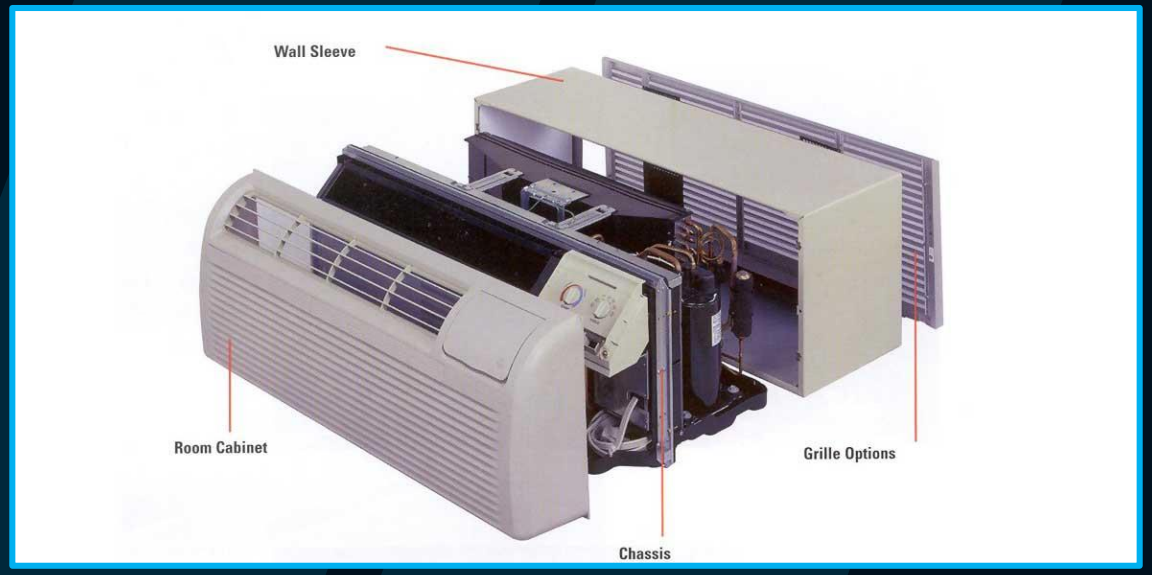
Initial test when installed

Test 1 year after install

Test every 6 years hospitals – every 4 years for other occupancies

General Item - PTACs

If they are bringing in outside air they must be provided with minimum MERV 13 filters



Sprinkler System Common Deficiencies

- **Control valve labels do not indicate area served**

6.7.4.3 Control valve shall identify the portion of the building served

- **Intermediate heads not provided in freezers /coolers with automatic defrost**

8.3.2.5(10) coolers and freezers with auto-defrost SHALL be provided with intermediate-temperature classification or higher

- **Improper amount of spare sprinklers and no wrench in the spare head cabinet**

6.2.9.5 (1)(2)(3) less than 300 = 6, 300 – 1000 = 12, over 1000 = 24

- **Sprinkler Head within 2'-6" of a horizontal discharge diffuse**

NFPA 13 (2016) Table 8.3.2.5(a)

EXHIBIT 8.5 Typical Office Area Diffuser.

Typical HVAC ceiling tile diffusers that are intended to move air along the ceiling, such as the one pictured in Exhibit 8.5, must be treated as horizontal discharge according to A.8.3.2.5. If the HVAC system runs hot, ordinary temperature–rated sprinklers within 2 ft 6 in. (750 mm) of the diffuser are subject to nuisance activation. Ordinary temperature–rated sprinklers are listed for use for temperatures no more than 100°F (38°C). Per Table 8.3.2.5(a), sprinklers classified as intermediate temperature–rated or higher need to be used in such situations. Some air diffusers in ceilings can be set up to discharge in multiple directions, including horizontally along the ceiling.

Generators

Temporary & Permanent

What Codes Apply To EPSS Systems

Hospitals [HL]

2018 Licensure Rules
2018 FGI Guidelines

NFPA 101- 2012 Life Safety Surveys (LSS) /
2018 NFPA 101 for Licensure Reviews (LR)
NFPA 110 - 2010 (LSS)
2016 (LR)
NFPA 99 - 2012 (LSS)
2018(LR)
NFPA 70 - 2011(LSS)
2017 NCEC (LR)

2012 NCSBC

What Codes Apply To EPSS Systems

Nursing Homes [NH]

2015 Licensure Rules

NFPA 101 - 2012 Life Safety Surveyors (LSS)
2012 Licensure Reviews (LR)
NFPA 110 - 2010 (LSS)
2013 (LR)
NFPA 99 - 2012 (LSS)
2012 (LR)
NFPA 70 - 2011 (LSS)
2014 NCEC (LR)

2012 NCSBC

What Codes Apply To EPSS Systems

Hospice [HP]

1991 Licensure Rules

NFPA 101 - 2012 Life Safety Surveyors (LSS)
2012 Licensure Reviews (LR)
NFPA 110 - 2010 (LSS)
2013 (LR)
NFPA 99 - 2012 (LSS)
2012 (LR)
NFPA 70 - 2011 (LSS)
2014 NCEC (LR)

2012 NCSBC

What Codes Apply To EPSS Systems

Ambulatory Surgery Center [AS]

2017 Licensure Rules

NFPA 101 - 2012 Life Safety Surveys (LSS)
2018 Licensure Reviews (LR)
NFPA 110 - 2010 (LSS)
2016 (LR)
NFPA 99 - 2012 (LSS)
2018 (LR)
NFPA 70 - 2011 (LSS)
2017 NCEC (LR)

2012 NCSBC

What Specific Licensure Rules Apply To EPSS Systems

Hospital Licensure Rules

Current Editions **NFPA 101, NFPA 110, NFPA 99, NFPA 70 by reference, NCSBC, NCEC, FGI.**

Facility Guidelines Institute

FGI 2.1-8.3.3
Emergency electrical service shall be provided for in accordance with NFPA 99, NFPA 101 and NFPA 110.

FGI. 2.1-8.3.3.1(3)(i).
Verify the generator will be designed to limit sound levels at the hospital building facades to a level not exceeding 70 dba as required by FGI. 2.1-8.3.3.1(3)(i).

FGI 2.1-8.3.3.1(2)
Where stored fuel is required, storage capacity shall permit continuous operation for at least 24 hours. APPENDIX calls for a fuel storage capacity of 96 gallons in locations likely to experience an extended power outage.

What Specific Licensure Rules Apply To EPSS Systems

Ambulatory Surgery Licensure Rules

Current Editions NFPA **101, NFPA 110, NFPA 99, NFPA 70 by reference, NCSBC, NCEC**

13C .1407 (c)(5)
Critical care areas require a Type 1 essential electrical system.

13C .1407 (c)(6)
Procedures requiring the use of electrical life support equipment require a Type 1 essential electrical system.

13C .1407 (c)(7)
All facilities shall have a minimum TYPE 3 essential electrical system.

13C .1407 (c)(9)
Fuel for the essential electrical system generator shall be stored on site in sufficient quantity to provide for not less than 24 hours of operation.

What Specific Licensure Rules Apply To EPSS Systems

Hospice Licensure Rules - Please note these rules have been modified and are not all inclusive

Current Editions NFPA **101, NFPA 110, NFPA 99, NFPA 70 by reference, NCSBC, NCEC**

13K .1208(1) (a) TYPE 1 or TYPE 2 emergency lights as required by NCSBC

13K .1208(1) (b) Additional emergency lights at nurse stations, drug prep and storage areas, and for telephone switchboard.

13K .1208(1) (c) One or more battery-powered lamps each nurse station.

13K .1208(1) (d) A suitable source of emergency power for life-sustaining equipment to ensure continuous operation for a minimum of 72 hours.

13K .1208(4) Battery-powered corridor lights shall not replace the requirements for emergency power circuit nor be construed to substitute for the generator set. Sufficient fuel shall be stored for the operation of the emergency generator for a period not less than 72 hours, on a 24-hour per day operational basis. The system shall be test run for a period of not less than 15 minutes on a weekly schedule. Records of running time shall be maintained and kept available for reference.

What Specific Licensure Rules Apply To EPSS Systems

Hospice Licensure Rules

13K .1208(6) Lighting for emergency electrical services shall be provided in the following places: (a) exit ways and all necessary ways of approach exits, including exit signs and exit direction signs, exterior of exits exit doorways, stairways, and corridors; (b) dining and recreation rooms; (c) nursing station and medication preparation area; (d) generator set location, switch-gear location, and boiler room, if applicable; and (e) elevator, if required for emergency.

13K .1208 (7) The following emergency equipment shall be provided (a) nurses' calling system; (b) alarm system including fire alarm actuated at manual stations, water flow alarm devices of sprinkler systems if electrically operated, fire detecting and smoke detecting systems, paging or speaker systems if intended for issuing instructions during emergency conditions, and alarms required for nonflammable medical gas systems, if installed; (c) fire pump, if installed; (d) sewerage or sump lift pump, if installed; (e) one elevator, where elevators are used for vertical transportation of patients; (f) equipment such as burners and pumps necessary for auxiliaries and controls, required for heating and sterilization, if installed; and (g) equipment necessary for maintaining telephone service.

13K .1208(8) Where electricity is the only source of power normally used for space heating, the emergency service shall be provided for heating of patient rooms.

13K .1208(9) The emergency electrical system shall be connected within ten seconds to all emergency lighting, alarms, nurses' call, equipment necessary for maintaining telephone service, and receptacles in patient corridors. All other lighting and equipment required to be connected to the emergency system shall either be connected through the ten second primary automatic transfer switching or shall be subsequently connected through other automatic or manual transfer switching. Receptacles connected to the emergency system shall be distinctively marked for identification.

What Specific Licensure Rules Apply To EPSS Systems

Nursing Home Licensure Rules - Please note these rules have been modified and are not all inclusive

Current Editions NFPA **101, NFPA 110, NFPA 99, NFPA 70 by reference, NCSBC, NCEC**

13D .3402(1)(A) Type 1 or Type 2 emergency lights as required by NCSBC Electrical Code.

13D .3402(1)(B) additional emergency lights for control points required by .3201(1)(9) medication preparation as required by .3201(1)(1) and storage areas, and for the telephone switchboard if applicable.

13D .3402(1)(C) One or more portable battery powered lamps at each control point required by rule .3201.(1)(9)

13D .3402 (1)(d) A source of emergency power for life sustaining equipment, if the facility admits or cares for occupants needing such equipment, to ensure continuous operation with on-site fuel storage for a minimum of 72 hours.

13D .3402 (2) An emergency power generating set, including the prime mover and generator, shall be located on the premises and shall be reserved exclusively for supplying the essential electrical system.

13D .3402(3) Emergency electrical services shall be provided as required by rule .3101(b) of this sub chapter with the following modification: section 517.10(B)(2) of the NCSBC Electrical code shall not apply to new facilities.

13D .3402 (4) The following equipment, shall be connected to the critical branch: (a) nurse's calling system; (b) fire pump (c) one elevator, where elevators are used for the transportation of patients; (d) equipment such as burners and pumps necessary for operation of one or more boilers and their necessary auxiliaries and controls (e) telephone service; equipment and (f) task illumination of boiler rooms.

What Specific Licensure Rules Apply To EPSS Systems

Nursing Home Licensure Rules cont.

13D .3402 (5) A dedicated critical branch circuit per bed for ventilator-dependent patients is required. With two duplex receptacles identified for emergency use. If determined that additional electrical life support needs of the patient exceed the requirements stated in this Item, additional critical branch circuits and receptacles shall be provided. For the purposes of this Rule, a "critical branch circuit" is a circuit of the critical branch subsystem of the essential electrical system which supplies energy to task lighting, selected receptacles and special power circuits serving patient care areas as defined by the North Carolina State Building Codes: Electrical Code. This Item applies to both new and existing facilities.

13D .3402 (6) Heating equipment for ventilator dependent patients shall be connected to the critical branch and arranged for delayed automatic or manual connection to the emergency power source. This Item applies to both new and existing facilities.

13D .3402 (7) Task lighting connected to the automatically transferred critical branch shall be provided for each ventilator dependent patient bedroom. This Item applies to both new and existing facilities.

13D .3402 (8) Where electricity is the only source of power normally used for the heating of space, an essential electrical system shall provide for heating of patient rooms.

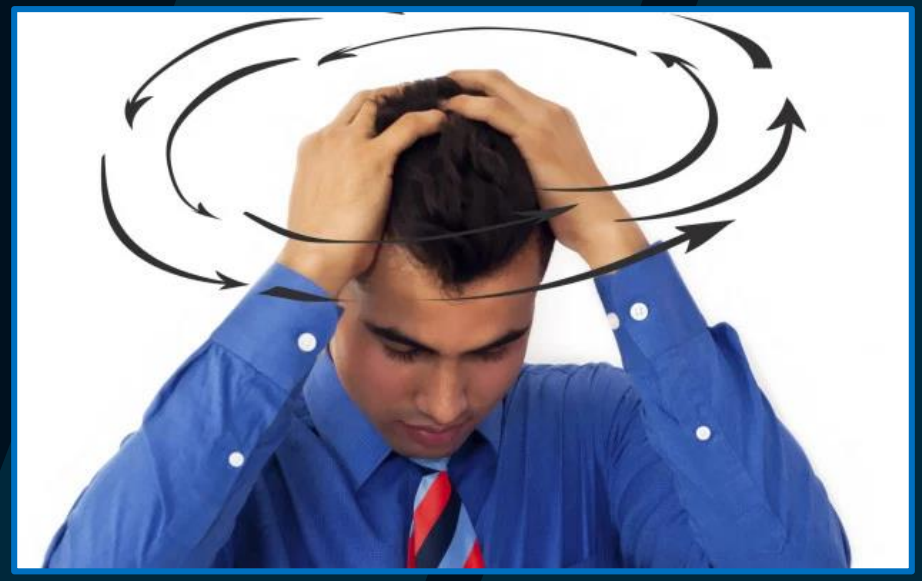
13D .3402 (9) An essential electrical system, with the generator connected within 10 seconds to all emergency lighting, alarms, nurses' call, and equipment necessary for maintaining telephone service. All other lighting and equipment required to be connected to the essential electrical system shall be connected through the 10 second primary automatic transfer switching or through delayed automatic or manual transfer switching. If manual transfer switching is provided, staff of the facility shall operate the manual transfer switch.

13D .3402 (10) Generator fuel supply of minimum 72 hours, with on-site fuel storage. Generator tested and maintained Per NFPA 99 including all amendments and editions. The facility shall maintain records of the generator system tests and make available to AHJ.

13D .3402 (11) The electrical emergency service at existing facilities shall comply with the requirements established in Sections .3100, and .3400 of this Subchapter in effect at the time a license is first issued. Any remodeling shall comply with the requirements established in Sections .3100, and .3400 of this Subchapter in effect at the time of remodeling.

What Codes Apply To EPSS Systems?

It Can Get Complicated



Several Codes Reference Specific Lower Years of
The Various Already Referenced Codes

Most Stringent Shall Apply

Level 1 – Level 2

Level 1 – Where failure could result in loss of human life or serious injuries.

Life safety Illumination, Fire Detection and Alarm Systems, Elevators, Fire Pumps, Public Safety Communications, Industrial processes where current interruption could cause serious life safety or health hazards, Essential ventilation and smoke removal operations

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Level 2 – Where failure is less critical to human life and safety.

Heating and Refrigeration systems, Communication systems, Ventilation and smoke removal systems, Sewage disposal, Lighting, Industrial processes.

Are There Any Requirements For Temporary Generators?

Temporary Generators

Will the generator be used to supply any portions of the licensed facility?

If YES then Temporary Set Required to Comply

It was always thought to be understood that the generator must energize the required portions of your essential electrical system within 10 seconds

Recently Several Facilities Thought It Was Okay to Not Provide Temporary EPSS Systems During Maintenance Or Change Out of Transfer Switches or Generators

What if I have large 3 meg units and can't get the system to parallel and transfer the load within 10 seconds?

Non-Compliant Gen Sets (EPSS) - Generator sets and transfer equipment that require more than 10 seconds to develop power shall be permitted if an auxiliary power supply energizes the emergency system until the generator can pick up the load. **NCEC 700.12(5)**

LIFE SAFETY & CRITICAL BRANCH
10 Seconds a Must

Temporary Generators cont.

Some functions that can remove an EPSS from service

Oil Change

General Maintenance

Replacement of Transfer Switches

Load Bank Testing

Unit Replacement Upgrade

Major Repair

2017 NCEC 700.3(F)

If the emergency system relies on a single alternate source of power, which will be disabled for maintenance or repair, the emergency system shall include permanent switching means to connect a portable or temporary alternate source of power which shall be available for the duration of the maintenance or repair

Temporary Generator Set Requirements

Battery powered emergency lighting and receptacle at the generator set location

No outside air intakes within 25 feet of generator exhaust (also medical air intake)

Fully functional local alarms and remote annunciator at staffed location

Generator instrument panel to comply with NFPA 110

Instrument panel on the gen set accessible

Low Fuel alarms to be provided

Remote E-stop

Temporary Generator Set Requirements cont.

What Type of Connections

Physical Protection of Unit

Protection of Temporary Wiring

Temperature in Enclosure

Operable Louvers Spring Operated Open

PLAN REVIEW REQUIRED?

YES

All Generators & Transfer Switches Whether Temporary or Permanent

Generators are required life safety equipment for several facility types. Replacing one is never a 1-for-1 replacement project, even if the two machines are identical. All must be reviewed.

All Generators & Transfer Switches Temporary or Permanent

At Minimum -
Site adaptation drawing signed and stamped by an engineer licensed to practice in North Carolina as follows:

Verify the location will comply with the requirements of NFPA 110 110 7.2.4.

Verify condition of existing wiring & conclude that no degradation has taken place.

Verification that the wiring is adequate for the required loads to be connected.

The owner should also verify the existing transfer switches and switchgear to which this unit will be connected are in good condition and serviceable.

DHSR EPSS Inspection and Testing Protocol

DHSR Inspection Protocol

Verify generator set is in a properly rated room or enclosure

Level 1 System greater than 1000 amps. Verify normal power is not in same room with the generator set or transfer switches where volts > 150 to ground

Verify exhaust system is adequate and not choked down

Verify fixed or operable louvers (operable spring to open/motor to close)

Verify access to the generator and the instrument panel. (Platform or ladder required?)

DHSR Inspection Protocol cont.

Maintenance of 40 degrees inside the generator room or enclosure

Verify remote annunciator at a constantly attended location

Alarm panels labeled to match names of generators

Test remote panel lights for function and alarm

Verify location of E-stop (not in generator room or on closure exterior)

DHSR Inspection Protocol cont.

Verify E-stop labeled and of a type to prevent unintentional activation (breakglass?)

Battery lights at the generator set and transfer switch locations. (not at exits)

Verify remote annunciator at a constantly attended location

Generator set accessories powered from life safety branch power
(battery charger, block heater, fuel pumps, etc.)

Verify transfer switches listed for emergency use

Verify transfer switches have a means for manual transfer

DHSR Testing Protocol

Battery charger power failure alarms local and remote
"85 % failure of this indication at the remote panel"

E-stop shutdown test and reset (local and remote buttons and alarms)
"90% failure of staff knowledge to reset"

Conduct Drop Test cutting power to smallest transfer switch
(verify < 10 seconds)

Verify generator supplying load indicator at remote panel with smallest switch
"75 % failure rate"

DHSR Testing Protocol cont.

Verify fuel low level alarm settings and confirm they were tested

"95 % Failure rate" Typically set at 95 % high level & 10% low level "factory"

- NFPA 99 6.4.1.1.18(2)(d)

Alarm when the main fuel tank contains less than 4 hour operating supply

- NFPA 110 5.5.2

Alarm when the tank level drops to the required run capacity as required

NFPA 110 5.5.3 by Table 4.1(a)

Main fuel tank capacity of at least 133 percent of either the low-fuel sensor as required by 5.5.2 or the required run time specified in 4.1(a)

DHSR Testing Protocol cont.

Generator Load Testing (NFPA 110 7.13) INSTALLATION ACCEPTANCE

- 70% Failure Rate
- “No Excuse”
- Initial start up verification per the code

DHSR Testing Protocol cont.

Generator Load testing
NFPA 110 7.13 INSTALLATION ACCEPTANCE

- New level 1 installations SHALL NOT be considered as meeting this standard until the acceptance tests have been conducted and test requirements met (conducted IAW 7.13.4.1.1 thru 7.13.4.1.4)

- (1) Load test with building loads or other loads that simulate intended building load shall be continued for not less than 1.5 hours

- (2) After completion of step 1 the prime mover shall be allowed to cool down for not less than 5 minutes

- (3) Then a 2-hour, full load test as follows:
  Minimum of 30 % of nameplate KW rating for 30 minutes
  Then minimum of 50% of nameplate KW rating for the next 30 minutes,
  then 100 % of nameplate KW rating for the next 60 minutes

DHSR Testing Protocol cont.

Generator Load testing (NFPA 110 7.13 INSTALLATION ACCEPTANCE cont)

- NFPA 110 7.13.4.4 (7.13.4.4.1 thru 7.13.4.4.3)

  Crank Cycle Testing and Battery Charge Rate Monitoring

- NFPA 110 5.6.5 and 5.6.6

  All Safeties - To be tested on site as recommended by the manufacturer

DHSR REQUESTS YOUR HELP

Project Submittals

Provide Contact E-mails to Include:

Letters to be addressed to the primary recipient:
CEO, Administrator, Director of Capital Projects for the organization

Please Provide these Titles so Letters Remain Professional
Project managers can be cc'd if desired.

Also provide contact info for:

Local code officials
Project Architect and Engineer – These are typically always included -
THANKS

Provide Color coded Drawings as noted in our Plan Submittal guide

DHSR REQUESTS YOUR HELP

Documents and Inspections

Respond to all review letters prior to requesting inspections

- **This includes providing sprinkler drawings for review**

Prior to Bringing us On Site for Final Inspection:

- **Verify all required final closeout documents will be available on site**
- **Certificate Of Occupancy is a MUST**
- **Ensure air balance testing has been reviewed and approved by the engineer of record**
- **Medical Gas third party verifier report without deficiencies**
- **Has the Owner or Designer visited the project for compliance**

DHSR REQUESTS YOUR HELP

Documents and Inspections

Responses to Reviews

- **Responses often indicate will be taken care of by contractor**
- **Yes, already included in the drawings**
- **Will be provided by the Vendor**
- **Will comply as noted**

The responses are great. However, Often when we show up and the contractor has no knowledge and says why didn't someone tell me.

DHSR REQUESTS YOUR HELP

Documents and Inspections

Generator initial acceptance testing

- **Often we find that the vendor completed test requirements for the annual load bank etc.**
- **No over crank test performed on site**

Air Systems

- **No supply or return duct detectors which were noted in drawing reviews**
- **Final filters not provided with gaskets and are not air tight**
- **Final filters not correct type**

DHSR REQUESTS YOUR HELP

Documents and Inspections

Smoke detector located less than 3 feet from air registers

- **This is a basic requirement and applies to every project**

Sprinkler Systems

- **Labels for control valve to indicate portion of building served**
- **No test orifice available for drop test**
- **Ordinary temp heads provided in freezers coolers with auto defrost**
- **Provide Sprinkler installer certificate correctly filled out to include types & #’s of devices**
- **Spare cabinet provided with wrench and correct amount and type of spare heads**

INSPECTION ≠ PUNCHLIST

Inspection Stops & Will Be Rescheduled for Minimum 2 Weeks

(Simply stated another final will be required)

This will provide for better service to all our customers both on review times and availability for inspections

THANK YOU!

We will stay for questions