



# NFPA 99 - Health Care Facilities Code 2012 and upcoming 2015 Edition

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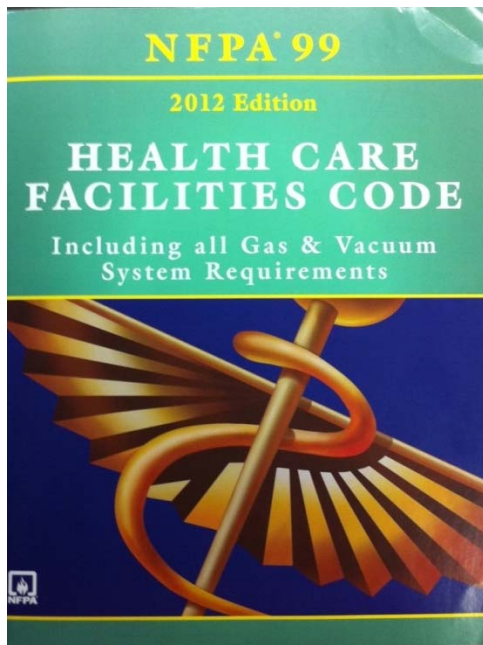
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# NFPA 99 – 2012 Edition – CURRENT EDITION!

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Finally!!!

- 2015 Edition has completed Second Revision balloting

Tech Session Preparation (& Issuance)	Notice of Intent to Make a Motion (NITMAM) Closing Date	2/7/2014	
	Posting of Certified Amending Motions (CAMs) and Consent Documents	4/4/2014	
	Appeal Closing Date for Consent Documents	4/19/2014	
	SC Issuance Date for Consent Documents	4/29/2014	

Tech Session	Association Meeting for Documents with CAMs	6/9-12/2014	
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Appeals and Issuance	Appeal Closing Date for Documents with CAMs	6/24/2014	
	Council Issuance Date for Documents with CAMs	8/14/2014	

# NFPA 99 – 2012 Edition Review

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- Replaced the 2005 Edition
- MAJOR overhaul of the document by NFPA
- Postponed
  - Scheduled for 2010
  - Postponed / Returned to Committee
  - Went through 2 Complete Code Cycles

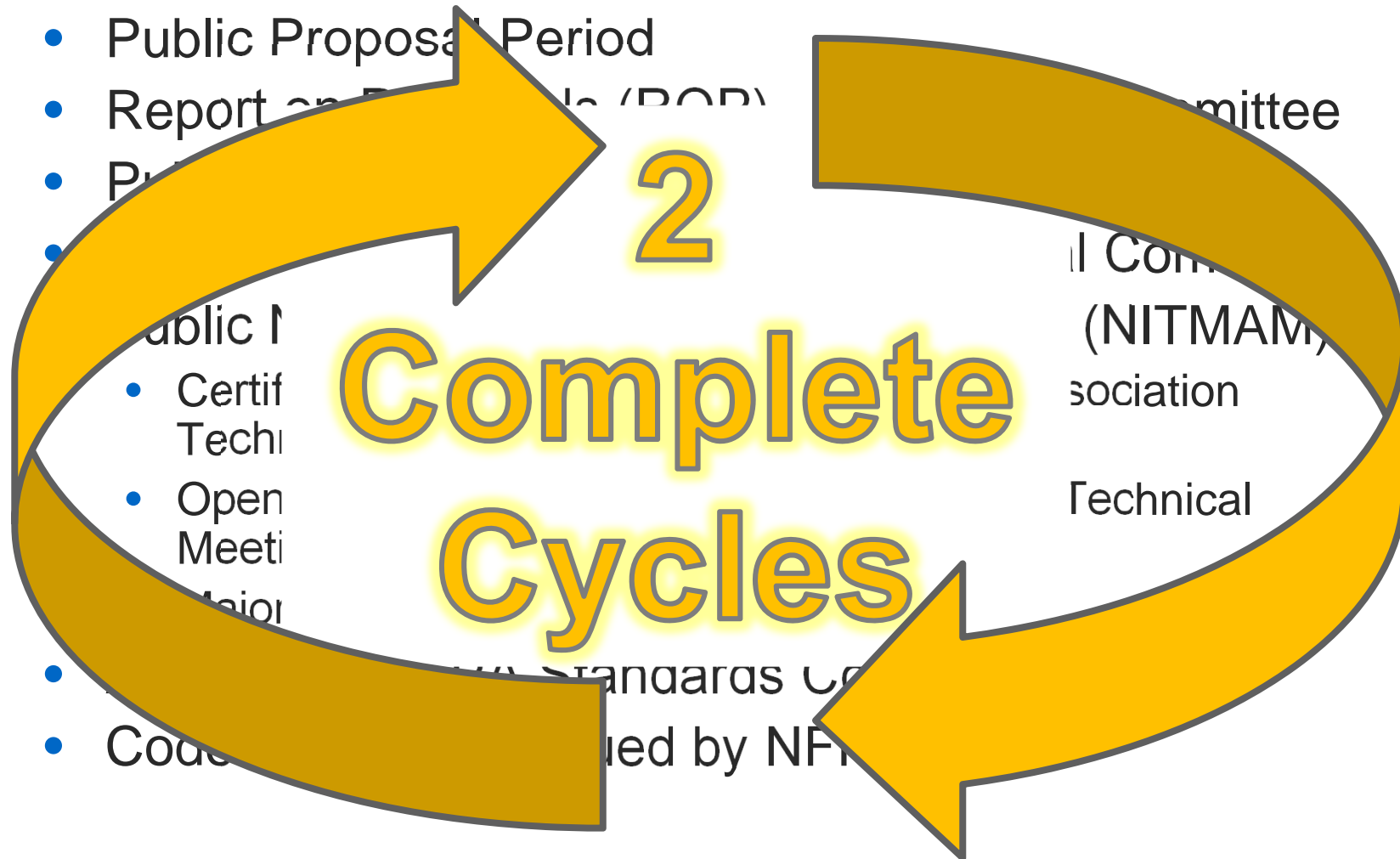
NFPA 99 - Standard for Health Care Facilities  
is now

## NFPA 99 – Health Care Facilities Code

- Makes this an “adoptable” and “enforceable” Code

# Consensus Based Codes Making Process

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# NFPA 99 - 2012 Edition

## Major Structural Revision

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- Document organization changed from Facility- based document to a Risk-based document
  - Eliminates existing Chapters 13 – 19 that covered different types of facilities (i.e. hospital, nursing home, birthing center, etc.)
  - Requirements for systems are now based on the risk to the patient / staff involved
- Several Contentious Electrical Issues
  1. Wet Procedure Locations
  2. Selective Coordination
  3. Application to Existing Systems
  4. Performance vs Installation

# NFPA 99 - 2012 Edition

## Risk Categories

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- NFPA recognized that the basic facility “type” did not necessarily reflect the type of procedures done or risk to patient / staff
  - Existing Chapters 13 – 18 of 2005 Edition
- Lots of “blurring of the lines” has occurred on the types of procedures that are performed in different types of the health care facilities
- Risk to the patient / staff doesn’t change for a given procedure
- New document requires a risk assessment is to be done to determine the Category of risk
- Determination of the risk Category determines the requirements for all Chapters of the document

# NFPA 99 - 2012 Edition

## Risk Categories

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### Chapter 4 – Fundamentals (New Chapter)

- Building System Categories – Applied to rooms or areas within the facility
  - Category 1
    - Facility systems in which failure of such equipment or system is likely to cause **major injury or death** of patients or caregivers...
  - Category 2
    - Facility systems in which failure of such equipment or system is likely to cause **minor injury** to patients or caregivers...
  - Category 3
    - Facility systems in which failure of such equipment or system is **not** likely to cause injury to the patients or caregivers, but may cause **patient discomfort**...
  - Category 4
    - Facility systems in which failure of such equipment or system would have **no impact** on patient care...
- The Category of the area being served determines the requirements of the Essential Electrical System (EES)
  - Critical Care Room = Category 1 Space = Type 1 EES
  - General Care Rooms = Category 2 Space = Type 2 EES
  - Basic Care Room = Category 3 Space = No EES requirement
  - Non-Patient Care Rooms = Category 4 Space = No EES requirement

# NFPA 99 – 2012 Edition

## Other Document Changes

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- Electrical Systems – moved from Chapter 4 to 6
- **NEW!** Information Technology and Communications Systems for Health Care Facilities – Chapter 7
- **NEW!** Plumbing – Chapter 8
- **NEW!** Heating, Ventilation, and Air Conditioning (HVAC) – Chapter 9
- **NEW!** Security Management – Chapter 13
- **NEW!** Features of Fire Protection – Chapter 15
- **Eliminated** - Occupancy Chapters 13 – 18, 21



# NFPA 99 – 2012 Edition

## Key Electrical Changes – Chapter 6

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- Chapter applies to new health care facilities...primarily
- **NEW!** Some changes will apply retroactively to existing facilities
- 6.1.2 Lists the sections that apply to new and existing facilities
  - Receptacles must have a grounding pole
  - Tamper resistant receptacles or tamper-resistant receptacle cover required in Pediatric locations
  - Receptacles, fixed electrical equipment, and corded equipment must be tested after damage, after repair, or at least every 6 months
  - OR's defined as wet procedure locations shall have IPS or GFCI
  - Receptacle covers for life safety and critical branches shall have distinctive markings in Type 3 EES
  - Maintenance, Testing, Recordkeeping, and Administration requirements as in previous editions

# NFPA 99 - 2012 Edition

## Key Electrical Changes – Chapter 6

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- Eliminated term “Emergency System” from NFPA 99
  - In 2005 edition, Emergency System is the name given to the Life Safety and Critical Branches of the Essential Electrical System
  - Not the same “Emergency System” as Article 700 of the NEC
  - Helps remove the scope confusion between Health Care facilities and Article 700 (i.e. 100% Selective Coordination, generator sizing, etc.)
  - Essential Electrical System now consists of (3) separate branches
    1. Life Safety Branch
    2. Critical Branch
    3. Equipment Branch
  - Division of the branches occurs at the transfer switch where more than one transfer switch is required
    - Eliminates challenges with separation of branches all the way back to the Generator or Emergency Switchgear.

# NFPA 99 - 2012 Edition

## Key Electrical Changes – Chapter 6

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6.3.2.2.1.3 Access – Overcurrent devices service Category 1 and 2 rooms not permitted in public spaces

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

6.4.2.2.2 Feeders from Alternate Source.

(A) A single feeder supplied by a local or remote alternate source shall be permitted to supply the essential electrical system to the point at which the life safety, critical, and equipment branches are separated.

(B) Installation of the transfer equipment shall be permitted at other than the location of the alternate source.

# NFPA 99 - 2012 Edition

## Key Electrical Changes – Chapter 6

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### 6.3.2.2.6.2 Minimum Number of Receptacles

- General Care Areas (Category 2) – 8 receptacles
- Critical Care Areas (Category 1) – 14 receptacles
- Operating Rooms (Category 1) – 36 receptacles

### 6.3.2.2.7.1 Isolated Ground Receptacles

- Isolated ground receptacle not allowed in patient care vicinity

### 6.3.2.2.8 Wet Procedure Location

6.3.2.2.8.4 All Operating Rooms are considered to wet procedure locations, unless a risk assessment determines otherwise

- Wet procedure locations require either GFCI or Isolated Power Systems
- No preference is given to either type of protection
- This issue created much debate in the TC and several motions

# NFPA 99 - 2012 Edition

## Key Electrical Changes – Chapter 6

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- Essential Electrical System Changes
  - 6.4.2.2.3.3 Alarms and alerting systems (except fire alarm system) can be on either life safety or critical branch
  - 6.4.2.2.3.4 All generator support equipment required to be on Life Safety Branch (formerly part of the equipment branch)
  - 6.4.4.1.1.2 10-second criterion does not apply for monthly testing. Must be proved annually.
    - Allows the use of closed transition ATS that may take more time to sync between two live sources

# NFPA 99 - 2012 Edition

## Selective Coordination

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- Selective Coordination requirement added for Type 1, 2, and 3 EES
  - 6.4.2.1.2, 6.5.2.1.1, 6.6.2.1.1
  - **“Overcurrent protective devices serving the essential electrical system shall selectively coordinate for the period of time that a fault’s duration extends beyond 0.1 second.”**
  - Included the same exceptions from Art. 700 for:
    - Transformer primary and secondary
    - OCPD’s of the same size in series

# NFPA 99 - 2012 Edition

## Selective Coordination

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- Highly contentious issue in the NEC and in NFPA 99
- Numerous Motions and Appeals from NEFA (National Electric Fuse Association), IBEW, and NECA challenging the new NFPA 99 requirements
  - All were defeated...numerous times!
- Highlighted the need to differentiate between performance requirements and installation requirements
- NFPA 99 Health Care Facilities Code
- 1.1 Scope
  - 1.1.4.1 Electrical Systems
    - 1.1.4.1 Chapter 6 covers the performance, maintenance, and testing of electrical systems (both normal and essential) in health care facilities.

# Performance vs Installation Requirements

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- Technical Correlating Committee formed a Task Group on Inner-committee Coordination on Emergency Electrical Systems
  - Performance Requirement – A specification of the manner in which equipment or a system is intended to function or operate.
  - Installation Requirement – A specification of the material and process associated with putting equipment in place and making it ready for use in accordance with performance requirements.
- Standards Council clarification to Technical Committees - if the scope of their document is performance, they can only write performance requirements. If scope is installation, then can only write installation requirements.
- A recent example related to the 2014 NEC:
  - CMP-15 (Art. 517) added a requirement that all Life Safety and Critical branch outlets must “have an illuminated face or an indicator light to indicate there is power to the receptacle.”
  - Overturned by the Standards Council as it was determined to be a performance requirement (NFPA 99), and not an installation requirement (NFPA 70).



# NFPA 99 - 2012 Edition

## Proposals for 2014 NEC

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- As a result of the Standards Council's Decision, coordination is needed between NFPA 99 2012 and Article 517 of the NEC
  - Intercommittee coordination task group created
- NEC and NFPA 99 are on different Code Cycles
- Proposals were made by Walt Vernon, NFPA 99 – ELS - Technical Committee Chair
  - Mostly “clerical” to harmonize the terminology
    - “rooms” vs “areas”
    - “branches” vs “systems”
    - Minimum number of recepts
    - Etc.
- All proposals were accepted exactly as proposed with the exception of Selective Coordination...more to follow...



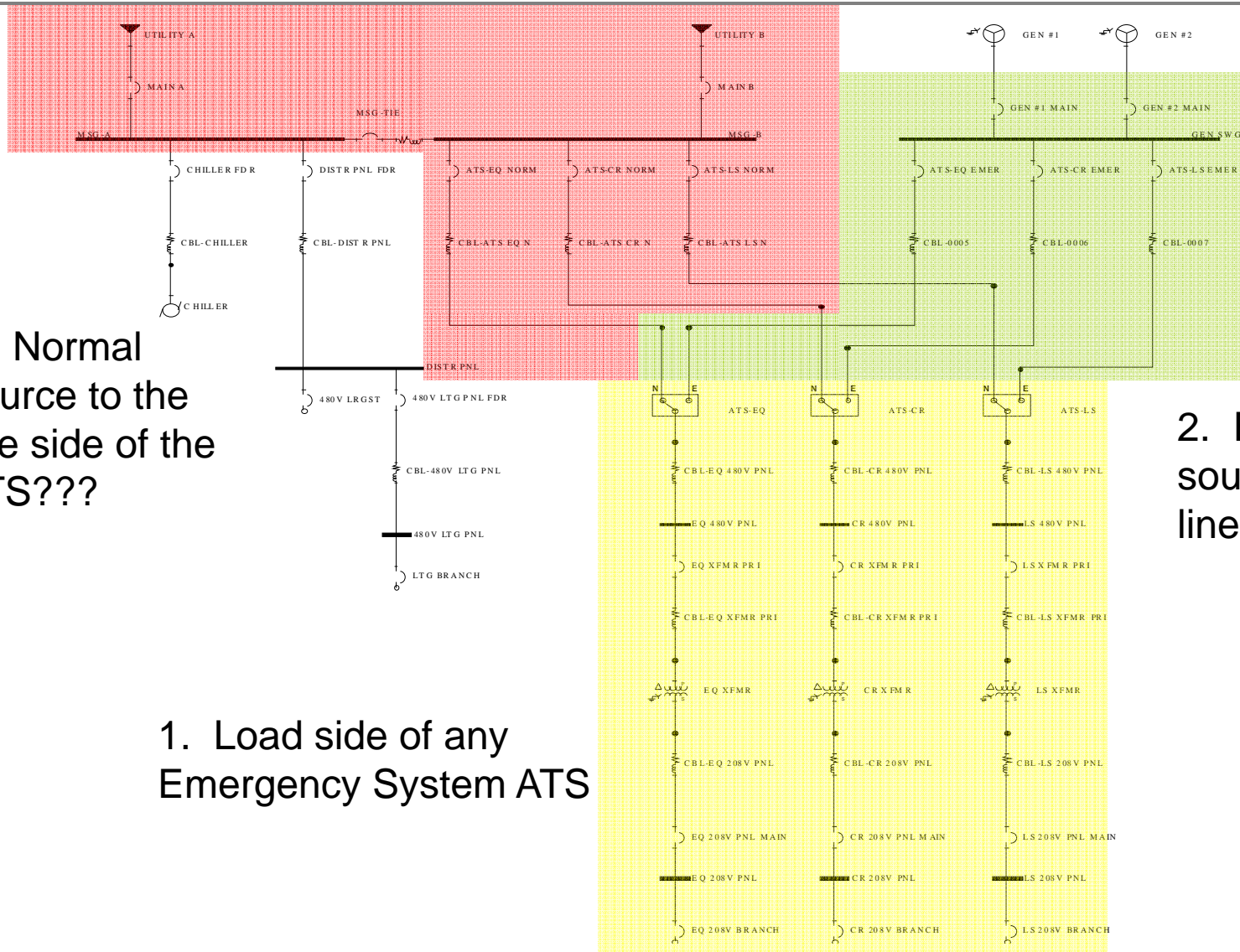
# Selective Coordination

# What devices are required to Selectively Coordinate?

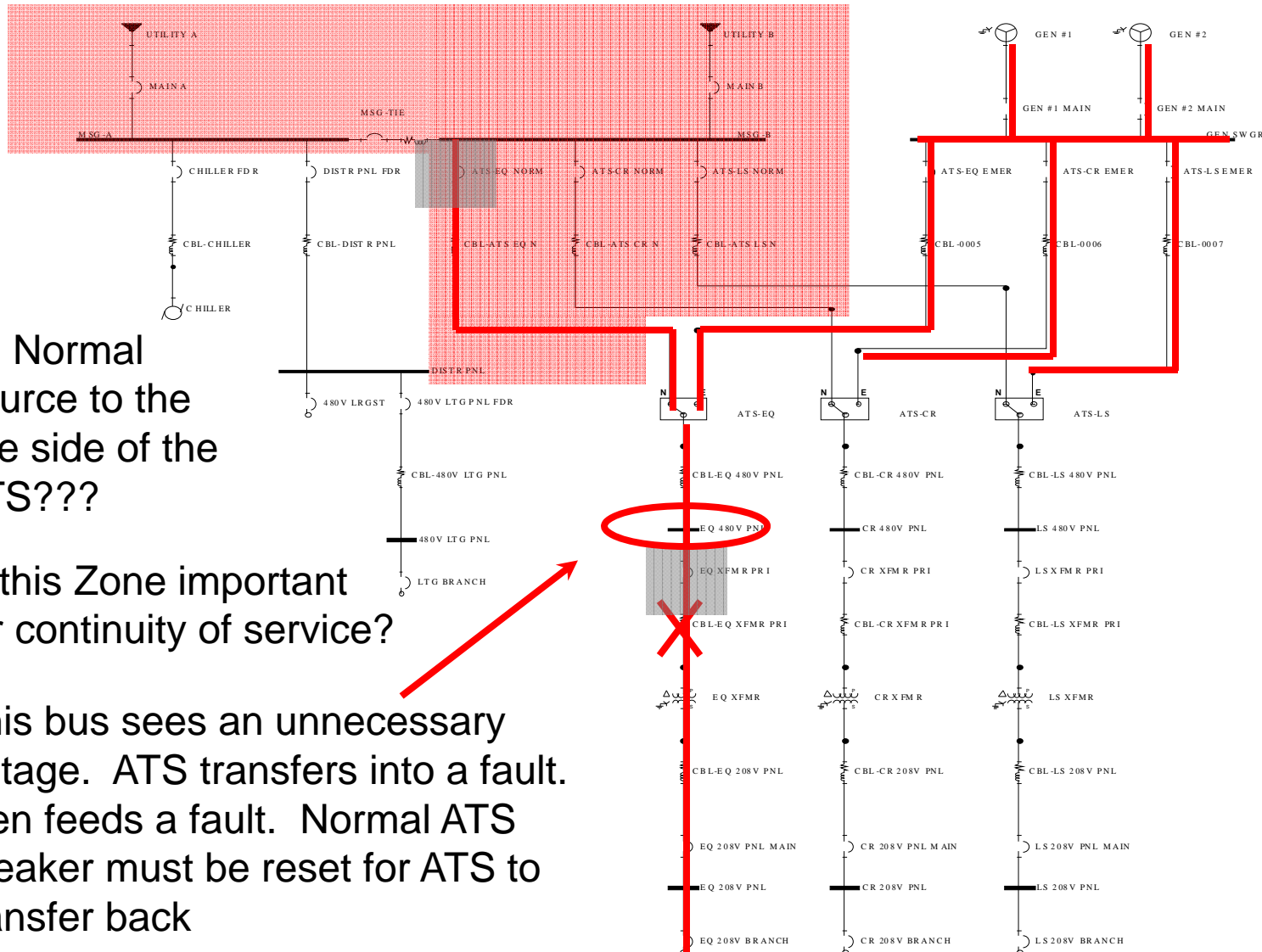
3. Normal source to the line side of the ATS???

1. Load side of any Emergency System ATS

2. Emergency source to the line side ATS



# What devices are required to Selectively Coordinate?



3. Normal source to the line side of the ATS???

Is this Zone important for continuity of service?

This bus sees an unnecessary outage. ATS transfers into a fault. Gen feeds a fault. Normal ATS breaker must be reset for ATS to transfer back

# NFPA Comment

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“Although the emergency systems of a hospital are designated as the life safety branch and the critical branch (see 517.30 (B)(2)), Section 517.26 requires that the *essential* electrical system meet the requirements of Article 700. Therefore, since the essential electrical system in accordance with 517.30 (B)(1) includes the equipment system the provisions of Section 700.27 are also applicable to the equipment system as follows: Section 700.27 requires *all emergency system overcurrent devices* to be selectively coordinated with *all upstream overcurrent protective devices*. **The phrase “selectively coordinated with all supply side overcurrent protective devices” does not limit the requirement to only those that are installed in series with the alternate supply source for the emergency system and includes coordination with the normal side providing the normal side supplies the essential circuits during normal operation.** Section 700.27 is silent on overcurrent devices that are not in series with essential system overcurrent protective devices. **Although the scope of Article 700 does not include supplies other than emergency, 700.27 is specific in that all the emergency system overcurrent devices must be selectively coordinated with all supply side devices which would include those on the normal side unless the exceptions to 700.27 apply.** *Note: See ROP15-68, associated comments and the 2011 NEC draft for changes to 517.26 for future reference.”*

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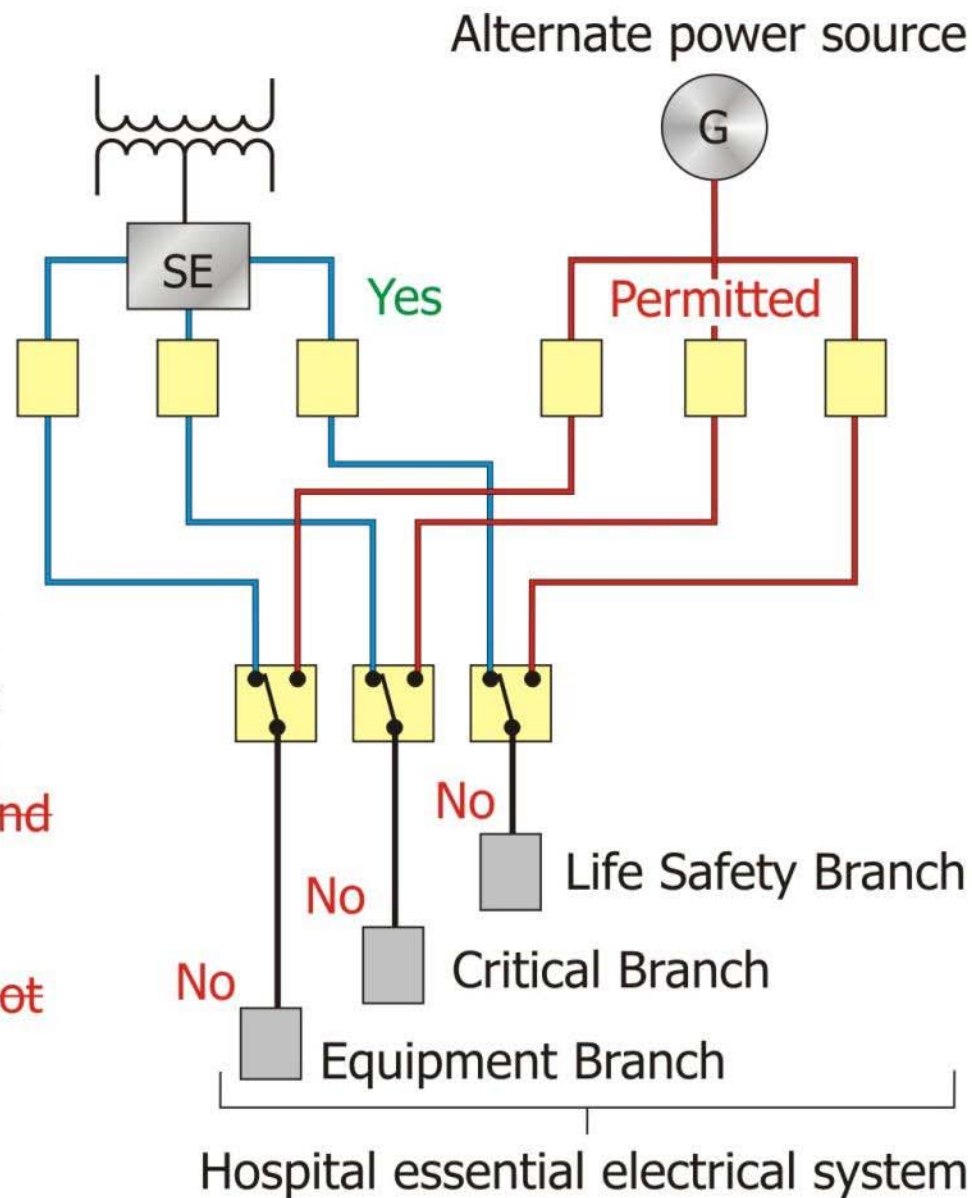
## 517.17(B) Feeder GFP (Health Care Facilities)



Where ground-fault protection is provided as specified by 230.95 or 215.10, an additional step of GFP is required in all next level feeder disconnecting means downstream toward the load

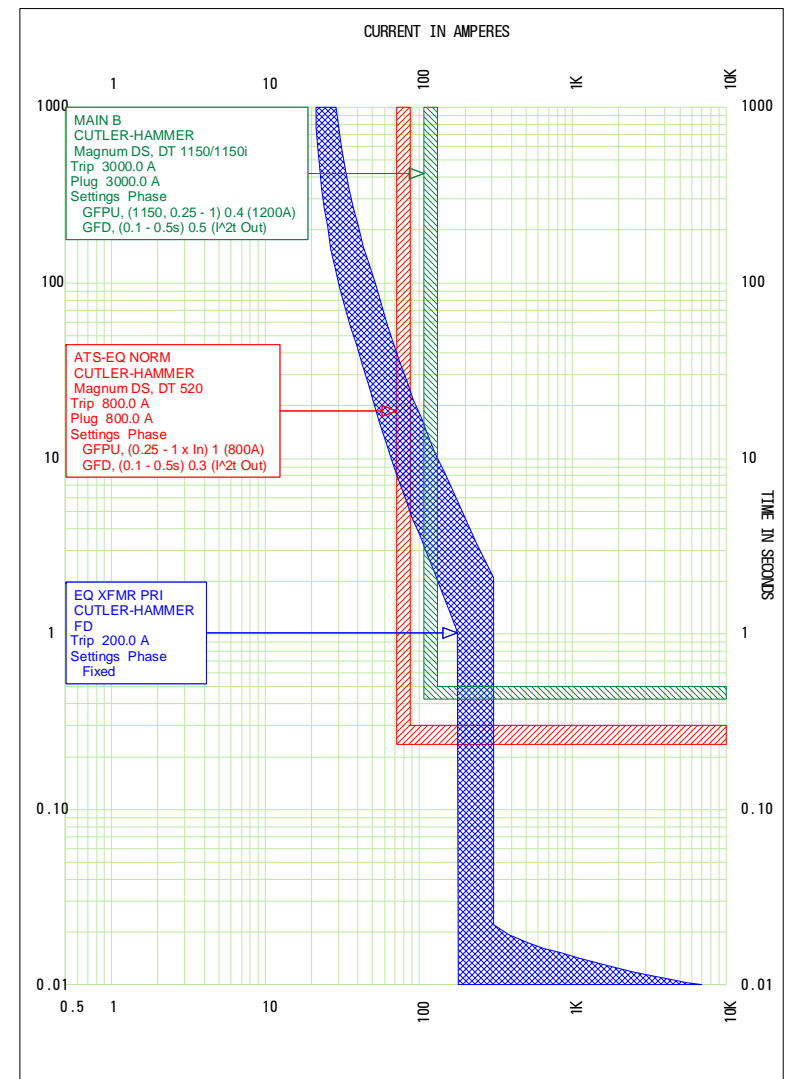
Additional levels of GFP shall not be installed as follows:

- (1) On the load side of an essential electrical system transfer switch
- ~~(2) Between the on-site generating unit(s) described in 517.35(B) and the essential electrical system transfer switch(es)~~
- ~~(3) On electrical systems that are not solidly grounded wye systems (greater than 150 volts to 600 volts phase-to-phase)~~



# What devices are required to Selectively Coordinate? What about GF Protection?

- What about coordination with required GF protection?
- Required on 1<sup>st</sup> 2-levels for Health Care applications
  - Max GF pick-up = 1200 Amps
  - Max GF delay = 0.5 sec
- Won't coordinate with even small downstream breakers
- Not addressed in the Code or by the CMP-13
- Are more levels of GF needed?



## 2014 NEC / 2015 NFPA 99

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- There has been significant effort since 2012 NFPA 99 was released to correlate between it and Article 517 of the NEC
- A series of proposals from the NFPA 99 Technical Committee were submitted for Article 517 and accepted to harmonize language





# SELECTIVE COORDINATION

# 2015 NFPA 99 Key Changes

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- **2014 NEC (CMP-13) changes the definition of Coordination (Selective)**
- **100. Coordination (Selective).** Localization of an overcurrent condition to restrict outages to the circuit or equipment affected, accomplished by the ~~choice~~ selection and installation of overcurrent protective devices and their ratings or settings for the full range of available over-currents, from overload to the maximum available fault current, and for the full range of overcurrent protective device opening times associated with those over-currents.

## 2015 NFPA 99 Key Changes

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- 2014 NEC (CMP-15) then moved away from the term Coordination (Selective)
- **517.30 (F) 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.
  - Informational Note: The terms “Coordination” and “Coordinated” as used in this section do not cover the full range of overcurrent conditions.

## 2015 NFPA 99 Key Changes

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- Clarifies that the Health care requirement for Coordination at 0.1 sec. & above is different than the requirement for Coordination (Selective) in Sections 620.62, 700.27, 701.27, and 708.54.
- 2015 NFPA 99 will correlate with Art. 517 of the 2014 NEC
  - Adopted same language and added the Informational Note to the Annex material

# 2015 NFPA 99 Key Changes

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- Most other NFPA 99 2015 changes are related to “clean up” efforts
  - Still have a ways to go on organization of Chapter 6
- GFCI used in Operating Rooms
  - Where GFCI protection is used in an operating room:
    - Each receptacle shall be a GFCI device, or
    - Each receptacle shall be individually protected by a single GFCI device
- “Room” vs “Area” vs “Space”
  - The term “space” is replacing “area” or “room”
  - Example:
    - Category 1 space (in lieu of Critical Care Area, or Category 1 room)

# 2015 NFPA 99 Key Changes

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- Only the life safety branch must comply with Art 700 (Emergency Systems) of the NEC
  - Additionally, several of the Art. 700 provisions do not apply
    - Generator sizing – on demand load, not connected load
    - 1 hour fire rated cabling vs 2 hour fire rated cabling
    - Battery backed lights allowed on the life safety branch
    - 700.27 - Coordination (Selective)

# 2015 NFPA 99 Key Changes

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- Type 3 Essential Electrical System removed
  - There are no risk Categories that call for a Type 3 EES
- Receptacle, cord connected, and fixed electrical equipment
  - Eliminated testing interval of every 6 months

# 2015 NFPA 99 Key Changes

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- Fuel Cells allowed as an alternate power source
  - Must have N+1 capacity
  - Restore power in 10 seconds or less
  - Sufficient fuel supply with onsite storage for EES type
  - Must include a connection for portable diesel generator to supply life safety and critical branches



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# Questions?