



3.3.1.4 NFPA 101 (LSC) Layout

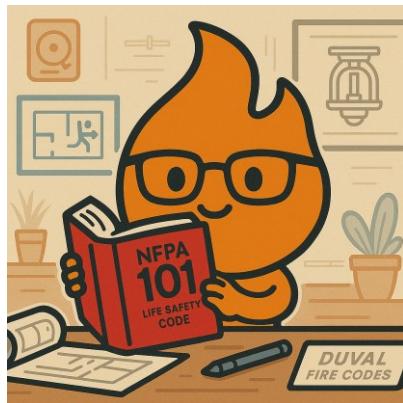


Figure 30: Ignis Reading his Favorite Book

First published in 1966 as the Building Exits Code that evolved into the document that we know today as NFPA 101, Life Safety Code (LSC). We learned previously that it is an occupancy-based code, this means that the requirements lean more towards life safety of the occupants and not necessary property protection. This means that the document will focus on requirements that protect occupants or that can extend tenable conditions.

The LSC comprises forty-three (43) chapters and a handful of annexes. The LSC includes dual chapters for most all the occupancies, a new and existing chapter. This differs from the IBC that has an entirely separate document for existing structures,

the International Existing Building Code (IEBC).

NFPA 101, Life Safe Code (LSC) 2024 Edition		MAE-40039 Study Guide	Helpful Tips from Ignis
Chapter	Title	Reference Chapter	
Chapter 1	Scope and Administration	Chapter 2	This Chapter establishes the administrative provisions for the scope and purpose of the document along with enforcement. It does not include the same administrative requirements as the IBC, as this document is not entire building code and is to be adopted as part of a larger set of regulations.
Chapter 2	Reference Publications	N/A	In the NFPA documents, instead of having the reference publications (other codes and standards referenced in the code prescriptive requirements) at the end of the document, NFPA includes it in the beginning.
Chapter 3	Definitions	Chapter 2 Glossary	In the LSC, this Chapter includes specific definitions used in this document that might differ than your typical understanding. We have included some of the more common ones in the Glossary for your quick reference.

FOR USE IN UCSD EXTENDED STUDIES
COURSE MAE-40039 AND PERSONAL USE
ONLY.

OCCUPANCY AND CODE STRUCTURE



NFPA 101, Life Safe Code (LSC) 2024 Edition		MAE-40039 Study Guide	Helpful Tips from Ignis
Chapter	Title	Reference Chapter	
Chapter 4	General Requirements	Chapters 2 and 3	This Chapter details the overall goals of this code, objectives, and the options for compliance either prescriptive (by the book) or performance based (by fire design scenario and not “by the book”)
Chapter 5	Performance-Based Option	N/A	This Guide and Course will not review the Performance-Based Option. The performance-based design is an option that allows designers to comply with the Code without having to meet the prescriptive code requirements. This involves following the different fire scenarios and performing some fire and/or egress modeling. While outside the scope of this course, understanding the basis and foundations of the concepts will help you apply the performance-based designs, as you are trying to now meet the “intent” rather than the “letter of the code”.
Chapter 6	Classification of Occupancy and Hazard of Contents.	Chapter 3	Later in this Chapter, we dive into the different classifications of Occupancies. This classification(s) directs us to specific occupancy chapter that includes requirements for means of egress, and fire protection features and systems. These occupancy chapters will refer back to the core Chapters as we will see. This Chapter also includes the evaluation of the contents (i.e. fuel loading) of the spaces to determine the level of hazard (low, ordinary, or high).

**FOR USE IN UCSD EXTENDED STUDIES
COURSE MAE-40039 AND PERSONAL USE
ONLY.**



MAE-40039 Study Guide by Ignis:
Fundamentals of Building and Life Safety Code Regulations

NFPA 101, Life Safe Code (LSC) 2024 Edition		MAE-40039 Study Guide	Helpful Tips from Ignis
Chapter	Title	Reference Chapter	
Chapter 7	Means of Egress	Chapter 5	If you can't get out, nothing else matters! We start the dive into the specific rooms and areas, identifying the Use/Function of these spaces. Calculating the number of occupants and size of the means of egress system (exiting!). This is one of the "Core" Chapters of the LSC, that the occupancy chapters will refer back or further modify.
Chapter 8	Features of Fire Protection	Chapter 6	Compartmentation! Walls, ceilings, floors, and openings between floors will have some specific fire and smoke protections (fire-rated and smoke-rated assemblies). The other Chapters will refer to this chapter to detail the fire and smoke rating requirements on certain types of assemblies and allowances for certain vertical openings.
Chapter 9	Building Service, Fire Protection, and Life Safety Equipment	Chapter 7	The Fire Protection Systems! This is where we find out when and where the occupancy chapters will refer to when certain fire protection systems are required (note that some of the occupancy chapters modify/expand on some requirements similar to the IBC) and what standards they need to meet. This is also where the elevator requirements are found in the LSC (similar to IBC Chapter 30).
Chapter 10	Interior Finishes	Chapter 8	The final touches! The material attached to our bare walls, floors, and ceilings. These too have specific requirements depending on building classifications. There are details about furnishings here too.

FOR USE IN UCSD EXTENDED STUDIES
COURSE MAE-40039 AND PERSONAL USE
ONLY.

OCCUPANCY AND CODE STRUCTURE



NFPA 101, Life Safe Code (LSC) 2024 Edition		MAE-40039 Study Guide	Helpful Tips from Ignis
Chapter	Title	Reference Chapter	
Chapter 11	Special Structures and High-Rise Buildings	Chapter 3	This is where LSC includes special requirements for some types of buildings (underground, high-rise, towers, etc). This chapter is not as extensive of the IBC Chapter 4. This is due to the fact that the LSC occupancy chapters will include special occupancy requirements, so they do not need to be repeated here.
Chapter 12	New Assembly Occupancies		This is the beginning of the Occupancy Chapters. Being an occupancy-based code, the LSC provides a separate chapter for each occupancy. In addition, most will include a “New” and “Existing”, Assembly Occupancies includes a separate chapter for each.
Chapter 13	Existing Assembly Occupancies	Chapter 3	
Chapter 14	New Educational Occupancies	Chapter 3	Being an occupancy-based code, the LSC provides a separate chapter for each occupancy. Educational Occupancies have a separate chapter for ‘existing’ and ‘new’.
Chapter 15	Existing Educational Occupancies	Chapter 3	
Chapter 16	Existing Day-Care Occupancies	Chapter 3	Being an occupancy-based code, the LSC provides a separate chapter for each occupancy. Day-Care Occupancies have a separate chapter for ‘existing’ and ‘new’.
Chapter 17	New Day-Care Occupancies	Chapter 3	
Chapter 18	New Health Care Occupancies	Chapter 3	Being an occupancy-based code, the LSC provides a separate chapter for each occupancy. Health Care Occupancies have a separate chapter for ‘existing’ and ‘new’.
Chapter 19	Existing Health Care Occupancies	Chapter 3	

**FOR USE IN UCSD EXTENDED STUDIES
COURSE MAE-40039 AND PERSONAL USE
ONLY.**



MAE-40039 Study Guide by Ignis:
Fundamentals of Building and Life Safety Code Regulations

NFPA 101, Life Safe Code (LSC) 2024 Edition		MAE-40039 Study Guide	Helpful Tips from Ignis
Chapter	Title	Reference Chapter	
Chapter 20	New Ambulatory Health Care Occupancies	Chapter 3	Being an occupancy-based code, the LSC provides a separate chapter for each occupancy. Ambulatory Health Care Occupancies have a separate chapter for 'existing' and 'new'.
Chapter 21	Existing Ambulatory Health Care Occupancies		
Chapter 22	New Detention and Correctional Occupancies	Chapter 3	Being an occupancy-based code, the LSC provides a separate chapter for each occupancy. Detention and Correctional occupancies have a separate chapter for 'existing' and 'new'.
Chapter 23	Existing Detention and Correctional Occupancies		
Chapter 24	One- and Two-Family Dwelling	Chapter 3	This Chapter does not have a new or existing, this Chapter will include both new and existing requirements.
Chapter 25	Reserved	N/A	Reserved (mostly to keep the general format of Even chapters applying to New Construction and Odd chapter applying to Existing Construction).
Chapter 26	Lodging or Rooming Houses	Chapter 3	This chapter does not have a new or existing, this chapter will include both new and existing requirements.
Chapter 27	Reserved	N/A	Reserved (mostly to keep the general format of Even chapters applying to New Construction and Odd chapter applying to Existing Construction).
Chapter 28	New Hotels and Dormitories	Chapter 3	Being an occupancy-based code, the LSC provides a separate chapter for each occupancy. Hotels and Dormitories

FOR USE IN UCSD EXTENDED STUDIES
COURSE MAE-40039 AND PERSONAL USE
ONLY.

OCCUPANCY AND CODE STRUCTURE



NFPA 101, Life Safe Code (LSC) 2024 Edition		MAE-40039 Study Guide	Helpful Tips from Ignis
Chapter	Title	Reference Chapter	
Chapter 29	Existing Hotels and Dormitories		Occupancies has a separate chapter for 'existing' and 'new'.
Chapter 30	New Apartment Buildings	Chapter 3	Being an occupancy-based code, the LSC provides a separate chapter for each occupancy. Apartment Building Occupancies have a separate chapter for 'existing' and 'new'.
Chapter 31	Existing Apartment Buildings		
Chapter 32	New Residential Board and Care Occupancies	Chapter 3	Being an occupancy-based code, the LSC provides a separate chapter for each occupancy. Residential Board and Care Occupancies have a separate chapter for 'existing' and 'new'.
Chapter 33	Existing Residential Board and Care Occupancies		
Chapter 34	Reserved	N/A	Reserved chapters.
Chapter 35	Reserved	N/A	
Chapter 36	New Mercantile Occupancies	Chapter 3	Being an occupancy-based code, the LSC provides a separate chapter for each occupancy. Mercantile Occupancies have a separate chapter for 'existing' and 'new'.
Chapter 37	Existing Mercantile Occupancies		
Chapter 38	New Business Occupancies	Chapter 3	Being an occupancy-based code, the LSC provides a separate chapter for each

FOR USE IN UCSD EXTENDED STUDIES
COURSE MAE-40039 AND PERSONAL USE
ONLY.



MAE-40039 Study Guide by Ignis:
Fundamentals of Building and Life Safety Code Regulations

NFPA 101, Life Safe Code (LSC) 2024 Edition		MAE-40039 Study Guide	Helpful Tips from Ignis
Chapter	Title	Reference Chapter	
Chapter 39	Existing Business Occupancies		occupancy. Business Occupancies have a separate chapter for 'existing' and 'new'.
Chapter 40	Industrial Occupancies	Chapter 3	Another Chapter that includes both applicable to new and existing industrial occupancies.
Chapter 41	Reserved	N/A	Another reserved chapter, to keep occupancy chapters on the Even numbered.
Chapter 42	Storage Occupancies	Chapter 3	Another Chapter that includes both applicable to new and existing industrial occupancies.
Chapter 43	Building Rehabilitation	Chapter 3	This Chapter guides you through which chapters of the new and existing apply depending on the scope of the building rehabilitation.
Annex A	Explanatory Material	N/A	This is where you will find the explanatory material on some code sections (the asterisk*). This is not enforceable language (no <i>shall</i> , uses <i>should</i> , instead) but helps with understanding the intent or why behind some of the code requirements.

Other LSC Annexes

Similar to the International Building Code, the LSC includes a handful of informational annexes. These are supplementary provisions that are not part of the adopted code. They include the following:

- Annex B: Supplemental Evacuation Equipment
- Annex C: NFPA Documents on Hazardous Materials
- Annex D: Alternate Care Sites
- Annex E: Informational References

Not nearly as many as the IBC Appendices, but a handful of additional annexes for assistance.



3.3.1.5 NFPA 101 (LSC) Navigation

The Goals and Objectives:

Chapter 4 covers the Goals of this document, 1) the protection of occupants not intimate with the initial fire development, and 2) improvement of survivability of occupants intimate with initial fire development.

The objectives of this document include:

Occupant Protection: The design of the structure is to be designed/constructed and maintained to protect occupants who are not intimate with the initial fire development for the time they would need to evacuate, relocate or defend-in-place.

Structural Integrity: The design of the structure is to be maintained for the time needed for occupants who are not intimate with the initial fire development to evacuate, relocate or defend-in-place. While the LSC is not a building code, there are certain occupancy chapters that will have minimum construction requirements in the XX.1.6 subsection to help maintain structural integrity for the time needed for evacuation.

Hazardous Materials Emergency Protection: Refers to other hazardous material codes and standards for additional safeguards for occupancies and buildings that store and handle hazardous materials.

Security Features: While some occupancies will require security for a variety of reasons, these features are to not compromise the requirements of the LSC. You will notice that there are some restrictive-access permissions but require some specific coordination and additional requirements.

System Effectiveness: Reinforces the need to maintain the systems used to achieve the goals. These systems are not used daily like our AC systems during the summer months, so we need to ensure that these safety systems operate anytime. To ensure this effectiveness, testing, inspecting and maintenance (ITM) program is extremely important for building owners and users.

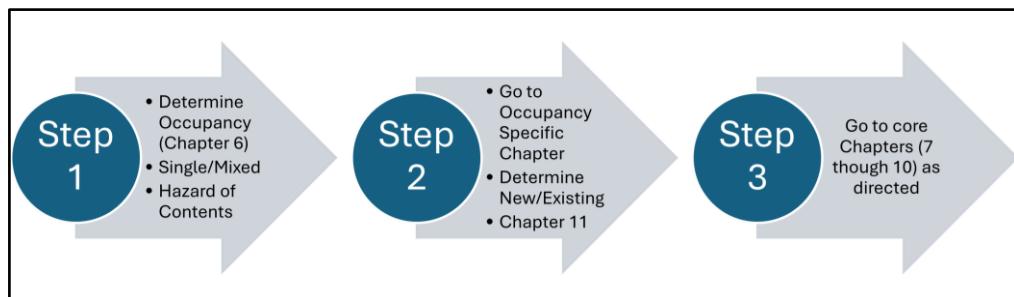


Figure 31: NFPA 101 (LSC) Prescriptive Navigation

**FOR USE IN UCSD EXTENDED STUDIES
COURSE MAE-40039 AND PERSONAL USE
ONLY.**



MAE-40039 Study Guide by Ignis:
Fundamentals of Building and Life Safety Code Regulations

How to Navigate NFPA 101, LSC:

Step1: Review Chapters 1-6:

Establish Applicability and Determine Occupancy Classification.

1. Start by understanding the code's scope, purpose, definitions, and how it applies to your specific project (new vs. existing). These fundamental chapters lay the groundwork.
2. Chapter 4 will give you two compliance options: Performance-Based Option or Prescriptive Option.
 - *Performance-Based Options*¹¹: This approach allows for alternative designs that achieve the same level of safety as the prescriptive requirements, provided it can be demonstrated that the design meets the stated goals and objectives of the Code.
 - *Prescriptive-Based Compliance*: This is the more traditional approach, where the design must strictly adhere to the specific requirements outlined in the Code's core and occupancy chapters. This method assumes that by following the specific rules, the design will inherently meet the Code's overall safety goals.
3. Based on the use of the building or space, identify the appropriate occupancy category as defined in these chapters. This is the most critical initial step, as LSC is occupancy-based, and this classification directs you to the relevant detailed rules.
4. Is this a multiple or mixed occupancy? LSC Section 6.1.14 will provide you with guidance on how to handle a multiple occupancy building.¹²

Step 2: Identify the Applicable Occupancy Chapter (Ch. 12–42).

1. Once you have the occupancy classification from Step 1, go to the chapter titles (e.g., Chapter 18: New Health Care Occupancies, Chapter 36: New Mercantile Occupancies). Choose the corresponding Chapter to the occupancy classification. This chapter is your primary guide.

¹¹ We will revisit at the end of this Chapter in Code Enforcement and Compliance where we bring the two Codes (IBC and LSC) back together.

¹² Don't worry we will review the multiple occupancies in the next chapter, but this section, 6.1.14, with the beginning section of occupancy chapter(s), XX.1, will guide you through the process too.



Step 2.1: Apply Occupancy-Specific Provisions, Including References to General Requirements.

1. Each occupancy chapter contains detailed requirements tailored to the unique risks of that type of space. These will include specifics for construction (some occupancies), protection and safety equipment (e.g., fire alarms, sprinklers), and means of egress specific to that occupancy type.
2. Within these chapters, you'll find references to core (general) requirements in other chapters, such as Chapter 7 (Means of Egress) or Chapter 9 (Building Service and Fire Protection Equipment). These references are your "detours" to the more general rules. Follow them as directed by the specific occupancy chapter.

Step 3: When Directed Navigate to Chapter 7, Means of Egress:

Subject to Any Modifications from the Occupancy Chapter.

Chapter 7 provides the fundamental rules for designing safe exits (e.g., number of exits, travel distance, door widths). However, the occupancy chapters (12-42) often modify or add to these general egress rules. An assembly occupancy, for example, might have stricter requirements for exit capacity or arrangement than a business occupancy.

- So, use Chapter 7 when the occupancy chapter directs you to, and be sure to note any variations or exceptions specified in the occupancy chapter.
Chapter 7 is your basis for design but always apply the modifications from the occupancy chapter first.

Step 4: When Directed, Navigate to Chapters 8, 9, and 10 for Specific Requirements:

Subject to Any Modifications from the Occupancy Chapter.

- **Chapter 8 (Features of Fire Protection):** This chapter covers things like fire barriers, smoke barriers, smoke partitions, and vertical openings. You'll be directed here when the occupancy chapter specifies a need for these protective features.
- **Chapter 9 (Building Service and Fire Protection Equipment):** This is a big one! It includes requirements for fire alarm systems, sprinkler systems, standpipe systems, smoke control, and more. Occupancy chapters will frequently send you to Chapter 9 to specific the requirements and reference standards for these essential fire protection systems.

FOR USE IN UCSD EXTENDED STUDIES
COURSE MAE-40039 AND PERSONAL USE
ONLY.



MAE-40039 Study Guide by Ignis:
Fundamentals of Building and Life Safety Code Regulations

- **Chapter 10 (Interior Finish):** This chapter deals with the flame spread and smoke development characteristics of interior walls and ceilings. Occupancy chapters will reference Chapter 10 to specify the required interior finish classifications based on the risk of the space.
- Similar to Chapter 7, always apply the modifications or specific requirements from the occupancy chapter first when directed to Chapters 8, 9, or 10. The occupancy chapter will tell you *what* is needed, and these chapters will provide the *how* and the detailed specifications, subject to any occupancy-specific variations.

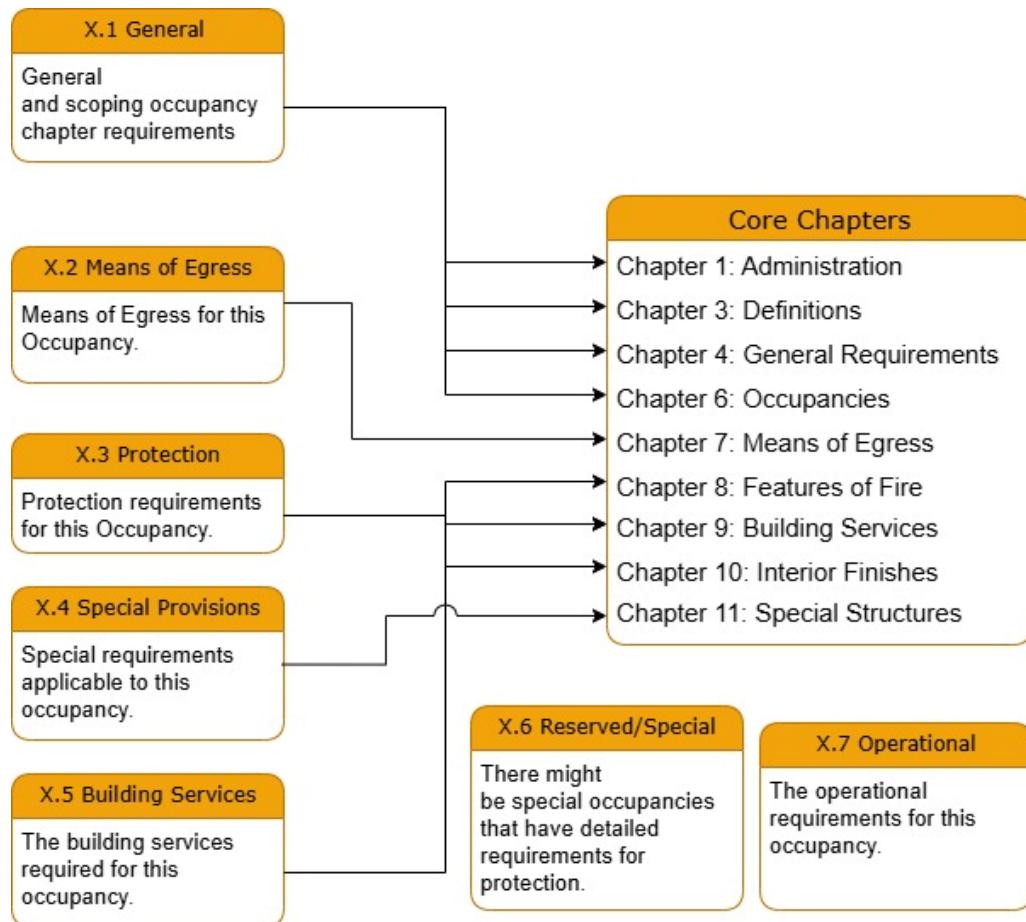


Figure 32: NFPA 101 (LSC) Typical Occupancy Chapter Layout and Navigation

FOR USE IN UCSD EXTENDED STUDIES
COURSE MAE-40039 AND PERSONAL USE
ONLY.

OCCUPANCY AND CODE STRUCTURE



Table 3: Typical Occupancy Chapter Layout

Occupancy Subsection	Reference Core Chapter(s)	Description
XX.1 General Requirements	Chapters 1, 3, 4, and 6	Most of all NFPA documents and other Code documents will begin with the scoping section. This general requirement section at the beginning of the occupancy chapters will provide some specific instructions on applying Chapter 4 goals and objects and other occupancies in Chapter 6.
XX.2 Means of Egress	Chapter 7 Means of Egress	The subsection XX.2 will include the occupancy's specific means of egress requirements and limitations on travel distances and reference Chapter 7 for compliance of various components of the means of egress system. This section may include allowances for single exit buildings.
XX.3 Protection	Chapters 8, 9, and 10	The protection subsection, this includes those higher-hazard spaces (equivalent to IBC 509 Incidental Use) that might require additional fire-rated separation. In this section you will also find the fire suppression/extinguishing and alarm/detection requirements for the given occupancy. Interior finish requirements are also in this subsection. Some additional compartmentation requirements as well.
XX.4 Special Provisions	Chapter 11	There will be special provisions for some occupancies in this subsection. It will refer to Chapter 11 as needed to address special structures.
XX.5 Building Services	Chapter 9	This section includes many building system requirements such as HVAC and elevators and will refer to various sections of Chapter 9.
XX.6 Reserved /Special Provisions	--	This is where you will find special building types that are specific to a single occupancy (aircraft hangars under 40.6 or 42.6). If there are none, it is "reserved".
XX.7 Operational Features	--	The last subsection of the occupancy specific chapters includes "operational" features such as evacuation drills except for the Storage Chapter that lists a few other special occupancies.

**FOR USE IN UCSD EXTENDED STUDIES
COURSE MAE-40039 AND PERSONAL USE
ONLY.**



MAE-40039 Study Guide by Ignis:
Fundamentals of Building and Life Safety Code Regulations

Which chapter do I use, New or Existing?

The LSC fundamentally recognizes that it's often impractical, economically unfeasible, or even structurally impossible to make every existing building fully comply with all the stringent requirements designed for brand new construction. As we reviewed, most occupancy types there are two distinct chapters: one for New Occupancies and one for Existing Occupancies.

1. When to Apply "New Occupancy" Chapters (e.g., Chapter 12 for New Assembly):

You must apply the "New Occupancy" chapter when dealing with:

- **New Construction:** Any building or portion thereof that is constructed in its entirety after the adoption date of the current edition of NFPA 101.
- **Major Alterations or Renovations (IBC Connection):** (*Refer to LSC Chapter 43*) If an existing building undergoes substantial renovation, alteration, or rehabilitation (the definition of "substantial" often ties into the IBC's thresholds, e.g., a certain percentage of the building's value, extensive structural changes, or changes to core life safety components). While the LSC doesn't define "substantial" in the same way as IBC, the LSC Chapter 43, Building Rehabilitation, includes criteria for how to apply the appropriate requirements of the LSC requirements based on the type of alteration.
- **Change of Occupancy Classification:** (*Refer to LSC Chapter 43*) When the Activity (use) changes, but the occupancy classification stays the same, it generally needs to meet the requirements of the applicable existing occupancy chapter for that new use. However, if that new use creates a more hazardous area (like turning a regular storage closet into a significant chemical storage room), then that area must specifically comply with the more stringent new construction requirements for hazardous areas.
- **Additions:** (*Refer to LSC Chapter 43*) New additions to existing buildings are typically required to meet the "new occupancy" requirements.

2. When to Apply "Existing Occupancy" Chapters (e.g., Chapter 13 for Existing Assembly):

You apply the "Existing Occupancy" chapter when dealing with:

- **Existing Buildings Not Undergoing Substantial Change:** (*Refer to LSC Chapter 43*) Buildings that were constructed and approved under a previous edition of a code (or no code at all) and have not undergone major alterations, renovations, or a change in occupancy that would trigger "new construction" requirements.
- **The "Grandfather" Principle:** Existing buildings are generally "grandfathered in" under the code edition they were built under, or the "existing occupancy" provisions of the current code. This means they don't have to be immediately upgraded to meet every single new construction requirement of the latest code.



Example: CMS (Center for Medicaid and Medicare Services)¹³, being a federal organization, adopts the LSC. However, it does not update the edition every year, so they have adopted the 2012 edition and are still enforcing this edition. For hospitals constructed prior to that year (2012), when CMS conduct their inspections, they would enforce the Existing Chapter, Chapter 19, on those facilities. For all hospitals constructed after 2012, they are expected to meet the new requirements, Chapter 18.

- **Undue Hazard:** However, even existing buildings must still meet a minimum level of safety and cannot pose an "undue hazard to life." The LSC will often have specific requirements for existing buildings related to basic egress, fire alarm systems, and potentially sprinklers if the hazard is significant.
- **Change of Use or Occupancy (same or lesser hazard):** (Refer to Chapter 43) When the activity (use) changes, but the occupancy classification stays the same, it generally needs to meet the requirements of the applicable existing occupancy chapter for that new use. When the occupancy classification (not use/function/activity) changes but the hazard category is the same or lesser, the fire protection and alarm systems need to comply with the new construction requirements while the rest can comply with the existing requirements.

This dual approach in the LSC is incredibly practical. It allows jurisdictions to upgrade safety in existing buildings without imposing impossible burdens, while ensuring that all new construction adheres to the highest current safety standards. For designers and AHJs, identifying whether a building falls under "new" or "existing" provisions is the very first critical step after determining its occupancy classification. It sets the baseline for every other life safety requirement!



¹³ This isn't the last time you will see this organization in this Chapter. In fact, the first Discussion Board Post Code Change is related to this organization!