



Applying Building Codes to Tiny Homes

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This white paper contains some basic information about code guidelines for tiny homes. It identifies some of the NFPA documents and requirements in these documents as of the date of publication. This material is not the complete and official position of the NFPA on the referenced topics which is represented solely by the NFPA documents in their entirety. For free access to the complete and most current version of these and all NFPA documents, please go to nfpa.org/standards. The NFPA makes no warranty or guaranty of the completeness of the information in this white paper. In using this information, you should rely on your independent judgment and, when appropriate, consult a competent professional and your local authority having jurisdiction.

ABSTRACT

Tiny homes are a popular trend in housing. Some people view them as a counterculture movement; to others they are a necessity for reduced living costs, especially in expensive real estate markets. Tiny homes have also been suggested as an affordable means to house the homeless.

Clearly, this trend for tiny homes is on the rise. Tiny homes are showing up within cities and towns on parking lots and yards. Empty lots are turning into tiny home developments. But with this new movement come questions regarding the applicability of building codes to these unique dwellings.

Do the provisions that apply to traditional dwellings also apply to the particular characteristics of tiny homes? A case could be made that due to their small size, compliance with a building code can be challenging.

This paper, *Applying Building Codes to Tiny Homes*, has been developed by the Building Code Development Committee (BCDC) of the National Fire Protection Association (NFPA) to assist understanding the expectation of code enforcement practices on the construction or setting-in-place of tiny homes.

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Development of *Applying Building Codes to Tiny Homes* took place as an activity of the Building Code Development Committee (BCDC). Members of the BCDC identified the need for the report and worked collaboratively with peers to develop a draft through a task group. Ultimate review and input was provided and approved unanimously by the full BCDC in December 2016.

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INTRODUCTION

For the most part, a tiny home is just that — it is a single family dwelling on a very small scale. The tiny home community often states that the size of a tiny home is 400 square feet or less. But this threshold is subjective. There is no formal definition for tiny homes in nationally recognized building codes.

Tiny homes are dwellings. A dwelling is considered by building codes to be used as a non-transient occupancy for the purposes of living, which includes sleeping and cooking. Dwellings are not for transient use, where occupants unfamiliar with the building will stay temporarily, such as a hotel room.

Dwellings are therefore generally subjected to the same building code regulations as any other home unless specifically exempted. Those working to enforce code provisions on tiny homes may have difficulties because the nature of tiny homes introduces features that challenge conventional code requirements.

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SCOPE OF BUILDING CODES

Codes are adopted and enforced by jurisdictions to provide a minimum level of safety to protect building occupants and property. Their intent is to minimize dangers to life and property. These regulations protect against many risks associated with the purpose and use of buildings. The safety goal of building codes is to reduce the probability of injury or death from fire, structural failure, and building use.

Codes that regulate building construction are often referred to as construction codes or building codes. These codes don't only address the architectural features of buildings, they also address the systems associated with buildings such as the mechanical, electrical, and plumbing systems. As such, the terms *building code* and *construction code* may also include mechanical codes, electrical codes, and plumbing codes. Building codes may also be referred to as residential codes when they are applied to residential occupancies.

This guide does not address compliance with zoning codes. Zoning regulations may address many issues that could affect the placement or use of a tiny home. This could include lot size, sewage, water, and electrical requirements.

Tiny homes are built in different ways, and it is important to identify which types of tiny homes fall within the scope and application of building codes.

Types of tiny homes include the following:

- Recreational vehicles
- Manufactured homes
- Modular dwellings
- Site-built dwellings

Regulations for each of these four types may vary from state to state and from jurisdiction to jurisdiction. Generally, building codes will apply only to tiny homes in the form of modular dwellings and

site-built dwellings. Those taking the form of recreational vehicles and manufactured homes are not regulated by building codes but are under the regulation of other codes and standards.

For the purposes of these guidelines, a tiny home is intended for permanent and non-transitory occupancy or residency. Also for the purposes of these guidelines, tiny homes are not attached to multiple units and would not be configured or used as a bunkhouse.

Recreational Vehicles

Tiny homes that can be set on a permanent trailer chassis with wheels are often referred to as tiny homes on wheels (THOW). Remaining in a mobile-ready state, they do not fall within the scope of building codes. They may fall within the scope of other laws or regulations, such as NFPA 1192, *Standard on Recreational Vehicles*, as well as rules established by the state Division of Motor Vehicles.

There is one issue when following regulations for recreational vehicles (RVs). The U.S. Department of Housing and Urban Development (HUD) requires RVs to be only "temporary living quarters," and tiny homes often are intended to be permanent homes. Regardless, tiny homes taking this form are not regulated by building codes. As RVs, they more likely must comply with other state or federal regulations.

Manufactured Homes

Manufactured dwellings or manufactured homes are pre-manufactured at an off-site location, such as a factory or shop, and then relocated to a permanent site. These are historically referred to as *mobile homes* and in some cases *park models*.

"Park model" is a vehicular-type unit that has a floor area of 400 square feet or less and meets the American National Standards Institute (ANSI) recreational standard A119.5, *Park Model Recreational Vehicle Standard*. Park models are primarily designed for permanent or semi-permanent installation and are used as residences. Some suggest that a park model may not be used for permanent occupancy and may be intended for recreational or seasonal use.

Whether a manufactured home, mobile home, or park model, it will have a label from HUD affixed to it at the factory identifying that it meets HUD regulations.

Manufactured homes are usually installed on a chassis. This allows them to be transported by truck to a site where they are placed permanently or semi-permanently to a foundation. The wheels may be removed and generally the home is rendered non-transitory. In fact, the home may be set on a foundation. Regardless, the chassis will remain with the structure, which will have a label identifying the HUD standard to which it was built.

In this form, manufactured homes are not regulated by building codes but are predominantly regulated by HUD requirements. NFPA 501, *Standard on Manufactured Housing*, and NFPA 225, *Model Manufactured Home Installation Standard*, may be adopted and enforced at the state or local level, and other state and local regulations may also apply. Note that current HUD requirements are based on NFPA 501, but HUD has substantially revised the NFPA provisions.

Modular Dwellings

Modular dwellings are built in whole or in part at a factory, and then taken to a site for installation. These types of dwellings are not built or labeled to the HUD standards for manufactured homes nor labeled as such. Modular dwellings are regulated by building codes.

Site-Built Dwellings

Site-built dwellings are structures that are used as buildings. In general, a structure is something that is built or constructed (see *NFPA 5000*,[®] *Building Construction and Safety Code*,[®] Section 3.3.628, and IRC Section 202). A building is a structure that is used or intended for supporting or sheltering a use or occupancy (see *NFPA 5000* Section 3.3.67, and IRC Section 202).

If a tiny home is a building used for occupancy that meets these definitions and is excluded by being considered an RV, manufactured home, mobile home, or park model, then the building code applies.

The guidelines in this publication are intended to provide insight on regulatory issues from a building code perspective. They will identify provisions in building codes that are intended to apply to site-built single family dwellings.

CODE APPLICATION

There are two nationally recognized, voluntary building construction codes promulgated in the United States that regulate the construction of single-family dwellings: *NFPA 5000, Building Construction and Safety Code*, promulgated by the National Fire Protection Association (NFPA), and the International Building Code (IBC) promulgated by the International Code Council (ICC). Generally, the IBC establishes regulations for homes in the International Residential Code (IRC). Provisions from these documents will be cited from their 2015 editions.

NFPA 101, Life Safety Code, correlates closely with *NFPA 5000*, and many of these issues are also regulated by *NFPA 101*. The corresponding sections from the *Life Safety Code* are not cited in this document.

Currently, these building codes do not have an authoritative definition of tiny home for purposes of regulation. This is likely because there are no provisions or exceptions specifically for tiny homes in these nationally recognized codes. Further, it does not appear that the term tiny home is used in either the NFPA or ICC codes. Therefore, the definition of the term tiny home as it relates to *NFPA 5000* or the IRC does not have an impact on the enforcement of the code provisions. This would change if specific provisions are introduced to the codes.

Codes make accommodations for special situations because of the impracticality of applying certain requirements. For example, there are specific places where ladders are allowed as a means of egress. However, these accommodations usually consider their impact on life safety and may include trade-offs.

Additionally, both national building codes do not allow code requirements to be waived. *NFPA 5000* Section 1.5 allows equivalencies to be used when it is not possible to meet the requirements of the code when using the prescribed code provisions. It also allows for the design and construction of homes to follow a performance-based approach, as outlined in *NFPA 5000* Chapter 5. IRC Section R104.11 allows for the use of alternate materials and methods of construction when the prescribed provisions of the code cannot be met, as well as allowing for a performance-based approach.

Enforcement of the construction codes also depends on any amendments or ordinances that are developed by the adopting jurisdiction. These may be present, and if so, may vary. It is important to know what, if any, local building codes and ordinances may also apply.

Both nationally recognized codes indicate that they apply to buildings that are built in, or moved into, the enforcing jurisdiction as outlined in *NFPA 5000* Section 1.3.1 and IRC Section R101.2.

Building codes require that a building be classified with an occupancy. See *NFPA 5000* Section 1.7.6.2.1 and IBC Section 302.1. Tiny homes are separate buildings intended for non-transient living purposes. The occupancy that building codes establish for an occupancy for residential living is a dwelling unit: in *NFPA 5000* the occupancy is a one- and two-family dwelling; in the IBC/IRC it is an R-3 occupancy.

Tiny homes are single-family dwellings, and under this occupancy description the building code will regulate them. A dwelling is defined as a building provided with permanent provisions for sleeping, cooking, eating, living, and sanitation.

Tiny homes are not accessory structures, as considered by building codes. *Accessory structures* is a term used in building codes to refer to structures accessory and incidental to a building on the same lot. This means that an accessory structure is not for primary use. A dwelling, no matter what the size, is a primary use and a permanent, habitable occupancy. Accessory structures would more commonly be a shed or detached garage.

Following are building code-related issues that may affect the design and construction of tiny homes. This is not intended to be a complete code analysis. These are the general requirements that have the greatest effect, and these citations do not necessarily reflect all the exceptions, allowances, and trade-offs established by the codes.

Room Size and Dimension

Requirements for minimum room sizes and dimensions are established in both codes. These include minimum sizes for habitable rooms, minimum horizontal dimensions in rooms, and other dimensional requirements. Note that the codes do not require a dwelling to have multiple rooms.

NFPA 5000 49.5.2.1 and IRC Section R304.2 set a minimum horizontal dimension of 7 feet for habitable rooms. The IRC provision is for one dimension, but for *NFPA 5000* this applies to all dimensions, which ultimately sets a minimum room size of 49 square feet. IRC Section R304.1 establishes that habitable rooms have a minimum area of 70 square feet.

Bathrooms are not habitable rooms, but there are established dimensional requirements that may affect a tiny home. Codes generally require a clearance of 15 inches from the center of a toilet to any obstruction. They also require 24 inches in front of a toilet. Also, shower basins are required to be a minimum of 30 inches by 30 inches. See IRC Section P2708.

Currently, the codes do not exclude tiny homes from these requirements. These provisions should not adversely affect the design or code compliance of tiny homes.

Mezzanines/Lofts

Many tiny homes contain lofts that are used for different purposes, often sleeping. Logic suggests that these are lofts, yet the codes do not address the functionality of these spaces.

Codes recognize elevated areas that are not separate stories within a room as mezzanines. *NFPA 5000* Section 3.3.417 defines a mezzanine as an intermediate level between the floor and ceiling. *NFPA 5000* Section 8.13.2 limits the aggregate area of mezzanines within a room, except for those in special-purpose industrial occupancies, to less than one-third the open area of the room. IRC Section R325 indicates that a mezzanine is allowed where the height above and below the mezzanine floor is 7 feet and the aggregate area is not more than one-third the area of the room. For both codes, mezzanines must be open to the floor below and require means of egress to comply with stair requirements.

The dimensional requirements could make compliance with the IRC mezzanine provisions difficult within tiny homes.

Though undefined in the building codes, lofts typically are considered spaces open to the floor below that do not comply with headroom or egress requirements because they more nearly resemble a storage shelf. As such, they are not a habitable or occupiable space and do not need to comply with headroom and egress requirements.

However, many tiny homes use a loft space for sleeping, which implies it is habitable. This use does not appear to be allowed in the current codes unless the spaces are provided with headroom and egress requirements. Thus, habitable loft areas within a room must meet the requirements of a mezzanine.

In a tiny home with a proposed raised sleeping area, the best approach to allow its use may be to request from the authority having jurisdiction (AHJ) an equivalent alternative per Section 1.5 of *NFPA 5000* or an alternate design in accordance with IRC Section R104.11. The request could identify the intended use for sleeping, the specific limited area/clearances, access, and the intent to permanently install what would otherwise be considered a raised (bunk) bed. Applying these sections of the codes require approval by the AHJ.

Headroom

Both national codes establish minimum ceiling heights in habitable rooms. *NFPA 5000* generally establishes this at 7 feet 6 inches in Section 49.5.2.2, and IRC establishes this at 7 feet in Section R305.1. This may vary for toilet rooms, bathrooms, and laundry rooms.

Both codes have similar allowances for room size calculations where sloping ceilings reduce the height to 5 feet, as well as other projections into the required ceiling height, such as furred ceilings, and beams.

Consideration has not yet been given to providing any exceptions specific to tiny homes. As indicated, there are exceptions for sloped ceilings, projections, and non-habitable rooms.

Means of Escape

Both codes require providing a primary and secondary means of escape. *NFPA 5000* Section 22.2.2.1.1 requires sleeping rooms and living areas to have primary and secondary means of escape for dwellings. Section 22.2.2.1.2 of *NFPA 5000* forgoes the need for secondary means of escape when the room has a door leading directly to the outside finished ground level or if fire sprinklers are provided.

IRC Section R310.1 requires an emergency escape and rescue opening in sleeping rooms that leads directly to the outside. Additionally IRC Section R311 requires a primary means of egress in accordance with Section R311. There are some trade-offs for this provision, based on dimensions and geometry, but no exceptions.

In most cases, the sleeping room in a tiny home is the main room of the house, and the main door serves as the primary means of escape. Where a separate sleeping room is created, a secondary means of escape is required, as noted above.

NFPA 5000 Section 22.2.2.2 does not require the primary door to be a side-hinged door. However, IRC Section R311.2 requires the primary means of escape to be a side-hinged door. Thus, a sliding door may be nonconforming where the IRC is enforced.

Egress Width

The primary means of escape is required to be at least 32 inches wide by *NFPA 5000* Section 22.2.2.1.2 and IRC Section R311.2. Both codes establish some exceptions in very specific cases, but they are not related to tiny homes.

This clear width is also required for accessibility purposes. Exit width does not seem to impact the design of tiny homes, as this is usually the width of the door on the exterior wall. The 32-inch clear opening dimension should be easily achievable for tiny homes.

STAIRS

Second stories must be provided with means of egress. The most traditional means of egress is a stairway. National building codes maintain specific requirements for stair geometry and minimum widths.

The required geometry may limit traditional stairways from being inside a tiny home, but stairways may be located outside as well. *NFPA 5000* Table 11.2.2.2.1 calls for a maximum rise of 7 inches and a minimum run of 11 inches; IRC Section R311.7.5 requires a maximum rise of 7¾ inch and a minimum run of 10 inches. Minimum stairway widths are 36 inches (see *NFPA 5000* Section 11.2.2.2.1.1, and IRC Section R311.7.1). *NFPA 5000* Table 11.2.2.2.1 and IRC Section R311.7.2 require stairways to have a minimum headroom of at least 6 feet 8 inches.

NFPA 5000 Section 11.2.2.3.1 and IRC Section R311.5.1 require all stairs serving as required means of egress to be fixed construction. This would prohibit the use of movable stairs to access a second story.

NFPA 5000 Section 11.2.2.2.3.1 and IRC Section R311.7.10.1 allow the use of spiral or circular stairs as the primary means of egress from a second story. The maximum rise for spiral stairs serving an occupant load of three or fewer in *NFPA 5000* Section 11.2.2.2.3.3 is 9½ inches IRC Section R311.7.10.1 requires this maximum rise despite occupant load. *NFPA 5000* Section 11.2.2.2.3.3 and IRC Section R311.7.10.1 require a 7½-inch minimum run at 12 inches from the narrower edge. Once again stairs are allowed to be inside or outside.

Access to loft areas as noted above should be considered as an alternate means or method of construction.

AUTOMATIC FIRE SPRINKLERS

NFPA 5000 Section 22.3.5.1 and IRC Section 313.2 require automatic fire sprinkler systems to be installed in all new one- and two-family dwellings. Note that the fire sprinkler standards referenced allow for multi-purpose systems, where sprinklers are integral to the standard plumbing system.

Since plumbing is required for dwelling units, providing fire sprinklers should not be difficult to include within tiny homes.

SMOKE ALARMS

NFPA 5000 Section 22.3.4.1 and IRC Section R314.3 both require smoke alarms to be provided within dwellings. Both codes reference *NFPA 72, National Fire Alarm and Signaling Code*, for their installation. The location requirements for smoke alarms are specific, and exceptions within *NFPA 72* are intended to address small dwellings.

CARBON MONOXIDE ALARMS

Both codes also require carbon monoxide detectors where fuel fired equipment is installed or attached garages are present. See *NFPA 5000* Section 22.3.4.2 and IRC Section R315.2. This should not pose a significant issue with tiny homes.

SANITATION

Tiny homes are dwellings. The IRC definition of a dwelling unit requires permanent provisions for sanitation. The occupancy definition of one- and two-family dwellings in *NFPA 5000* Section 3.3.178 and in Section 6.1.8.1.1 dwelling units also requires bathroom facilities. IRC Section R306.1 states that every dwelling unit must have a toilet, lavatory, and a tub or shower.

Therefore accommodations must be made for these facilities in tiny homes.

LIGHT AND VENTILATION

Light and ventilation for buildings are required in both codes. *NFPA 5000* Sections 49.3.2 and 49.2.2.7, respectively, and IRC Section R303.1 require glazing to be 8 percent of the floor area and 4 percent openable.

If natural light is not provided, both codes require a minimum level of switched receptacles for electrical lighting. See *NFPA 5000* Section 49.3.1 and IRC Section R303.1.

See *NFPA 5000* Section 11.8.1.3 and IRC Section R303.7 for stairway lighting.

Conditioned space is also required. IRC Section R303.9 requires heating not less than 68 degrees F. *NFPA 5000* Section 49.7.3.1 has a similar provision through reference to ASHRAE 55 *Thermal Environmental Conditions for Human Occupancy*.

ELECTRICAL

If electrical systems are installed in a home, both codes refer to *NFPA 70, National Electrical Code (NEC)*, for electrical requirements. The IRC provides reprints of applicable portions from the *NEC*.

ACCESSIBILITY

Accessibility is not required for single family dwellings used for non-transient purposes.

CONCLUSION

Building codes apply to tiny homes if they are constructed in ways that fall within the scope of building codes. Recreational vehicles and manufactured homes do not fall within the scope of building codes.

The concept of tiny homes is not currently addressed in the building codes. Most aspects of codes apply to these types of structures, and many of the provisions do not conflict with the concept of tiny homes. As pointed out in these guidelines, a few of the design concepts may have difficulty with code compliance.

Consideration should be given to the design elements as an equivalent alternate or alternate design as approved by the AHJ.