



Building Codes Toolkit

For Homeowners and Occupants

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Foreword

The FEMA Building Codes Toolkit offers basic guidance and tools to help homeowners and occupants learn about building codes and how they can make a home more resilient against natural hazards.

Building codes and standards provide the minimum design and construction requirements needed to protect the health and safety of homeowners and the public. Building codes include specific provisions to address different hazards and types of construction that have been developed over the years by the International Code Council (ICC).



The ICC model codes are updated every three years following a very specific multi-step process to incorporate the latest research results and lessons learned. This three-year cycle of updating the codes provides communities with the most up-to-date information on making homes safer and more resilient against natural hazards in a cost-effective manner.

The ICC model codes are then generally adopted by states, tribes, territories or local governments, either directly or with modifications, and enforced at the local jurisdiction level.

FEMA believes it is important for homeowners, occupants and the public to understand homeowners and how they protect lives and property to better support their use.

However, having something “built to code” is not always an end goal. Building codes provide the **minimum** design and construction requirements needed to protect the health and safety of the occupants. However, there are situations when going beyond the code minimum will better ensure that a home will remain habitable or functional after a natural disaster. In the *Home Builders Guide for Earthquake Resistant Design and Construction* (FEMA P-232), we call these “above-code recommendations.” These additional steps can help provide a more resilient home.

This version of the FEMA Building Codes Toolkit includes updates to documents from the previous editions of the Toolkit, as well as new documents that will help readers better understand building codes and how they work. The Toolkit can be read as one publication or as a series of separate documents to give readers information specific to their needs. Step-by-step guidance, along with background information, is provided to help readers make informed decisions about building codes. Readers will learn the importance of building codes and how to make sure they are incorporated into their home or project.

This Toolkit is meant to encourage people to support the adoption and use of natural hazard-resistant building codes and standards. Communities that adopt building codes have been proven to be safer and more resilient against natural hazards. This ultimately results in less damage, lower repair costs, and fewer deaths and injuries caused by the next disaster. The FEMA Building Codes Toolkit can help homeowners and occupants become one step closer to living in a community that is safer and more resilient against natural hazards.

Building codes, in general, refer to sets of requirements governing the design, construction, alteration, maintenance and use of buildings. They specify the minimum requirements to adequately safeguard building occupants’ health, safety and welfare.

Mitigation is the effort to reduce the loss of life and property by lessening the impact of disasters.

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Building Codes Basics

Building codes and standards are crucial to protecting homes in the event of a natural hazard. Only about a third of the jurisdictions in the U.S. that are at risk of one or more hazards have adopted the latest natural hazard-resistant codes. This is particularly important for the Residential Code, as residential buildings account for over 80% of disaster-related damage. By adopting and implementing the latest natural hazard-resistant building codes, your home will be able to better withstand more extreme weather conditions and natural hazards.

There have been numerous examples of homes or communities that were designed and built to the latest building codes that have not only survived a significant natural disaster but were able to continue their intended function, helping their community quickly recover and remain resilient. Some of these examples are detailed below.

How Building Codes Have Changed the Lives of U.S. Virgin Island Residents

In 1995, within two weeks, the U.S. Virgin Islands (USVI) were hit by Hurricane Luis and Hurricane Marilyn. Hurricane Luis caused \$300 million worth of damage, while Hurricane Marilyn caused even more of an impact. Marilyn was responsible for eight deaths and the loss or damage of 21,000 homes, including 75% of the residences on St. Thomas. As a result, USVI damage estimates from Hurricane Marilyn were \$2.1 billion.



Hurricane Luis Damage

\$300 million

Hurricane Marilyn Damage

\$2.1 billion

Through FEMA's Hazard Mitigation Grant Program, just over \$30 million was granted to the USVI to provide the territory with resources for design, construction, construction management oversight, and quality assurance and quality control of mitigation projects. The grant also funded a vital part of the region's post-disaster mitigation plan – the Home Protection Roofing Program (HPRP). One of the key components of the HPRP was to address the issue of poorly attached roofs which could easily be torn from houses by high winds.

A little over 20 years later, in 2017, Hurricanes Irma and Maria struck the USVI. In the wake of those storms, a FEMA Mitigation Assessment Team was deployed to investigate damage. One of their goals was to assess a sample of St. Thomas HPRP homes to determine how the replacement roofs fared.

The result: no structural damage to those roofs was observed. Prior to 1995 and Hurricane Marilyn, the code provisions for wind resistance were weak, but following FEMA's post-storm recommendation, USVI adopted the 1994 Uniform Building Code, which provided significantly more wind resistance requirements. As a result, although Hurricanes Irma and Maria were more severe than Hurricane Marilyn, structures that were repaired or constructed to the 1994 codes showed far less roof damage.



Figure 1. USVI home built using 1994 code



Figure 2. USVI home built using pre-1994 code

The Role of Florida’s Building Codes in 2018 Hurricane Michael

The State of Florida first adopted a statewide minimum building code in 1974. However, that code allowed local governments to adopt one of four different codes that they could amend and enforce as they saw fit. When Hurricane Andrew struck south Florida in 1992, it broke all records for insured losses and became Florida’s worst insurance crisis in history. It quickly became obvious that Florida’s building code system was not adequate and that improvements were needed for the entire state.¹

In its report, *Building Performance: Hurricane Andrew in Florida, Observations, Recommendations and Technical Guidance (FIA-22)*², FEMA recommended improvements to the Florida Building Code. In 1996, Florida appointed a Building Code Study Commission that ultimately recommended “strengthened compliance through greater predictability and accountability in the building code system.” The recommendations included “a streamlined uniform family of codes, strengthened administration and enforcement of codes and enhanced compliance with codes through education, training and discipline.” In 1998, the legislature adopted the Commission’s recommendations, and in 2002, the Florida Building Code was formally adopted, superseding all previous codes.³

While buildings constructed to the new Florida Building Code have generally performed well, there still exists a significant population of older buildings constructed prior to 2002 that remain at risk. The vastly different performance by these two sets of buildings was clearly highlighted in 2018 when Hurricane Michael struck the Florida panhandle. Hurricane Michael made landfall at Mexico Beach, a gulf-front community made up of mostly older homes.

The newer homes that were built after the new code took effect performed relatively well, while the majority of older homes were destroyed. One beach-front home performed extremely well and was the subject of numerous reports. This home, nicknamed the Sand Palace, was actually built to higher criteria that was called for in the Florida Building Code.⁴ Some of these higher criteria included:

- The concrete support pilings were embedded to 40 feet.

1 Overview of the Florida Building Code (floridahousing.org)

2 FIA 22, Mitigation Assessment Team Report: Hurricane Andrew in Florida (fema.gov)

3 Overview of the Florida Building Code (floridahousing.org)

4 How One House Survived Devastating Hurricane Michael ([Architizer Journal](http://Architizer.com))

- The use of a construction technique, insulated concrete forms, that is stronger than normal construction materials.⁵
- Roof overhangs were kept to a minimum to prevent wind uplift.
- A hip roof was used to provide better wind protection.

The Sand Palace's owner estimated that the cost of these additional steps added 15 to 20% to the cost of the home's structural system, which would be less than 10% of the overall cost, but that it more than made up for that cost in only having to do minimal repairs.



Figure 3. Remaining slab of a non-elevated structure from Hurricane Michael

Building Code Lessons From the 1994 Northridge Earthquake

At 4:30 a.m. on January 17, 1994, the M6.7 Northridge struck in the San Fernando Valley, roughly 20 miles northwest of downtown Los Angeles. Although the duration was only 10 to 20 seconds, the ground motions included a reading of 1.82g, the highest ever recorded in an urban area in North America, and the MMI was IX (violent). The earthquake resulted in around 60 fatalities, and damage estimates were as high as \$50 billion.

One of the critical building code lessons to come out of the earthquake was the unacceptable performance of steel moment resisting frame construction. Up until then, this type of construction was assumed to be one of the best seismic-performing systems. Once the extent of the problem became known, the earthquake engineering community faced a very real crisis. The building code for this type of construction had just been invalidated, and engineers had little idea of how safe existing buildings were or how to repair damaged buildings.

⁵ Hurricane proof homes, tornado resistant homes (floridagreenconstruction.com)

In conferring with several industry experts, FEMA determined that the first need was for guidance on how to repair damaged buildings. This work was completed in less than one year, and its product, the *Interim Guidelines for Steel Moment Resisting Frame Construction* (FEMA 267), became the *de facto* standard for repairing this type of construction.

FEMA then contracted the second phase of the project: to research and develop final design criteria documents for new and existing steel moment frame buildings for use by the nation's model building codes and standards. This initiative was groundbreaking in that it was the first FEMA project to effectively combine academic research and the earthquake engineering design community on a scale never before attempted. The project also required close coordination with the steel and welding manufacturing industries who ultimately provided steel columns and beams for project research and testing purposes.

The final products included technical guidance for new construction (FEMA 350), upgrade guidance for existing buildings (FEMA 351), evaluation and repair guidance for damaged buildings (FEMA 352), a technical specifications/quality control guidance document (FEMA 353), a non-technical guidance document for building owners and local officials (FEMA 354) and a series of background papers (FEMA 355CD).

As a result of this effort, the nation's model code organizations and industry standards groups used these findings to improve their codes and standards for this type of construction. FEMA has been widely recognized for its role in organizing and leading the solution to what was a serious problem for the nation's building codes and standards.



Figure 4. Damage from Northridge Earthquake

Building Codes Benefit All

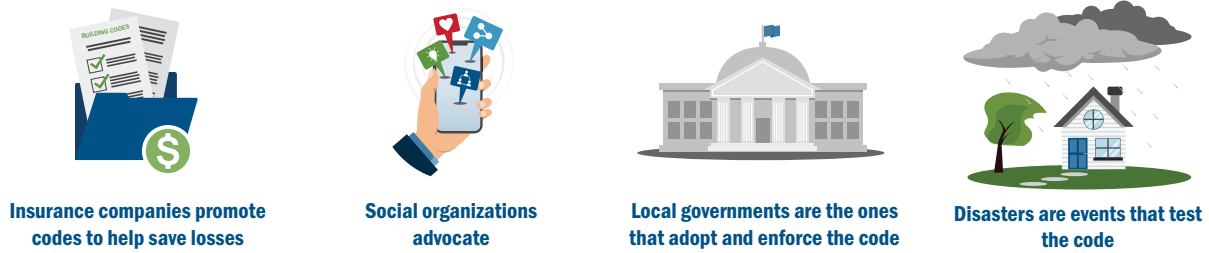


Figure 5. Four factors of modern building codes

Building codes are intended to benefit everyone and are available to be used worldwide. However, many individuals do not understand the importance of having a home designed and constructed using up-to-date building codes. Learning more about the building codes in your community is the first step to creating a world with safe and resilient homes. If your area has not adopted the latest natural hazard-resistant building codes and standards, it is important to encourage their adoption and implementation to reduce the future risk of life and property.



How Strong is Your Building Code?

Find the current codes adopted in your area using the [Inspect to Protect](#) tool.

Fast Facts

- Flooding is the most common natural hazard—90% of natural disasters are flood events, and flood risk exists in every county in the nation.
- A 2019 study by the National Institute of Building Sciences found that adopting the latest building codes saves \$11 per \$1 invested (NIBS, 2019).
- The Earthquake Hazards Reduction Act of 1977 established the need for creating and promoting model building codes to make buildings more resilient against natural hazards.
- Since 2000, states and communities across the country that have adopted the consensus model codes have saved and estimated \$32 billion in building damage, according to FEMA’s Building Codes Save study (2020).
- Between 2010 and 2020, the [National Weather Service](#) reported a ten-year average of 94 tornado-related fatalities.
- The [Natural Hazard Mitigation Saves Study](#) determined that about 1,600 people experience nonfatal injuries for every one fatality caused by natural hazards.

Basic Project Planning Template

Purpose: This document equips property owners with a template that they can use to understand the basic planning elements of a construction project. It includes items that local building departments and design professionals usually require.

NOTE: FEMA recommends seeking advice and assistance from local building departments and design professionals as part of the planning process.

Target User: Homeowners

Address of Property or Assessor's Parcel Number (APN): _____

Latitude, Longitude: _____

Owner's Address: _____

Type of Construction:

- New construction/modular
- Mitigation or retrofit work
- Alteration, repairs or additions to existing buildings or structures
- Rehabilitation of historic property
- Demolition
- Foundation only
- Relocation
- Plumbing, mechanical, electrical systems
- Green project
- Property Maintenance as per the International Property Maintenance Code

Description of Work: _____

Type of Dwelling (one or two family dwelling or townhouse not more than three stories above grade as defined in IRC Section 101.2, or other residential structure as defined in IBC Section 310): _____

HAZARD INDICATORS

Design Wind Speed (see Section R301.2.1 of the IRC or Section 1609 of the IBC): _____

Seismic Design Category (see Section R301.2.2 of the IRC or Section 1613 of the IBC): _____

Snow Loads (see Section R301.2.3 of the IRC or Section 1608 of the IBC): _____

Flood Hazard Area (see Section R301.2.4 and Section R322 of the IRC or Section 1612 of the IBC):

Base Flood Elevation from the FEMA Flood Insurance Rate Map (if applicable): _____

Site is located in a designated Wildland-Urban Interface Area (see the ICC Wildland-Urban Interface Code): _____

Fire Protection Systems, such as automatic fire sprinkler systems (see Section R313 of the IRC or Section 901 of the IBC): _____

Jurisdiction / Building Department: _____

Architect/Engineer: _____

Design Plan: _____

General Contractor: _____

Subcontractors: _____

Insurance Coverage and Requirements: _____

Timeline: _____

Drawings and Plots (i.e., property dimensions, streets, underground utilities and easements, etc.):

BUILDING PERMIT

Does the construction project require a building permit?

Yes

No

If yes, Permit Numbers: _____

*A separate permit may be required for each individual structure outlined in a project (e.g., house, swimming pool, detached garage). A separate permit may be required if your project entails major upgrading or if multiple disciplines are involved such as electrical, cooling/heating (HVAC) and plumbing.

If yes, at what times during your project is it recommended that you schedule inspections?

INSPECTION SCHEDULE

You may have a number of inspection requirements during your construction project depending upon the type of project and the permits it requires. Please consult your local building department for requirements that pertain to your project. Permit requirements, details and inspections will vary depending on the type of project you are planning.

Type of Inspection: _____

Date: _____ **Time:** _____

Pass/Fail: _____

Type of Inspection: _____

Date: _____ **Time:** _____

Pass/Fail: _____

Type of Inspection: _____

Date: _____ **Time:** _____

Pass/Fail: _____

Type of Inspection: _____

Date: _____ **Time:** _____

Pass/Fail: _____

Type of Inspection: _____

Date: _____ **Time:** _____

Pass/Fail: _____

PROJECT COMPLETED / CERTIFICATE OF OCCUPANCY ISSUED:

Date: _____

Pass/Fail: _____

Checklist to Ask Your General Contractor

Purpose: This section helps homeowners with hiring credible contractors who will construct using the codes and standards enforced in the home's area. Checkboxes are provided by each question so the user can easily note which questions have been asked. A notes section is located at the end, allowing users to write any further questions or information they gathered throughout this process.

Target User: Homeowners

Checklist to Ask Your General Contractor

This document gives homeowners and occupants basic knowledge, consumer protection, and questions to ask when hiring a general contractor to perform new construction, remodeling, rebuilding, or mitigation work.

Is the contractor licensed for the type of work proposed?

It is crucial that you verify that any individual or company you are considering is properly licensed. To verify they are licensed, ask for a copy, check the expiration dates, and contact the issuing authority to verify their license is in good standing. In some states, there is no state-wide licensing for certain trades such as general contractors; rather, it may be done locally by the county or the city. Some jurisdictions may not have any licensing requirements; however, for your safety, it is recommended that you work with a verified licensed professional whenever possible.

Is the contractor bonded?

In some jurisdictions, in addition to being licensed, general contractors are also required to be bonded. Being bonded means a bonding company has secured money that would be available to anyone who files and wins a claim against the general contractor.

How many building permits has the contractor obtained in this jurisdiction in the last two years?

This question will help the homeowner determine a contractor's experience level with working in the area the structure is located. Some general contractors are based outside the homeowner's jurisdiction⁶ and may not know how to obtain a permit in your area. This is especially true after a disaster when many outside contractors show up not knowing the local codes or permit application procedures. Ensure that your general contractor is familiar with your local building code requirements and permitting process, is qualified and credible, and has previously worked with your jurisdiction.

⁶ This is particularly true following a disaster. During this time, local resources are overwhelmed, and out-of-state general contractors are needed to support fast recovery.

Will the contractor proactively incorporate mitigation techniques as part of the construction project?

Most mitigation efforts are cheaper to apply to structures if planned as part of the home's scheduled maintenance, repair or upgrade. Applying mitigation measures will help to decrease risks to the home from future natural hazard events and their effects.

For example, to reduce or eliminate the damage caused by earthquake forces, you could ensure that the structure is properly anchored to its foundation, properly attach structural wall panels to the wall framing, replace large openings with additional structural wall panels, or replace damaged masonry chimneys with lightweight metal flue chimneys.

Does the contractor have experience repairing or rebuilding structures damaged during a natural hazard event?

It is essential that your general contractor checks with your local code official regarding securing the proper permits before repairing or rebuilding a structure damaged by a natural disaster. There are often strict local requirements on how and where structures can be renovated. Consulting with your local code official will ensure that repairs or rebuilding comply with local codes and standards.

In a federally designated disaster, you can also visit Disaster Recovery Centers to talk with FEMA Hazard Mitigation Specialists about repair and rebuilding advice. To find the Disaster Recovery Center nearest you, see the [Disaster Recovery Center Locator](#) on [FEMA.gov](#).

Has the contractor used FEMA to get technical guidance on a project? If not, would they be willing to do so? Are they aware of FEMA technical guidance?

It is your responsibility as the homeowner to set the project's scope and, if your scope includes mitigation of future damage, it is valuable for your general contractor to be aware of and understand the FEMA guidance related to your project. Your general contractor should be familiar with mitigation techniques that will help ensure your home and its occupants are better protected against future damage.

FEMA offers an array of free technical guidance materials focused on minimizing the damage that can occur due to a natural disaster. To order these free FEMA resources, please call 1-800-480-2520 or [visit the Building Science Resource Library on FEMA.gov](#).

Can the contractor provide proof of their general liability insurance before you sign a contract with them?

General liability insurance protects your home from damage or negligence on the part of the general contractor, his employees, and any subcontractors brought onto your property. For your protection, make sure anyone you are considering has a general liability insurance policy by asking for a copy of their insurance certificate, checking the expiration dates, and contacting the issuing authority to verify their insurance is valid.

Does the contractor carry workers' compensation insurance?

Workers' compensation insurance protects you from liability if a worker is injured while on your property. It is always recommended to hire a fully insured general contractor. *Please note: if the general contractor does not have employees, he may not need or have workers' compensation insurance.*

Will the contractor provide you with a list of past clients for whom they performed a similar job?

A credible general contractor should have no problem providing multiple references. It is important to contact at least three to five previous clients for whom the general contractor performed similar work. Only then will you know the type of work they are capable of and the level of service you can expect.

Questions to ask the general contractor's references:

- Were you satisfied with the results of the project?
- Did the project come in according to budget, and was it completed on a timely basis? If not, what types of problems or delays affected the overall cost?
- Would you hire the general contractor again? If not, why?

Will the contractor be hiring sub-contractors on this project?

If so, ask for the name of everyone who will be hired and the type of work they will be doing so that you can verify their credentials and ensure they have the necessary insurance requirements (if applicable). A sub-contractor is an individual or business that signs a contract to perform part or all of the obligations of another's contract.

What kind of written warranty will the contractor give you?

A credible general contractor should provide a written warranty agreement. The warranty should clearly spell out what is covered, what is not, and for how long. At a minimum, a general contractor should guarantee a one-year warranty on their work and materials; although two years is preferred.

How will your project be supervised?

The general contractor or another lead individual should be assigned to oversee your project from start to finish. It is important that the project manager is not only experienced but very familiar with the details of your plans. They should manage the daily operations of your project to ensure the work is done correctly and is compliant with the local building code. You should be given the contact information for this individual so you can ask questions and resolve any issues that arise throughout the project.

What will the payment schedule be?

It is not unusual that a down payment is required for a contract to pay for the initial time and materials; however, you should never pay a general contractor in full before the project is completed. If the project will extend over several months, ensure that the payment schedule is determined and outlined in a written contract before the work begins. It is a common practice to withhold at least

10% of the payment until the project has been completed to your satisfaction and, if applicable, a certificate of occupancy has been issued. Make payments in a way that they are traceable, or get receipts for each of your payments.

Will the contractor obtain all of the required building permits?

Although there is some cost and additional time required for obtaining building permits, it is recommended that your general contractor do this because it is your only assurance that your project will be done to code. By having your general contractor handle the permitting process/inspections, you gain an independent third party in your corner who offers you the protection that the job will be done in full compliance with local building codes. If a general contractor asks that you obtain the permit yourself, it is likely that they are unlicensed or unqualified for the job. See the section titled Checklist to Acquire a Building Permit.

Who will coordinate the required inspections as part of the building permit process?

The general contractor should be willing to handle all aspects of the building permit process, including the required or recommended inspections that will take place during the construction process. It is strongly recommended that you are present for the inspection to make sure it takes place, you hear the feedback from the building department regarding the work being done, and you are aware of any corrections notices issued to the general contractor.

Will the contractor provide you with a written lien waiver at the end of the project?

A lien waiver is a legal document from the general contractor/sub-contractor that verifies you have paid the general contractor in full for the services rendered. At the end of your project, your general contractor should have no problem providing you with a written lien waiver for both your original contract and any subcontractors that worked on your project. The lien waiver also ensures that the general contractor or any sub-contractors waive their right to place a lien on your property.

Notes

Checklist to Acquire a Building Permit

Purpose: This section equips and helps homeowners understand the general process for acquiring a building permit before starting any new construction, addition, repair, renovation, rebuilding, or mitigation work. It should not be used as a substitute for checking with your local building department or for understanding the building codes and regulations in your community.

Target User: Homeowners



A building permit is a legal document that allows a homeowner and their contractors to legally perform construction to a home. A building permit can ensure that the construction is performed properly and to the building code, adding to the value of the property.

Minor changes, repairs, or remodeling projects may not require all the drawings and submittals listed. However, for more significant projects, a design professional may be needed to create a signed and sealed set of plans before submitting an application for a building permit. The details of every project should be reviewed to ensure they meet your local building codes and regulations.

Create Project Plan

As the homeowner, you must decide your project's scope and the expertise required to complete it successfully. Complex projects, such as new construction or additions, may need the help of an architect or engineer to plan and create the design drawings. The design planning process is also a good opportunity for you to ask about mitigation techniques that could be added as part of the project to reduce future risks from natural hazards. Most mitigation techniques are a lot less expensive to apply to homes if they are added as part of the home's scheduled construction, maintenance, repairs, or upgrades.

You also need to decide if you should hire a general contractor for the construction process of your project. It is strongly recommended that you hire a general contractor for new construction, rebuilding, or mitigation work that may require different trades. For help with hiring a general contractor, review the Checklist of Questions to Ask Your General Contractor. Discuss with your local code official if you have any questions when planning the scope of your project and determining if you should hire a design professional or general contractor.

- Project plan (See Basic Project Planning Template)
- Checklist of Questions to Ask Your General Contractor

Pre-Application Meeting with Local Code Officials

Local code officials can advise you on making your project a success and avoiding problems that could cost you time and money. Discussing plans with a code official will help determine if you need a permit for your project, if other local requirements, such as zoning, need to be met, and what documents are required for your application. You should be able to find your local building code department through your local government listing.

Permits are generally required for the following:

- New construction of buildings or structures
- Mitigation or retrofit work
- Alterations, repairs, or additions to existing buildings or structures
- Rehabilitation of historic properties
- Changes to electrical, mechanical, and plumbing systems
- Development in the floodplain

Note: The above list of construction projects is not all inclusive; please consult your local building code official to determine requirements for your project.



Figure 6. A local building code inspector inspects an above-ground shelter that performed well in a heavily damaged area

Complete and Submit the Building Permit Application

After talking with a local code official on requirements, ensure you have all the forms, documents, and plans needed for submitting your building permit request. The materials should be detailed enough so that the staff reviewing them would be able to construct the project by easily visualizing every detail. If you have a general contractor, they should be the ones submitting the building permit application to ensure that they are covering all of the necessary requirements.

Generally, the following documents are required:

- Local application form and fee
- Project plan (See Basic Project Planning Template)
- Other potential local requirements: maps; photographs; other federal, state, and local permits; architectural/ engineering designs; construction plans; design load calculations; energy calculations; or post-disaster damage inspection (i.e., substantial damage estimation for flood or substantial structural damage determination for seismic)

Permit Review Process

Once the application documents and fees are submitted, the local code official will review the project and determine if it meets the local building code, zoning, environmental, and construction requirements. The building department will evaluate your designs during the permit review process for new or complex projects. Due to the detail involved in such construction designs, the review process can be lengthy, depending on the community. To avoid permit and construction delays, work closely with your design professional and general contractor to ensure all required documents are complete and submitted as part of the permitting application, leaving plenty of time for review.

If your plan meets these requirements, a permit is issued. If not, the local code official will note items that need to be addressed and may recommend solutions to help correct the issues found in your application. Once you meet all the conditions or make the corrections, your building permit will be approved. Generally, you will need the following during the review process:

- Application submission confirmation (i.e., receipts, etc.)
- Copies of the application submitted
- Local code official contact information

Obtain Building Permit

When your permit is issued, you have legal permission to start construction that follows the approved plans, local building code requirements, and other applicable laws and regulations. Based on the size of the project, a fee may be collected to cover the cost of the application, the review, and the inspection process. Separate permits may be required for electrical, plumbing, heating, and air-conditioning work, or other locally required specialties. Usually work must be started within a certain timeframe. Building permits normally must be displayed on the job site, and a set of approved plans must be available for inspection. Generally, the building department provides the following documents once a permit is approved:

- Building permit
- Job/Inspection card
- Set of stamped/approved construction documents



Figure 7. Two construction workers fix a roof on a home that had been damaged in Crisfield, Maryland after Hurricane Sandy came through the area.

On-site Inspections

Inspections are done to ensure the completed work complies with the permit, local building codes, approved plans, etc. You will be informed by the local code official as to (approximately) how many inspections may be needed for your project. Inspectors will fill out an inspection card, noting any items that do not comply, and this becomes the official inspection record. Throughout this process, you and your general contractor should keep strong coordination with your local code official to ensure your project meets all local requirements and minimize any costly mistakes. If you have hired a contractor, this will be the contractor's responsibility, but you should review to ensure inspection

Role of Insurance

What to Know About Insurance

Purpose: The insurance industry plays a vital role in supporting building codes so that homeowners and occupants are better protected against and prepared for natural hazards. This section explains what insurance options are available and how purchasing insurance helps protect both renters and homeowners.

Target User: Homeowners, Renters

What Homeowners Insurance Gets You

Homeowners insurance protects your home, contents and personal belongings against the damage caused by natural hazards. If a disaster strikes, having insurance for your home is the best way to ensure you have the financial resources needed to help repair, rebuild, or replace whatever has been lost or damaged. Having an insurance policy on your home needs to be part of your overall disaster recovery plan.

Many people believe that in a federally declared disaster, federal disaster assistance will make them whole again. This is not true. Having insurance should be part of your disaster recovery plan.











However, be aware that most normal homeowners insurance policies do not automatically cover all natural hazards. In many cases, to have insurance protection against damage from some hazards, such as flooding and earthquakes, a separate insurance policy may be required. To have proper insurance coverage, one needs to be aware of what hazards can affect them and have the proper insurance policies to cover their home from those hazards.

Not all insurance policies are the same – coverage amounts, deductibles, and payment caps can vary greatly. Talk with your insurance professional to be sure your policy covers damage caused by disasters common to your area.



Paperwork by Mikhael Nilov

Homeowners' insurance typically:

Covers			Does Not Cover	
 Hail	 Tornadoes	 High Winds*	 Flooding	 Earthquakes
 House Fires	 Wildfires	 Volcanic Eruptions	 Mudflows	 Landslides

*such as from a hurricane or thunderstorm

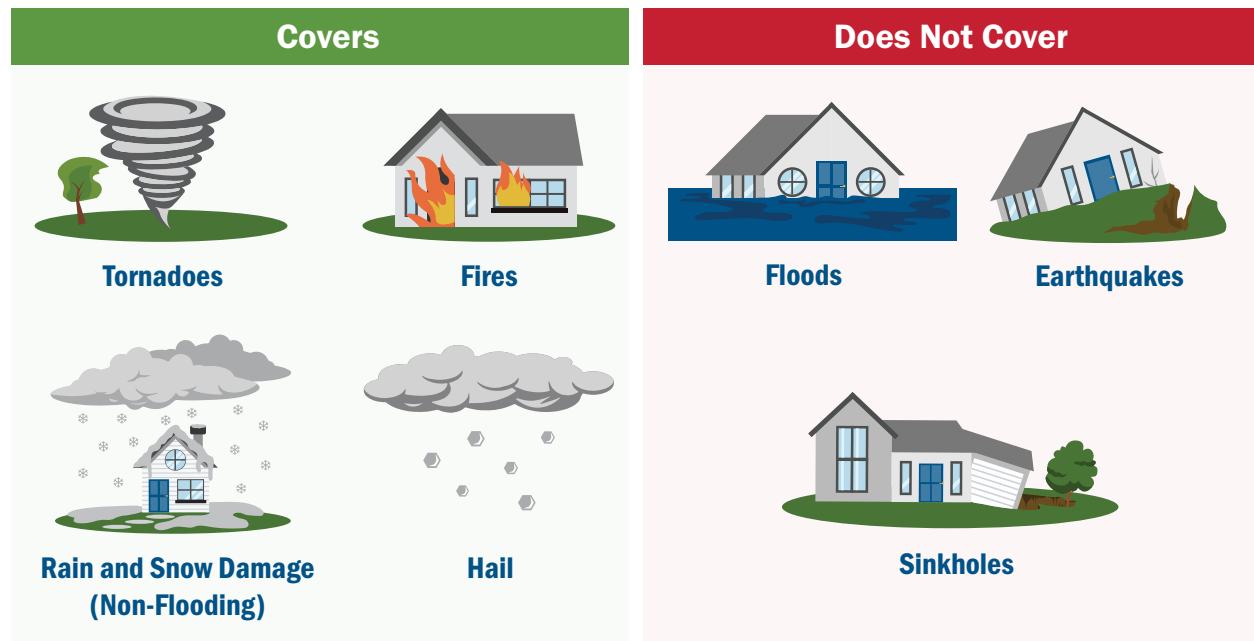
For most homeowners that have a mortgage on their homes, homeowners insurance is required as part of the mortgage and is paid for and renewed automatically. If you happen to own your home without a mortgage, there may not be an insurance purchase requirement, but it is very important that you still have insurance on your home. Without insurance, you may not be able to afford the cost of repairs.

Parametric Insurance is a relatively new approach to insuring policyholders against specific events by using parameters (set criteria that apply to everyone) to determine the cost of any damage sustained. Payments are triggered if set parameters agreed on in the contract are met (for example, when an earthquake meets or exceeds a certain ground shake intensity) and a third party verifies that the agreed parameters have been met.

What Renters Insurance Gets You

Renter's insurance is applicable to those who are renting a home. Tenants are less likely than homeowners to have adequate insurance. As a result, those who rent houses or apartments in natural hazard-prone areas are putting their safety, belongings, and financial security at risk. As is the case with homeowners insurance, renters insurance does not cover all natural hazards. It normally covers tornadoes, fires, hail, and rain and snow damage, but it may not cover flooding or earthquakes unless a special rider or separate policy is added. If one of these covered disasters severely damages your property and belongings or prevents you from living in the home, then your renter's insurance policy should kick in and provide some financial compensation for your losses.

Renters' insurance typically:



Building Codes and Insurance

Purchasing and maintaining insurance protects homeowners' investments. Along with buying insurance, incorporating up-to-date building codes into your building not only protects your investment through reducing future losses; it can also save you money each year through insurance incentives. Individuals that build above minimum codes and standards often receive discounts on wind, fire, flood, and earthquake insurance premiums. To receive a discount, the home usually must have been built to a specific code edition or upgraded to or above a certain code or standard. For example, this is the case with the Fortified program promoted by the Insurance Institute for Business and Home Safety. In many areas, the difference in the cost of premiums can, over time, be enough to pay for retrofits to better protect your home. Check with your state insurance office/department for specific requirements for your area.

- For more information on earthquake insurance, visit [FEMA's Earthquake Insurance webpage](#).
- For more information on the National Flood Insurance Program, visit [floodsmart.gov](#).
- For more information on tips on financial preparedness, please visit [Ready.gov](#).

Frequently Asked Questions for Homeowners

Purpose: These frequently asked questions address common concerns of homeowners and occupants related to building codes and available tools.

Target User: Homeowners

Further information or assistance can be found on [FEMA.gov](https://www.fema.gov) or through the FEMA Building Science Helpline: 866-927-2104 or FEMA-Buildingsciencehelp@FEMA.dhs.gov.

Why are building codes important?

Numerous post-disaster investigations conducted by FEMA have proven that communities that adopt and enforce up-to-date building codes and standards are safer and more resilient, making them better able to withstand the harsh effects of natural hazards. Building codes are important because they protect you, your family, your home, and your community against various natural hazards while minimizing economic and property loss. Following them can also help to keep your home's value over time.



Did you know?

According to the National Flood Insurance Program (NFIP), floods are the #1 most commonly occurring natural hazard in the United States. People outside of high-risk floodplain areas file over 25% of NFIP claims and receive one-third of disaster assistance for flooding. For flood insurance and building code requirements, please visit [FEMA Building Science's Building Codes Resources](https://www.fema.gov) on [FEMA.gov](https://www.fema.gov).

Who develops the building codes?

Most states and local jurisdictions adopt the International Code Council (ICC) model building codes instead of going through the expense of creating their own. Where permitted by law, some jurisdictions may amend the ICC model codes where needed before adoption to address building or environmental issues specific to that area.

The International Codes were first published in 2000 and were formed when the three regional legacy model building codes decided to combine into a single model code that would be applicable for use throughout the entire country. Building codes are nationally developed through a rigid triennial consensus process allowing input from both ICC members as well as the general public. ICC voting members then vote to make the final decisions.

The development of the International Codes is a collaborative process. To help achieve consensus, organizations such as FEMA, the American Society of Civil Engineers, the American Institute of Architects, the National Association of Home Builders and other design, construction and materials industry stakeholders and organizations provide technical insight into the development of the latest building codes and standards.

However, the actual voting on proposed code changes is done by local building and fire officials that are members of the ICC. The code development process allows for all interested parties, whether they are ICC members or not, to provide valuable input into developing the codes.

The updated model codes are then published once every three years by the ICC and are then adopted by states or local jurisdictions. Some states adopt them directly while others allow for an adoption process that can include amendments or changes to address local conditions. The International Codes are adopted in one form or another in all 50 states.

For tips to protect your home and family, refer to “[Safety First-Disaster Preparedness](#)” a brochure published by ICC. To purchase this and all other ICC products, please visit www.iccsafe.org.

What are the different types of building codes?

The most popular building codes are the International Building Code (IBC), International Residential Code (IRC), International Existing Building Code (IEBC), and the International Fire Code (IFC). The ICC publishes new editions of the International Codes every three years.



Figure 8. The parent codes of the I-Codes.



Select an architect, engineer or general contractor that knows these codes, your local area, and can appropriately protect you and your property. Visit www.iccsafe.org to purchase all International Code Council products and www.nfpa.org to purchase the latest National Fire Protection products.

How are building codes adopted?

Under the U.S. Constitution, the adoption of building codes and other related responsibilities are controlled at the state level. There is no national or federal building code. All 50 states handle this responsibility differently, but all state or local jurisdictions usually adopt building codes through some form of a legislative and/or public policy process. Some states just adopt the International Codes directly, either allowing for changes as part of that process or not. Other states start with the International Codes but then follow a specific process to convert them into their own state building code, usually allowing for amendments during that process. Some states do not adopt a code at all and instead either mandate or just allow this to be done at the local jurisdiction level. As you can see, building code adoption is inconsistent between states and sometimes even within the same state, even in areas with high hazard levels (i.e., earthquakes, flooding, hurricanes, tornadoes, etc.). For instance, some states in the New Madrid Seismic Zone (NMSZ) located in Central U.S. and local jurisdictions at risk of earthquakes have adopted the building codes but have made changes weakening the seismic provisions. Other areas have also been slow to adopt the latest code editions, meaning they are missing out on the latest design and construction research results and lessons learned after disasters.

For more information on how jurisdictions adopt building codes, access the Code Adoption Checklists in the *Building Codes Adoption Playbook for Authorities Having Jurisdiction* (FEMA P-2196).

Who is responsible for enforcing building codes?

Building Officials, Code Enforcement Officers, Floodplain Management Officials, Fire Marshals, Permit Clerks and Building Inspectors from the local Building and Fire Departments are all responsible for enforcing the adopted building codes within a jurisdiction. Building code enforcement is achieved through the review and approval of design plans, construction work inspections, and building and occupancy permit issuance.

Who is responsible for designing a structure with building codes?

A registered design professional (either an architect or engineer) as well as the general contractor are all responsible for including the latest code requirements into their design plans and actual construction. This ensures that homes and their occupants benefit from the positive effects of building to code and minimizing the impact of natural and other hazards.



Blueprint by Daniel McCullough

What building codes are enforced by my jurisdiction?

Building codes and how they are enforced are dependent upon where you live. Please talk with your local building or planning department to find out what building codes have been adopted and are enforced in your area.

Check out how strong your building codes are at www.inspect2protect.org.

How can I properly start a construction retrofit project? (i.e., new building, upgrade, expansion, etc.) that meets my local building code requirements?

Please see the Basic Checklist to Acquire a Building Permit and Checklist of Questions to Ask Your General Contractor for more detailed information.

CodeMasters are handy reference tools to help your design professional in determining seismic, wind, and flood-resistant design criteria. Visit www.iccsafe.org to purchase the latest CodeMasters.

Figure 9. Covers of the CodeMasters publications.

I have an old home; does this mean my property is not building code compliant?

Most existing homes do not meet the current codes and standards for new construction because of their age. This does not mean the home is out of compliance because older buildings are not required to be improved whenever the codes are updated. However, there are triggers within the building codes that can require building upgrades if building damage or future changes, such as adding additions, exceed a particular threshold. For example, homes within the Special Flood Hazard Area (SFHA) that have sustained substantial damage (normally 50% of its pre-disaster value) would be required to meet the flood provisions of International Residential Code as they are repaired.

I have an older home; how can I make my home safer and stronger?

The first steps in making an older home safer and stronger would be to talk with your local Emergency Management Agency, building department, or licensed design professional to gain insight and understanding of the local hazards and risks, site characteristics, and possible suggested improvements. Additionally, your local building department may be able to provide you with basic information about the items that are typically included in a retrofit for a home of a certain era. It is recommended that a registered design professional (an architect or engineer) or a licensed general contractor inspect the property to make specific recommendations. Please note that the recommendations you receive can vary depending on the year in which your home was built, the jurisdiction that you live in, and the hazards/risks in your area.

For more information, please:

- Refer to the FEMA Guidance cataloged in our Resources section of the Building Codes Toolkit
- Visit the FEMA Building Science Resource Library, where you will find links to publications and resources as they relate to hazard type
- Call FEMA Building Science Helpline: 866-927-2104 or email FEMA-Buildingsciencehelp@fema.dhs.gov
- Call the International Code Council Call Center: 888-422-7233 and press 0 or email CareCenter@iccsafe.org

Did you know?

FEMA's Hazard Mitigation Assistance grant programs provide funding for activities that reduce future losses and protect life and property from potential damage. Visit the FEMA Hazard Mitigation grant page for more information.

Are there available grants or financial assistance in making my property code compliant?

Contact your local building or grants department, or housing authorities for financial assistance. Also, check these websites for other potential assistance:

- www.fema.gov/grants
- www.disasterassistance.gov
- www.benefits.gov
- www.sba.gov/funding-programs/disaster-assistance

Where can I find more information about building codes and proper construction standards?

- Talk with your local code official or building/planning department.
- FEMA
 - [FEMA Building Science Resource Library](#)
 - [FEMA Building Code Documents](#)
 - [FEMA Building Codes Save Study](#)
 - [FEMA Seismic Building Codes](#)
 - Contact the FEMA Helpline: BuildingScienceHelp@fema.dhs.gov

- FEMA Publications Warehouse: To order hard copies, call 800-480-2520 or email fema-publication-warehouse@fema.dhs.gov. You must know the specific document number of the publication you are inquiring about and always request the most recent version of the publication when ordering from the warehouse.
- [FEMA Ready.gov](http://FEMAReady.gov)
- [International Code Council](#)
- [American Society of Civil Engineers](#)
- [Earthquake Engineering Research Institute](#)
- [Federal Alliance for Safe Homes](#)
- [Insurance Institute for Business and Home Safety](#)
- [National Association of Home Builders](#)

Notes

Frequently Asked Questions for Renters

Purpose: These frequently asked questions address common concerns of people who rent residential buildings related to building codes, the process, and available tools.

Target User: Renters

Further information or assistance can be found on [FEMA.gov](https://www.fema.gov) or through the FEMA Building Science Helpline: 866-927-2104 or FEMA-Buildingsciencehelp@FEMA.dhs.gov.

While people who rent homes will generally not be directly involved in working with a community's building codes since most code-related issues would be handled by the homeowner, there are code-related issues that they should be aware of when selecting a rental property and assessing that property's risk from natural hazards as part of that selection process.

Following are a series of questions that renters should consider asking when inspecting a potential property. As we say in the emergency management community, how that home will protect you and your family in a natural hazard event is more important than whether it has granite countertops and wood floors.

Does the type of construction of the house affect its vulnerability to specific natural hazards?

Yes, it can. Certain types of older construction have been shown to be more vulnerable to natural hazards. For example, an older unreinforced masonry homes, such as of all brick or concrete block construction, are more vulnerable to collapse in an earthquake because of their mass and lack of adequate reinforcement. On the west coast, homes with cripple wall foundations (with wood foundation walls) are inherently weaker and can collapse in an earthquake unless they have been seismically retrofitted. In high wind areas, older wood frame homes without modern wall sheathing are also vulnerable to damage from wind loads.

All of these problem construction types have been addressed in more recent editions of the building codes, and they would no longer be permitted for new construction. A simple way to avoid these potential problems would be to verify that the home was built to a modern code or has been upgraded to meet the current code. This can be done by having it inspected by a qualified registered design professional before signing a rental agreement.

Does when the house or structure was built affect its vulnerability to specific hazards?

Yes, it can. The older the house is, the older the building code that was used for its construction. Building codes are improved and republished every three years, and many of those improvements came from lessons learned during damage investigations after natural hazard events. Older building codes did not adequately address certain issues and as a result, older homes can be more vulnerable.

For example, older homes that were not properly anchored to the foundation can slide off their foundations in an earthquake or high wind event. Older masonry chimneys have less reinforcing in them and can be subject to collapse in an earthquake. Both issues were addressed in the building codes in the late 1960's. If the home you are intending to rent was built before then, it may be more prone to damage in a natural hazard event, possibly making it uninhabitable.

Are there situations where a renter would need to work with the building codes?

Most residential renters will rarely be making changes to a home that would trigger the building code, although it is possible. While most changes that would trigger the building code tend to be more structural in nature (like removing a wall) and would be done by the owner, there are many non-structural improvements or changes that would require a building code permit. These would include plumbing (like replacing a water heater) or electrical (like replacing a circuit breaker panel). In these situations, the renter should still be aware of the building codes and how they work.

Has the landlord checked the home for natural hazard vulnerabilities and done any retrofitting if the building is one of a vulnerable type?

The issues listed above for certain types and ages of homes can greatly increase the risk of serious damage from natural hazards to the point where the home may no longer be habitable after a natural hazard event. This is especially true for certain types of natural hazards, such as seismic and high winds, where the hazard affects a large area and can impact the entire structure, finding the weakest point, ultimately causing significant damage.

Some of the vulnerabilities listed above for older homes can be addressed by retrofitting the vulnerability and bringing the home up to the current code. If done correctly, this could address the hazard and make the home worth renting or leasing. It would still be advisable to have the home inspected to verify that the retrofitting was performed correctly and now meets the current code.

Does the property owner have the necessary natural hazard insurance on the property?

If your rental home is damaged in a natural hazard event, you are dependent upon the homeowner getting it repaired if you wish to remain there. Generally, this will only happen if the owner has a homeowners insurance policy that includes the applicable natural hazard coverage. Without insurance, there is a real risk of the owner simply walking away from the home, leaving you without a home, and finding a new vacant rental home after a natural disaster can be extremely difficult.



Engineers inspecting a home in Florida. Source: FEMA

Has the property ever sustained damage during a natural hazard event?

The owner should tell you if the home has ever been damaged in a natural hazard event. If they do not, the local building code department should have a record of any permits pulled on the home. Especially for hazards such as flooding, if it was damaged once, it can be damaged again, only this time with you inside.

Is the property in a flood hazard area?

Community flood hazard maps are available to look up the property location and determine if it is located in a flood hazard area. Flood hazard maps are available online through FEMA and the National Flood Insurance Program, or they can be checked at your local building code department office. Be aware that a home can be located outside of a flood hazard area but still be at risk of flooding, especially if the ground elevation is not much higher than that in the flood hazard area.

Does the property owner have an elevation certificate?

If the home is in a flood hazard area, the homeowner should have been given an elevation certificate. This certificate will tell you the elevation of the home’s lowest floor and whether that is above or below the base flood elevation. Records of elevation certificates can also be checked at your local building code department office.

Is the home located in a wildland-urban interface, where it can be subject to wildfire? If so, is the owner aware of this and have they taken any action?

If the home is located in a wildland-urban interface area, then wildfire is a possible threat. The local building code department should have information on this. Wildland-urban interface maps are also available online. If the home is in the wildland-urban interface, there are steps that can be taken to reduce the risk of wildfire impacting the home, such as protecting building openings from embers entering the home and controlling vegetation around the structure and along access routes. The owner should be aware of and have taken these steps. Your local fire department may be able to help you identify and take some of these wildfire mitigation measures.

Notes

Federal Role in State and Local Building Codes and Standards

Our nation's building codes and standards are critical to protecting our nation's homes and buildings in the event of a natural hazard event. Only about half of the U.S. jurisdictions at risk of one or more hazards have adopted the latest natural hazard-resistant codes. This is particularly important for residential buildings as they account for over 80% of all disaster-related damage.

The cost of natural disasters has risen to the point where the American taxpayer can no longer continue to pay for business as usual. We as a nation must change our behavior of building anywhere and any way we want, only to have nature show us the folly of our ways. FEMA aims to reduce the risk from natural hazards, and natural hazard-resistant building codes and standards are crucial to meeting this goal.

FEMA was one of the first federal agencies to recognize the importance of building codes and has worked within the model code development process for over 40 years; first to have the flood-resistant design requirements of the National Flood Insurance Program added to the nation's model building codes and later to do the same with FEMA's *Recommended Seismic Provisions for New Buildings and Other Structures* from the National Earthquake Hazards Reduction Program (NEHRP). FEMA's role in developing the seismic provisions of the first International Codes has been well recognized, including in a letter of appreciation to the FEMA Director from the International Code Council. To help with the understanding and use of this material, FEMA has jointly sponsored several technical publications with the ICC, including the *FEMA Home Builders Guide for Earthquake Resistant Design and Construction* (FEMA 232) and *Flood Resistant Provisions of the 2021 International Codes*. ICC has helped by distributing these publications directly to its members.

FEMA post-disaster building performance investigations, including those done under the Mitigation Assessment Team (MAT) program, have documented numerous examples of where buildings and communities that were designed and built to the latest building codes not only survived a significant natural disaster but were able to quickly continue their intended function, helping their community to recover more quickly and remain resilient.



MAT assessing the performance of manufactured homes after Hurricane Ian. Source: FEMA

FEMA has also documented many examples of where damage from a disaster was more significant in communities that either did not have an adequate building code in place or did not adequately enforce the building code that they did have. Code enforcement only works when building code officials are properly funded and supported by the community and properly trained to enforce all the building code.

There is no national or federal building code, as under the U.S. Constitution, the regulation of construction is a state right. Almost all state and local building codes are based on a model building code, a template developed by a private concern that a state or local community can then legally adopt and enforce under their ordinances. The International Code Council develops the most commonly used model codes. The *International Building Code*, *International Existing Building Code*, *International Residential Code*, and other related model codes are all published every three years using a rigorous updating process.

The federal government encourages federal agencies to participate in the model building code development process and to use available model building codes and standards where possible. This is specified in the Office of Management and Budget (OMB) *Circular A-119: Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities*.⁷ OMB Circular A-119 was initially published in 1993 and most recently updated in January 2016. It is “intended to encourage Federal agencies to benefit from the expertise of the private sector, promote Federal agency participation in standards bodies to support the creation of standards that are useable by Federal agencies, and minimize reliance on government-unique standards where an existing standard would meet the Federal government’s objective.” OMB Circular A-119 led to Congress passing the National Technology Transfer and Advancement Act of 1995 (Public Law 104-113), which codified policies on the development and use of voluntary consensus standards originally specified in OMB Circular A-119.

Further, Congress mandated specific programmatic areas of responsibility for FEMA involving the nation’s model building codes and how they are adopted and enforced at the State or local level to reduce future losses. Some more recent examples of this include the Biggert-Waters Flood Insurance Reform Act of 2012 and the National Earthquake Hazards Reduction Program Reauthorization Act of 2018 (PL 115-307).

Numerous FEMA-funded studies have documented the importance of adopting and enforcing natural hazard-resistant building codes. The most recent of these was the National Institute of Building Sciences Natural Hazard Mitigation Saves: 2019 Report⁸ which found that designing buildings to the 2018 International Building Code and the International Residential Code resulted in a national benefit of \$11 saved for every \$1 invested when compared to building codes from the 1990’s.

A second study was FEMA’s 2020 *Building Codes Save Study*, which found that over a 20-year period, jurisdictions with current natural hazard-resistant building codes avoided a total of at least \$32 billion in losses from natural hazards.⁹ This high of a return was even though, at the time of the report, only 35% of jurisdictions within the U.S. had adopted a modern building code that included adequate natural hazard-resistant provisions.

7 OMB A-119 Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities Circular-119-1.pdf ([whitehouse.gov](https://www.whitehouse.gov))

8 Natural Hazard Mitigation Saves: 2019 Report, National Institute of Building Sciences (nibs.org)

9 Building Codes Save: A Nationwide Study of Loss Prevention ([FEMA.gov](https://www.fema.gov))

A third study was conducted in 2015 by the Applied Technology Council (ATC). This project resulted in the report, *ATC-117 Strategies to Encourage State and Local Adoption of Disaster-Resistant Codes and Standards to Improve Resiliency*.¹⁰ This report emphasized the importance of federal leadership in promoting code adoption and compliance and identified several existing federal programs and regulations that could be used to improve the adoption of building code in areas at risk from natural hazards.

While natural hazard-resistant building codes are the most effective means of reducing future losses, there are several potential problems that should be considered:

- Every state and locality legally adopts and enforces its building codes differently. One size only sometimes fits all.
- In many cases, the state or locality may legally amend and weaken the code.
- Many states do not require the adoption of the latest version of the code, thereby missing out on the latest information and technology.
- Enforcement of building codes is often a local problem, especially for:
 - Financially strapped communities that can't afford inspectors.
 - Localities where code enforcement is pitted against development pressures.
 - A misplaced desire to speed up post-disaster recovery by waiving code requirements and allowing owners to rebuild as before.

FEMA has and will continue to support the development and maintenance of the model codes by making available state-of-the-art design and construction information that addresses protection from earthquakes, floods, hurricanes, wildfire and other natural hazards. Further, FEMA has and will continue to work with states and local communities upon request to assist in adopting building codes to help reduce future losses. To that end, FEMA has developed guidance that explains how these codes can be used to meet Federal requirements, such as Executive Order 11988 on floodplain management, Executive Order 13690 on a federal flood risk management standard, and Executive Order 13717 for seismic-resistant federally owned, leased or supported buildings. Since existing buildings represent this nation's greatest threat, FEMA will continue to develop and publish guideline documents to assist in upgrading buildings to resist damage from natural hazards better.

To better coordinate its building codes and standards activities across the agency, FEMA recently completed developing a Building Codes Strategy, which can be found at [Building Codes Strategy](#). This report was published in March 2022 and provides three core goals and 14 supporting objectives that provide a plan for FEMA's programs and policies to consistently support state and local adoption of the nation's codes and standards.

We need to continue focusing our efforts on areas where mitigation will have the most significant impact. Adopting and enforcing natural hazard-resistant building codes is our greatest tool to reduce future losses from all hazards. FEMA encourages states and local communities to do all they can to ensure building codes can do what they intended – providing safe and resilient buildings for the American public.

¹⁰ [ATC 117 Strategies to Encourage State and Local Adoption of Disaster Resistant Codes and Standards to Improve Resiliency \(atcouncil.org\)](#) and [ATC 117 1 Strategies to Encourage State and Local Adoption of Disaster Resistant Codes and Standards to Improve Resiliency Supporting Documentation \(atcouncil.org\)](#)

Resources

Guidance

- [FEMA B-526, Earthquake Safety Checklist](#)
- [FEMA P-50, Simplified Seismic Assessment of Detached, Single Family, Wood Frame Dwelling](#)
- [FEMA P-50-1, Seismic Retrofit Guidelines for Detached, Single Family, Wood Frame Dwellings](#)
- [FEMA P-232, Home Builders Guide for Earthquake Resistant Design and Construction](#)
- [FEMA P-312, Homeowners Guide to Retrofitting](#)
- [FEMA P-320, Taking Shelter from the Storm: Building or Installing a Safe Room for Your Home](#)
- [FEMA P-530, Earthquake Safety at Home](#)
- [FEMA V-528, Earthquake Home Hazard Hunt Poster](#)

Additional Resources

- The [FEMA Building Science Resource Library](#) is a collection containing the majority of FEMA's building code and building science-related resources. All resources are free to download. Paper copies can be requested free of charge by calling 800-480-2520.
- The [International Code Council](#) maintains a website providing the information, tools, and resources their members rely on, building safety professionals and the public trust.
- Use the [Federal Alliance for Safe Homes' \(FLASH\) Protect Your Home & Learn How to Be Prepared](#) site search engine to customize your experience as you learn the steps you can take to protect your property. Let them know which hazard category you are concerned with or your state. You will encounter information tailored to empower homeowners and occupants through videos, interactive tools, and more.
- [Inspect to Protect](#) is a free tool developed by FLASH that assists users in determining 1) if their community's codes are current, 2) the types of renovations, retrofits, and upgrades you should make to your home to stay safe and strong, and 3) your community's disaster history. It's as simple as entering your zip code or address!
- The [Insurance Institute for Business and Home Safety \(IBHS\)](#) maintains the [www.disastersafety.org](#) website, which features projects to help home and business owners protect their property from damage caused by natural disasters. Do you want tips on hiring your next roofing contractor, or what wildfire preparedness steps can you take? Visit today.

- Are you interested in going above the minimum code requirements in your area? [IBHS' FORTIFIED program](#) will help determine how your single or multi-family home can be built or modified to go above code!
- The [Earthquake Engineering Research Institute](#) believes that a key piece to resilience is ensuring residents have a safe home to return to after an earthquake. Educating residents on mitigation/retrofit options are critical to a community's resilience. In pursuit of this, their [Mitigation Center](#) provides free educational resources for residents, students, and businesses.
- The [National Flood Insurance Program's FloodSmart](#) offers flood insurance to help you protect the life you've built and recover more quickly after a flood.

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