



Answers to Questions About Substantially Improved/ Substantially Damaged Buildings

FEMA 213 / August 2018



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About the Cover

The photograph on the left shows a house after the storm surge from Hurricane Sandy flooded it with 5 feet of water. The photograph on the right shows the house being lifted on a taller foundation after the homeowners made the decision to elevate above the new flood level. FEMA photo by Kenneth Wilsey.

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Acronyms and Abbreviations

ACV	actual cash value
BFE	base flood elevation
CFR	Code of Federal Regulations
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMA	Flood Mitigation Assistance (grant program)
GIS	geographic information system
HMGP	Hazard Mitigation Grant Program
HVAC	heating, ventilation, and air conditioning
ICC	Increased Cost of Compliance
NFIP	National Flood Insurance Program
PDM	Pre-Disaster Mitigation (grant program)
RCV	replacement cost value
SDE	Substantial Damage Estimator
SFHA	Special Flood Hazard Area
SI/SD	substantial improvement and substantial damage



Section 1

Introduction

The National Flood Insurance Program (NFIP) is administered by the Federal Emergency Management Agency (FEMA). FEMA identifies and maps areas that are subject to flooding under certain conditions, establishes minimum criteria for development in identified floodprone areas, and underwrites flood insurance coverage. The purpose of the NFIP is to reduce future flood damage and to break the cycle of repetitive flood damage by encouraging communities to adopt and enforce floodplain management regulations and by providing affordable insurance to property owners, renters, and businesses. The NFIP regulations are found in Title 44 of the Code of Federal Regulations (CFR) § 59.1, Definitions, and 44 CFR § 60.3, Flood plain management criteria for floodprone areas.

The purpose of this booklet is to answer questions about the minimum NFIP regulations. It also summarizes FEMA's guidance and policies on substantial improvement and substantial damage (SI/SD) and what it means to bring structures into compliance with the minimum requirements for new construction.

NFIP flood insurance and certain types of Federal financial assistance are available only in communities that enter into agreements with FEMA to regulate flood hazard areas. More than 22,300 communities throughout the United States—counties, parishes, cities, towns, townships, villages, special districts, territories, Indian tribes, and authorized tribal organizations—participate in the NFIP by adopting and enforcing codes, regulations, and ordinances that meet or exceed the minimum requirements of the program.

The minimum NFIP requirements apply to new construction of buildings and structures, installation of manufactured homes, and all other development activities in Special Flood Hazard Areas (SFHAs) shown on Flood Insurance Rate Maps (FIRMs). When improvements to existing buildings, structures, and manufactured homes meet the definition of “substantial improvement,” or when damage meets the definition of “substantial damage,” communities must enforce requirements to bring those structures into compliance by meeting the requirements for new construction. The SI/SD requirements grew out of the recognition that there were large numbers of buildings and manufactured homes already located in floodprone areas before communities joined the NFIP.

This booklet refers to the NFIP minimum requirements. States and communities that adopt more restrictive requirements in floodplain management regulations or building codes must enforce those requirements.

As with all design and construction matters, property owners, design professionals, and building owners should determine whether any State or local floodplain management regulations or building codes have additional or more stringent requirements than those of the NFIP.

The enforcement of the SI/SD requirements can be a major concern for communities after they experience widespread damage from floods or other disasters. In particular, local officials may have many questions concerning permits that must be issued for the repair of damaged structures.

This booklet answers many of those questions and concerns and is organized into four sections. Section 1 outlines the role of the NFIP and the purpose of the booklet. Section 2 explains the NFIP definitions and regulations, and also answers some general questions about SI/SD. Section 3 answers questions about how to determine substantial improvement and substantial damage, and Section 4 answers common questions that arise in the post-disaster period.

The questions and answers in this booklet are intended to guide building officials, building inspectors, floodplain administrators, zoning administrators, citizen planning boards, and elected and other local officials who have roles in enforcing floodplain management and building codes. These officials should also obtain a copy of the *Substantial Improvement/Substantial Damage Desk Reference* (FEMA P-758). This booklet refers to the appropriate chapters and sections in FEMA P-758 for more detail. See Appendix A for links and ordering instructions for free FEMA publications and other resources.

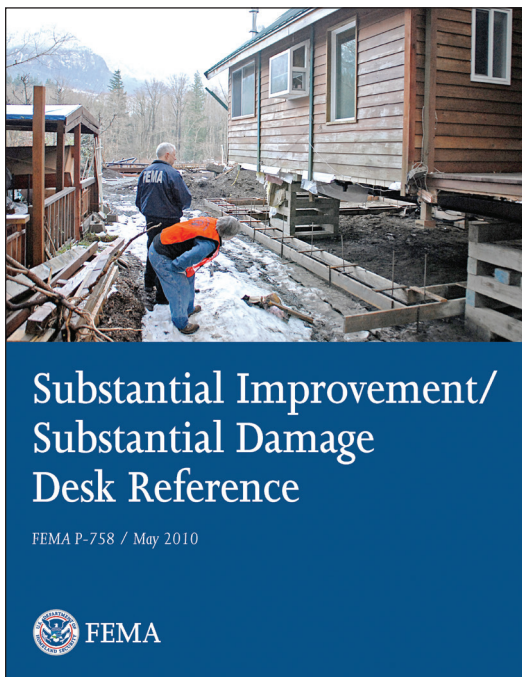


See Another Question

These text boxes identify other questions in this booklet where related information is located.



These text boxes identify sections in the *SI/SD Desk Reference* where related additional information and detail is found.



This booklet is also helpful for architects, engineers, contractors, building owners, and other interested parties. Local officials may want to provide this booklet to property owners to help them understand SI/SD, especially after events that damage many structures.

Local officials can also seek assistance from NFIP State Coordinating Agencies and FEMA Regional Offices. Appendix B lists contact information for these agencies.



Section 2

Definitions, Regulations, and General Questions

The questions in this section address general definitions and regulations pertinent to SI/SD. The questions in Section 3 address more specific issues when determining SI/SD.

1. What is substantial improvement?

Substantial improvement, as defined in 44 CFR § 59.1, means any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the start of construction of the improvement. The term includes structures that have incurred “substantial damage,” regardless of the cause of damage and regardless of the cost of repair work actually performed. However, the term does not include:

- Any project for improvement of a structure to correct existing violations of State or local health, sanitary, or safety code specifications that have been identified by the local code enforcement official, and that are the minimum necessary to ensure safe living conditions, or
- Any alteration of a “historic structure,” provided that the alteration will not preclude the structure’s continued designation as a “historic structure.”

Be sure to check the State and community’s floodplain management regulations and building codes to determine whether any local requirements are more restrictive than the NFIP minimum requirements. Some communities modify the substantial improvement requirements in one of two ways: adopting a lower threshold than 50 percent (such as 40 percent or 30 percent) or tracking costs of improvements and costs of repairs over a specific period, referred to as “cumulative substantial improvement.” Some communities adopt more restrictive requirements that affect the design of buildings, such as requiring elevation higher than the NFIP minimum elevation, which is the base flood elevation (BFE).

This booklet uses the terms “structure” and “building” to refer to buildings, structures, and manufactured homes subject to the SI/SD requirements.



See Section 3.4 of the *SI/SD Desk Reference*.



Historic Structures
See Question 25.

2. Why was 50 percent chosen as the substantial improvement threshold?

The 50 percent threshold was chosen as a compromise between two extremes. One extreme would be to prohibit all investment in existing, non-conforming buildings that do not meet the minimum NFIP requirements. The other extreme would be to allow buildings in flood hazard areas to be improved in any fashion without regard to the flood risk. In the first scenario, there is the potential for causing hardship to those who have built in flood hazard areas without knowing the risk because those buildings were constructed before areas were designated as floodprone. Those individuals would not be able to improve their buildings as damage or age contributes to deterioration. The second scenario provides no mechanism to ensure that increased investment in flood hazard areas would receive needed protection from the flood risk, contributing to the increased peril to life and property. Thus, the threshold of 50 percent is a compromise at a halfway point and conforms to similar building code and zoning standards that also use a 50 percent threshold.



See Section 1.1 of the *SI/SD Desk Reference*.

3. Who is responsible for making the determination of whether a building or manufactured home will be substantially improved or has been substantially damaged?

The NFIP requires participating communities to review all applications for development in mapped SFHAs and to enforce their floodplain management regulations and building codes. The local official who is designated to administer those regulations and codes is responsible for making SI/SD determinations. The local official reviews information submitted by applicants and may use a combination of information to estimate or verify costs and market values. The review determines whether cost estimates reasonably reflect the proposed work, including all work to repair and restore damaged buildings to pre-damage conditions.



See Section 2.2, Chapter 4, and Sections 5.2 and 5.6 of the *SI/SD Desk Reference*.

To administer the SI/SD requirements, local officials take four actions: (1) determine the cost of work, (2) determine the market value of buildings, (3) make SI/SD determinations and provide determinations to property owners, and (4) require owners to obtain permits to bring substantially improved and substantially damaged structures into compliance with the floodplain management requirements. Property owners may appeal decisions by providing additional information, especially when estimates of costs and market values are used to make determinations.

4. If proposed improvements are determined to be substantial improvements, what must happen to the building or manufactured home to bring it into compliance?

When a local official makes a determination that a building or manufactured home in an SFHA will be substantially improved, the structure must be brought into compliance with floodplain management (and building code) requirements for new construction based on flood zone. Every aspect of the structure must be made compliant. To identify how best to achieve this result, each provision of the community's regulations (and applicable building codes) should be reviewed, including:



See Sections 6.2 and 6.3 of the *SI/SD Desk Reference*.

- Lowest floor elevations
- Types of foundations

- Enclosures
- Basements
- Utilities and building service equipment
- Flood damage-resistant materials
- Making structures reasonably safe from flooding

Several solutions can achieve compliance. The solution selected for any given structure will depend on several factors, such as flood zone (Zone A or V), the type of foundation, feasibility, and whether the structure is residential or non-residential. Compliance solutions include, but are not limited to:

- Elevate in-place, which means detaching a building from its foundation and raising it onto a compliant foundation (applicable in Zones A and V)
- Convert the ground level to a compliant enclosure (typically in Zone A)
- Extend foundation walls upward and raise the floor (Zone A only)
- Convert a walkout basement to a compliant enclosure (Zone A only)
- Dry floodproofing (Zone A only, non-residential only)

5. What is substantial damage?

Substantial damage, as defined in 44 CFR § 59.1, means “damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.” Most damage occurs during a single and sudden event, such as a fire, wind storm, lightning strike, falling tree, tornado, earthquake, flood, or natural gas explosion. Damage may also be unrelated to a specific event, such as soil settlement, exposure to the elements, termite infestation, vandalism, deterioration over time, and other causes.



See Section 3.4 of the *SI/SD Desk Reference* for other useful definitions and terms.

6. What must happen when a building or manufactured home is determined to be substantially damaged?

If a local official determines that a damaged building or manufactured home in an SFHA has incurred substantial damage, then the structure must be brought into compliance with floodplain management (and building code) requirements for new construction based on flood zone. Work necessary to restore a substantially damaged structure to its pre-damage condition constitutes substantial improvement, regardless of the actual repair work performed. Therefore, when the NFIP regulations refer to substantial improvement, repair of substantial damage is included.

Even if an owner proposes to perform less than all of the work necessary to repair the damage completely, the determination must be made on the cost to fully repair and restore the structure to its pre-damage condition.



See Sections 6.2 and 6.3 of the *SI/SD Desk Reference*.



Requirements for Compliance

See Question 4.

If the total repair costs are equal to or greater than 50 percent of the structure's pre-damage market value, the structure must be brought into compliance. The same requirements for structures that are substantially improved apply to structures that are substantially damaged.

Reconstruction of a completely destroyed building or manufactured home (or one that is voluntarily demolished) is new construction, even if some or all of the original foundation is incorporated into the new structure.



Elective Improvements

See Question 20.

7. Which buildings and manufactured homes are subject to the substantial improvement and substantial damage requirements?

Communities are responsible for evaluating permit applications to perform work on buildings and manufactured homes in SFHAs, including improvements (i.e., rehabilitations, alterations, and additions), repairs, and reconstruction. After damaging events, local officials should proactively tour affected areas to identify buildings that should be inspected or evaluated before repairs are started. Buildings that are subject to the SI/SD requirements fall into two categories:

- Existing structures (sometimes called pre-FIRM structures). Existing structures were already present when FEMA issued a community's initial FIRM. Because they pre-date the regulations, many existing structures were not built in ways that recognized flood hazards. Existing structures are subject to the SI/SD requirements when certain improvements are proposed and when they sustain substantial damage.
- New construction (sometimes called post-FIRM structures). New structures are those built after a community joined the NFIP. Improvements and repairs of these structures, regardless of the nature or value of the work, must not be allowed to alter any aspect that was originally required for compliance with floodplain management requirements. These structures are subject to the SI/SD requirements if a FIRM has been revised and the BFE increases, the flood zone designation changes, or the floodplain management regulations have changed.

8. What types of improvements might trigger the substantial improvement requirement?

Any work on a building or manufactured home might be determined to be substantial improvement, regardless of the type of work (or what it is called), including:

- Rehabilitation or remodeling of a structure, with or without modifying its external dimensions

Pre-FIRM and Post-FIRM

The NFIP uses these insurance terms to determine flood insurance rates; they are tied to the date of a community's initial FIRM. Using the terms to identify buildings subject to the SI/SD requirements is common, but misleading. Because FEMA periodically revises FIRMs, sometimes changing flood zones and BFEs, reliance on "pre-FIRM" and "post-FIRM" terminology can lead to incorrect interpretations.



Types of Work, in the SI/SD Desk Reference, see:

- Rehabilitation and remodeling (Section 6.4.1)
- Lateral additions (Section 6.4.2) and vertical additions (Section 6.4.3)
- Repair, reinforcement, or replacement of foundations (Section 6.4.4)
- Repair of damaged buildings (Section 6.4.5)
- Reconstruction of demolished or destroyed buildings (Section 6.4.6)
- Work on compliant buildings (Section 6.4.7)
- Work on buildings where flood maps have been revised (Section 6.4.8)

- Lateral additions that may or may not involve structural modifications of the load-bearing structure of the existing structure
- Vertical additions
- Repair, reinforcement, or replacement of foundations, including extending existing foundations
- Repair of damage of any origin that is necessary to restore a structure to its pre-damage condition
- Work on structures that were compliant at the time of construction
- Work on existing structures where BFEs, flood zones, or floodways have been revised

9. If a building or manufactured home is substantially improved or substantially damaged and is **not brought into compliance with community floodplain management regulations, how would that impact NFIP flood insurance rates and premiums?**

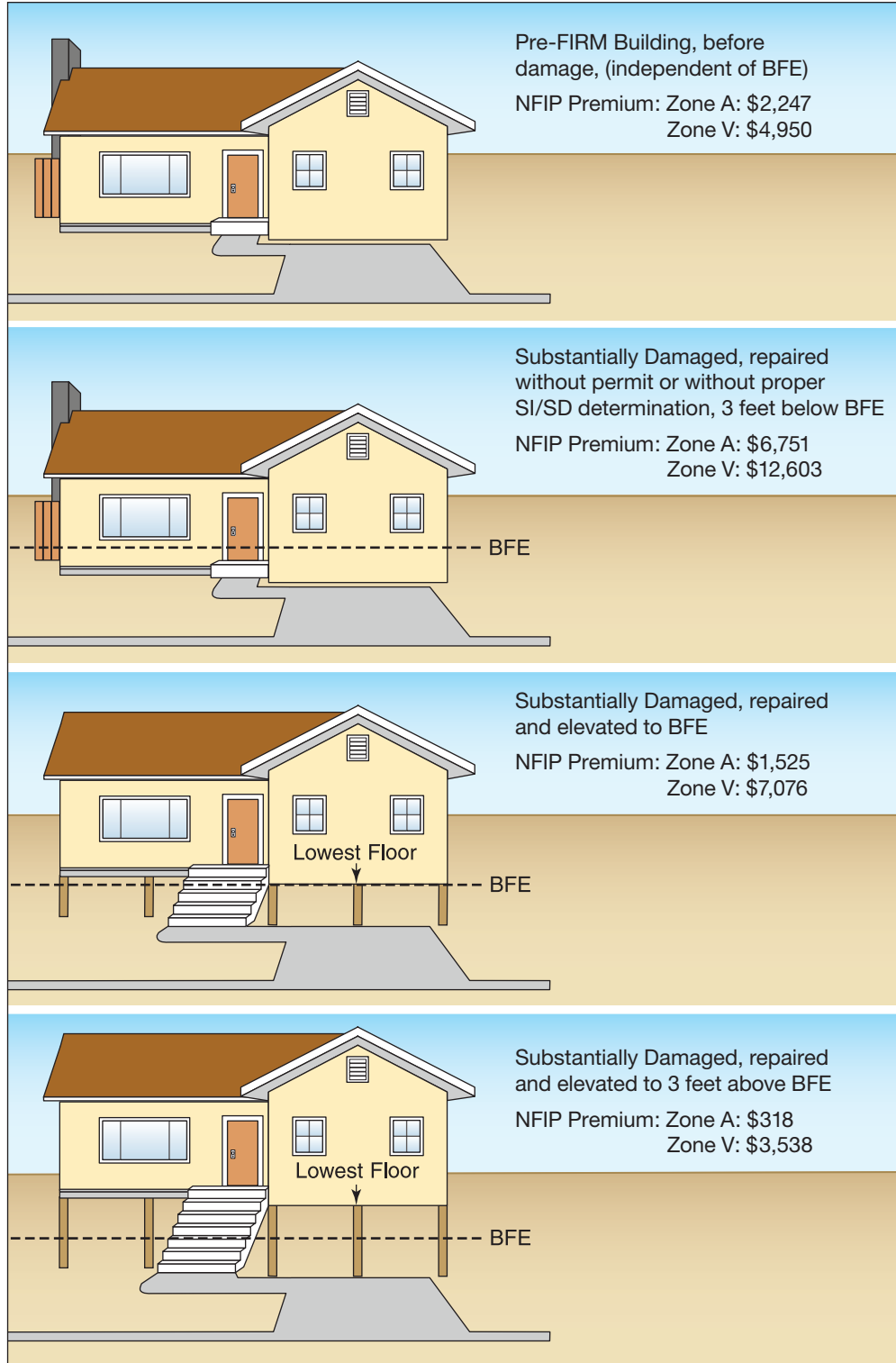
When a building or manufactured home in the SFHA is substantially improved or substantially damaged, the NFIP flood insurance policy for that structure will be rated using risk-based premium rates that depend on the surveyed elevation of the lowest floor relative to the BFE. Risk-based premium rates are actuarial rates that take into account the risk of flood damage. When a structure is elevated and brought into compliance with the requirements for new construction, the cost of an NFIP flood insurance policy generally will be lower than the premium calculated based on discounted rates used for buildings built before communities joined the NFIP, called pre-FIRM (see illustration on the next page). Communities require permittees to submit as-built surveyed lowest floor elevations as a condition of permits for new construction and SI/SD.



See Section 6.6 of the *SI/SD Desk Reference*.

If a building or manufactured home is substantially improved, or if a substantially damaged building or manufactured home is repaired or rebuilt, and it is not brought into compliance, it is in violation of the floodplain management requirements and the cost of an NFIP flood insurance policy may be very high. The annual premium could be more than 3 times the premium paid before the structure was improved or repaired. When questions arise concerning how a proposed improvement might affect an NFIP flood insurance policy, property owners should obtain cost estimates from qualified insurance agents. The NFIP may deny flood insurance coverage for specific buildings if communities cite violations and owners refuse to comply with the floodplain management requirements.

The cost of an NFIP flood insurance policy varies depending on how a substantially damaged building is repaired. The example illustrated is for a one-story, single-family home without basement or enclosure. Premiums shown are based on \$250,000 building coverage with \$2,000 deductible (rates as of April 2018), without fees and surcharges. This figure is for comparison purposes only.





Section 3

How to Determine Substantial Improvement and Substantial Damage

This section addresses general questions about making SI/SD determinations. Questions in Section 4 typically arise after disasters.

10. What is the basis for determining whether a building or manufactured home is substantially damaged? Is the basis for making a substantial improvement determination different?

When making a substantial improvement or substantial damage determination, the calculation is the same: the cost of the improvement (or the cost to repair to pre-damage condition) is compared to the pre-improvement or pre-damage market value of the structure:



See Chapter 4 of the *SI/SD Desk Reference*.

$$\frac{\text{Cost of Improvement or Cost to Repair to Pre-Damage Condition}}{\text{Pre-Improvement or Pre-Damage Market Value of Building}} \geq 50\%$$

When improvements to a building are proposed, the cost of the work must include all labor and materials necessary to perform the work. Minimum costs necessary to correct previously cited health, sanitary, or safety code violations may be excluded. The market value of the structure is the market value before the improvements are performed.

When repair of substantial damage is necessary, the cost of the work must include all labor and materials necessary to fully restore the structure to its pre-damage condition, even if the owner proposes to perform less work or do the work over time. In addition, the value of volunteer labor (including work performed by owners) and donated materials must be estimated. The market value of the structure is the market value before the damage occurred.



Who Makes SI/SD Determinations?

See Question 3.

Determining Market Value

See Question 12.

Costs to Include & Exclude

See Questions 16 and 17.

Existing Violations

See Question 18.

11. What level of accuracy is required when determining whether a building or manufactured home is being substantially improved or has been substantially damaged?

Local officials are responsible for reviewing the validity of all cost estimates provided by applicants, whether prepared by licensed contractors, engineers, architects, professional cost estimators, or property owners. When applicants submit professional appraisals of market value, local officials should examine the documentation to determine whether the appraisals reflect the specific characteristics of the buildings. Local officials also should inspect damaged buildings and manufactured homes to verify that the proposed costs include all work necessary to restore the structures to pre-damage condition.



See Sections 4.2, 4.4, 4.5 and 7.4 of the *SI/SD Desk Reference*.

Estimates may be used for both costs and market values. To be consistent, local officials should decide and document in advance the estimation methods that will be used, especially in post-disaster situations when many damaged structures may need to be evaluated to determine whether they have been substantially damaged.

When using estimates, the closer the ratio of estimated costs to estimated market value is to 50 percent, the greater the accuracy needed to make the SI/SD determination. Especially in the post-disaster period when using estimates to focus attention on the structures for which additional data are needed, local officials may decide that if the ratio of estimated costs compared to estimated market value is less than 40 percent, no further evaluation is necessary because the work obviously does not constitute SI/SD. Using that same logic, the community may decide that if the ratio is greater than 60 percent, no further evaluation is necessary because the work obviously does constitute substantial improvement. However, when the ratio falls between 40 percent and 60 percent, the local official may require the applicant to provide a detailed list of costs or to obtain a professional appraisal of the structure's market value.

12. For purposes of making SI/SD determinations, how should the market value of a building or manufactured home be determined?

Market value refers to the price that a seller of real property can expect to receive from a buyer in a fair and open negotiation. For SI/SD determinations, only the market value of the building or manufactured home is important (land, land improvements, and accessory structures are excluded). In addition, the market value must always be based on the condition of the structure before the improvement is undertaken or before damage occurred. If structures have not been maintained and have deteriorated over time, then the pre-improvement or pre-damage market values are the values as of the date applications for permits are submitted.



See Sections 4.5 and 7.4 of the *SI/SD Desk Reference*.

Many communities require permit applicants to obtain appraisals of market value prepared by qualified professionals who are licensed to perform appraisals in the State or community where the properties are located. In addition, three other methods can be used to estimate market value:

- Values developed for property tax assessment purposes, adjusted to approximate market value
- Estimates of a structure's actual cash value, including depreciation
- "Qualified estimates" based on the professional judgment of a local official

Local officials may need to use other methods to estimate market value after disaster events that damage many structures, when it is important to quickly and efficiently focus attention on those structures most likely to have sustained substantial damage.



Post-Disaster Permitting

See Questions 26, 27, and 28.

13. If property appraisals used for tax assessment purposes are used to determine market value, what are some of the limitations that should be considered?

Property assessment values determined by a State or local taxing or assessment authority can be used if the values are adjusted to reasonably represent market value. The assessor's office should provide an adjustment factor that, when applied to assessed value, yields the "adjusted assessed value," which can be used as an estimate of market value.



See Section 4.5.2 of the *SI/SD Desk Reference*.

Local officials who elect to use adjusted assessed values for making SI/SD determinations should consult with the authority that prepared the assessment values to understand the limitations on use of the data. These limitations are the length of the appraisal cycle (how old are the data), whether land value is listed separately, and the assessment level (an established statutory ratio between the assessor's estimate of value and the true fair market value). If not considered and accounted for, those limitations can produce erroneous estimates of market value.



Post-Disaster Permitting

See Questions 26, 27, and 28.

In post-disaster situations when no other market value estimates are available or the number of permit applications is overwhelming, unadjusted assessed values may suffice as the estimate of market value.

14. Can actual cash value or replacement cost value be substituted as estimates for market value?

If depreciated to account for physical conditions, then actual cash value (ACV) or replacement cost value (RCV) can be used to estimate market value.



See Sections 4.5.3 and 7.4.3 of the *SI/SD Desk Reference*.

ACV is the cost to replace a structure on the same parcel with a new structure of like kind and quality, minus depreciation due to age, use, and neglect. ACV does not consider loss in value due simply to outmoded design or location factors. Depreciation accounts for the physical condition of a structure. The concept of ACV is used in both the insurance industry and the construction industry. In most situations, ACV is a reasonable approximation of market value, provided depreciation is accounted for.

RCV is the cost to replace a structure on the same parcel with a new structure that is intended for the same purpose and using comparable materials and quality (at the present day cost of materials and labor). The concept of RCV is also used by both the insurance industry and the construction industry. Definitions may vary from State to State.

RCV can be estimated easily, even when a large number of damaged structures must be assessed. Therefore, local officials may find it useful to use RCV to estimate market values during the post-disaster period. However,

the older and more deteriorated a structure is, the greater the potential for a difference between RCV and market value. Thus, local officials who use RCV estimates for screening are advised to set a low threshold for the ratio of cost to repair to RCV, such as 30 percent. In that case, any structure that the screening indicates has a ratio value of greater than 30 percent would be examined carefully to ensure that valid cost estimates and market values are used in the substantial damage determinations.

15. How are the costs of improvements and costs to repair determined?

“Costs of improvements” include the complete costs associated with all of types of work being done. “Costs to repair” include the costs of all work necessary to restore a damaged building or manufactured home to its pre-damage condition. Both include the costs of all materials, labor, and other items necessary to perform the proposed work. Most costs must be included, although certain costs may be excluded.

Applicants for permits must provide estimates of the cost of the proposed work. Acceptable sources of cost information include:

- Itemized costs of materials and labor, or estimates of materials and labor that are prepared by licensed contractors or professional construction cost estimators.
- Building valuation tables published by building code organizations and cost-estimating manuals, and tools available from professional building cost-estimating services.
- “Qualified estimates” of cost prepared by the local official using professional judgment and knowledge of local and regional construction costs.
- Structure owners may submit cost estimates that they prepare themselves. Owners should submit as much supporting documentation as possible.

Costs can also be estimated by using the FEMA *Substantial Damage Estimator* (SDE) software. The program is most effective in the post-disaster period, when many estimates of repair costs and many substantial damage determinations must be made.

16. What items must be included in the cost of improvements or repairs?

Items that must be included in the costs of improvement are those directly associated with the work being done on a building or manufactured home. The costs of repairs must include all work necessary to restore a structure to its pre-damage condition. Whether determining costs of improvement or costs of repairs, the determination must include costs associated with complying with any other regulation or code requirement that is triggered by the work. Any list of costs that must be included cannot be exhaustive; however, the following list characterizes the types of costs that must be included:



See Section 4.4 of the *SI/SD Desk Reference*.



Included Costs

See Question 16.

Excluded Costs

See Question 17.

Donated and Owner Labor Costs

See Questions 21 and 22.



Substantial Damage Estimator (SDE)

See Question 29.



See Section 4.4.1 and a sample Notice to Property Owners, Contractors, and Design Professionals in Appendix D of the *SI/SD Desk Reference*.

- Materials and labor, including the estimated value of donated or discounted materials and owner or volunteer labor
- Site preparation related to the improvement or repair, such as foundation excavation or filling in basements
- Demolition and construction debris removal
- Labor and other costs associated with demolishing, moving, or altering structure components to accommodate improvements, additions, and making repairs
- Costs associated with complying with other requirements and codes that may be triggered by the work
- Construction management and supervision
- Contractor's overhead and profit
- Sales taxes on materials
- Structural elements and exterior finishes, including:
 - Foundations
 - Monolithic and other types of concrete slabs
 - Bearing walls, tie beams, trusses
 - Joists, beams, subflooring, framing, ceilings
 - Interior non-bearing walls
 - Exterior finishes
 - Windows and exterior doors
 - Roofing, gutters, and downspouts
 - Hardware
 - Attached decks and porches
- Interior finish elements, including:
 - Floor finishes
 - Bathroom tiling and fixtures
 - Wall finishes
 - Built-in cabinets
 - Interior doors
 - Interior finish carpentry
 - Built-in bookcases and furniture
 - Hardware
 - Insulation
- Utility and service equipment, including:
 - Heating, ventilation, and air conditioning (HVAC) equipment
 - Plumbing fixtures and piping
 - Electrical wiring, outlets, and switches
 - Solar panels and equipment
 - Light fixtures and ceiling fans
 - Security and fire, smoke, and CO2 warning systems
 - Built-in appliances
 - Central vacuum systems
 - Water filtration, conditioning, and recirculation systems

17. What items can be excluded from the cost of improvements or costs of repairs?

Items that can be excluded are those that are not directly associated with the structure. The following list characterizes the types of costs that may be excluded:

- Clean-up and trash removal
- Costs to temporarily stabilize a structure so that it is safe to enter to evaluate and identify required repairs
- Costs to obtain or prepare plans and specifications
- Land survey costs
- Permit fees and inspection fees
- Carpeting and recarpeting installed over finished flooring, such as wood or tile
- Outside improvements, including landscaping, irrigation, sidewalks, driveways, fences, yard lights, swimming pools, pool enclosures, and detached accessory structures (e.g., garages, sheds, gazebos)
- Costs required for the minimum necessary work to correct existing violations of health, sanitary, or safety codes
- Plug-in appliances, such as washing machines, dryers, and stoves



See Sections 4.4.2 and 4.4.7, and a sample Notice to Property Owners, Contractors, and Design Professionals in Appendix D of the *SI/SD Desk Reference*.



Existing Violations
See Question 18.

18. The NFIP definition of substantial improvement states: “the term does not, however, include any project for improvement of a structure to correct existing violations of State or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions.” What does this mean?

To be excluded, the costs must be the minimum necessary to correct a violation or condition that pre-dates the application and was previously cited by an official who has the authority to enforce the community’s health, sanitary, and safety codes. If substandard conditions are identified by the owner or are discovered in the course of deciding what work to perform, the costs to bring those substandard conditions up to code must be included. In addition, the mere presence of a condition that does not conform to current codes does not qualify as a violation.



See Section 4.4.8 of the *SI/SD Desk Reference*.

19. When a building or manufactured home is completely destroyed and a new structure will be built on the old foundation or slab, is it considered a substantial improvement or new construction?

A building or manufactured home that is totally destroyed, or so significantly damaged that it cannot be repaired, is a substantially damaged structure. However, any project that involves complete reconstruction, even if rebuilt on the same foundation, is new construction and must comply with all applicable floodplain management and building code requirements. Sometimes owners elect to demolish structures located in flood hazard areas. In these circumstances, if the decision is to reconstruct using an existing foundation, the reconstructed structure (including the existing foundation) must meet the requirements for new construction.



See Section 6.4.6 of the *SI/SD Desk Reference*.

20. What happens if damage is determined not to be substantial damage and during repairs, the owner wants to make other improvements to the building or manufactured home?

Local officials often see applications for combinations of improvements and repairs. In these cases, the combined costs of all work must be used to make the SI/SD determination. For example, property owners who make necessary repairs to damaged structures may elect to add improvements at the same time. Applicants must provide the combined estimated costs for all costs to repair buildings and all costs of proposed improvements. The combined total cost is compared to the pre-damage or pre-improvement market value of the structure to make the SI/SD determination.



See Sections 5.6.1 and 5.6.2 of the *SI/SD Desk Reference*.

If damage is initially determined not to be substantial damage or proposed improvements are initially determined not to be substantial improvements, and the owner subsequently wants to add more work, the permit must be modified. The cost of the additional work must be added to the costs used in the initial determination and the local official must reevaluate the SI/SD determination. If the combined repairs and improvements constitute substantial improvement, then the structure must be brought into compliance. Local officials should ensure proposed work is a complete project that does not depend on subsequent work, and should discourage deliberate phasing to circumvent the substantial improvement requirements.

21. What if a building or manufactured home is substantially damaged but not fully restored, or is repaired using donated or discounted labor and/or materials, such that the amount actually spent on repairs is less than 50 percent of the structure's market value?

By definition, a building or manufactured home is substantially damaged if the cost to restore all damaged aspects to pre-damage condition equals or exceeds 50 percent of the structure's market value, regardless of how much work the owner plans to do right away. Sometimes owners decide to undertake restoration and repairs over time. Sometimes the initial work is only the minimum necessary to make the structure safe enough to reoccupy (provided such occupancy is allowed by the community). Sometimes the owner's financial situation does not allow all of the repairs to be done at the same time. Even if an owner elects to perform less work or delay repairs, the substantial damage determination must be made using the estimate of all costs to fully restore the structure.



See Sections 4.4, 5.6.2, and 5.6.3 of the *SI/SD Desk Reference*.

When repair work is done by owners or volunteers, or when labor costs are discounted by contractors, and when materials are donated or discounted, the full costs must be estimated and included in substantial damage determinations.

22. How are estimates for donated or discounted materials and the owner's labor or volunteer labor determined?

The value placed on all donated or discounted materials should be equal to the full actual or estimated cost of such materials and must be included in the total cost. Where materials or service equipment are donated or discounted below market values, the costs should be adjusted to amounts equivalent to normal market costs.



See Sections 4.4.4 (materials) and 4.4.5 (labor) of the *SI/SD Desk Reference*.

When property owners do their own work, or if volunteer labor is used, then the normal market value or “going rate” for labor must be included in cost estimates. The value of labor should be estimated based on applicable minimum hourly wage rates for the skill and type of construction work that will be done. Wage rates can vary geographically.

In both cases, local officials should verify the estimates based on professional judgment and knowledge of local or regional material costs and construction industry labor wage scales.

23. What requirements apply when a substantially improved or substantially damaged building or manufactured home is located in a coastal high hazard area (Zone V)?

Coastal high hazard areas are areas of special flood hazard extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high-velocity wave action from storms or seismic sources. SFHAs where the waves are predicted to be 3 feet or higher are labeled Zone V on FIRMs.



See Section 5.6.9 of the *SI/SD Desk Reference*.

In Zone V, substantially improved and substantially damaged buildings and manufactured homes must be brought into compliance with the following requirements:

- Be elevated on open foundations (pilings or columns) that allow floodwater and waves to pass beneath the elevated structures (floodproofing is not allowed)
- Be elevated so that the bottom of the lowest horizontal structural member of the lowest floor is at or above the BFE
- Have foundations anchored to resist flotation, collapse, and lateral movement due to the effects of wind and water loads acting simultaneously on all structure components
- Have areas beneath elevated structures free of obstructions that would prevent the free flow of floodwater and waves during a base flood event
- Have utilities and structure service equipment elevated above the BFE
- Have the walls of enclosures below elevated structures designed to break away under base flood conditions without transferring loads to foundations

24. What requirements must be met if a substantially improved or substantially damaged building or manufactured home is located in a floodway?

A floodway is the channel of a river or other watercourse and the adjacent land areas that must be reserved (kept free of encroachments) to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Floodways are delineated along most waterways that are studied using detailed engineering methods.



See Section 5.6.8 of the *SI/SD Desk Reference*.

If a building or manufactured home is located in a floodway, bringing it into compliance may involve having a floodway encroachment analysis prepared if there is any increase in the footprint, such as a lateral addition or increase in earthen fill. The NFIP regulations require this analysis to be performed for any work that

encroaches into a floodway. If the analysis indicates any increase in BFE, the local official must not allow the proposed work. Using open foundations such as piers or columns may minimize the floodway impacts.

25. How are historic structures treated when they are substantially damaged or when improvements are proposed?

Floodplain management regulations give special consideration to the unique value of designated historic structures, which include structures listed or preliminarily determined to be eligible for listing in the National Register of Historic Places, structures certified or preliminarily determined as contributing to the historical significance of a registered historic district, or structures individually listed on a State inventory of historic places or on local inventories in communities with certified historic preservation programs. Note the NFIP has a specific definition for historic structures. It does not include structures that are merely old, those that are referred to as historic, or those that happen to be located in historic districts.



See Section 6.5.1. of the *SI/SD Desk Reference*.

Provided historic structures retain their designations as historic structures, the requirement to bring them into compliance does not apply if they will be substantially improved or have been substantially damaged. Although compliance is not required for substantial improvement of historic structures, owners should carefully consider the benefits of implementing measures to minimize flood damage. Guidance for minimizing the impacts of flooding on historic structures is found in *Floodplain Management Bulletin: Historic Structures* (FEMA P-467-2).

Permit applications for improvements (including additions) or repairs of historic structures should be accompanied by two pieces of evidence: (1) documentation that confirms the structure is designated a historic structure, and (2) documentation that confirms the proposed work will not preclude the structure's continued designation.

Communities may elect to use one of two approaches to handle historic structures. One approach is to grant variances, requiring evaluation of individual requests and consideration of conditions to make the structures more resistant to flood damage. The other approach is to exclude historic structures from the definition of substantial improvement. Whichever approach is selected, it should be used in all cases when improvements or repairs are proposed for historic structures.



Section 4

Post-Disaster Permitting

The questions in this section typically arise after a disaster, especially when many buildings or manufactured homes are damaged. The questions and answers in Sections 2 and 3 still apply after disasters.

26. What are the permit requirements for buildings and manufactured homes that have been substantially damaged?

Before starting to repair damaged buildings and manufactured homes, property owners should always check with local permit authorities to determine whether permits are required. Permits are typically required to repair damage, and if a structure has been substantially damaged, it must be brought into compliance with the community's floodplain management regulations. Note that it is not always easy to tell whether a damaged structure has been substantially damaged because making that determination requires an estimate of the cost to repair the damaged structure to its before-damage condition and an estimate of the market value of the structure before the damage occurred.



Existing Violations

See Questions 5 and 6.

27. Given the number of permit applications may be overwhelming in a post-disaster situation, what should local officials focus on to assess potential substantially damaged buildings and manufactured homes?

Immediately after a damaging event occurs, the first step in assessing damage typically involves conducting an initial “windshield review” or survey of the extent of damage, resulting in a broad characterization of the number of buildings and manufactured homes affected and the level of anticipated damage. This initial assessment, call a Preliminary Damage Assessment, is usually a precursor to a decision regarding whether to seek a declaration of the event as a major disaster.



See Sections 7.3, 7.4, and 7.5 of the *SI/SD Desk Reference*.

The next step local officials typically take is to conduct a rapid evaluation or structure condition survey of affected areas. This is done to identify obviously unsafe structures and to identify those that will require a permit before repairs are undertaken. This is the step where many communities use color-coded placards to identify the structures that have been inspected and declared safe (green), those that have restricted use (yellow), and those deemed unsafe (red).

Preliminary Damage Assessments and safety evaluations are not equivalent to substantial damage determinations. However, local officials charged with performing building inspections and making substantial damage determinations may find the results useful to identify areas where significant damage has occurred and to coordinate their substantial damage inspections.

Although it is important to issue permits to allow property owners in SFHAs whose buildings have sustained less than substantial damage to make repairs as soon as possible after a damaging event, it is equally important to make substantial damage determinations and to enforce the substantial damage requirements. Failure to do so means structures would remain vulnerable, may be in violation of floodplain management requirements, and NFIP flood insurance policies may have very high premiums.

Some readily available data can be used to estimate repair costs and market values. These estimates can be used to screen damaged structures for those most likely to have sustained substantial damage. Comparing readily available information on repair costs to readily available information on market value can give local officials a basic picture of which structures will require more attention and more detailed information to make substantial damage determinations. When using estimates, attention should be focused on those buildings for which the resulting ratios fall within a range around 50 percent, such as between 40 and 60 percent. Even if more refined data are used, those with higher ratios are still likely to have incurred substantial damage, while those with lower ratios are less likely to have to meet the substantial damage threshold.

While the sources of information listed below should not be used to make final substantial damage determinations, local officials can use them to organize and focus efforts following disasters:

- Property owners who have insurance will receive estimates of damage from their insurance companies. Because the basis used by insurance adjusters to estimate damage and the costs to repair are governed by the terms of the insurance policy, these estimates cannot be used to make substantial damage determinations. However, they are useful for screening to help identify the structures most likely to have sustained substantial damage.
- Unadjusted assessment values can be used as estimates of market values to quickly screen damaged structures to help focus attention on those for which more detailed information has to be provided.
- Replacement cost values can be used as estimates of market values to screen all damaged structures.

28. What options are available to help local officials handle a large number of permit applications and potentially substantially damaged buildings and manufactured homes after disasters?

Communities that have extensive floodplains and significant numbers of floodprone structures are encouraged to plan ahead to handle the workload. Even with good planning, support may be necessary to handle large numbers of damage inspections and permit applications.

In addition to support from the State and FEMA, resources may be available from other communities, State floodplain management associations, State building code associations, and organizations that represent engineers and architects. Some States and communities develop mutual aid agreements, interlocal agreements, or some other mechanism to facilitate this post-disaster



Level of Accuracy

See Question 11.

Adjusted Assessment Values

See Questions 12 and 13.

Replacement Cost Values

See Question 14.



See Section 7.2 of the *SII/SD Desk Reference*.

support. While help may be offered to perform inspections and gather data, perhaps using the FEMA SDE, making final SI/SD determinations and permit decisions remain the responsibility of local officials in affected communities.

Depending on the scale and severity of damage, some communities institute a full or partial moratorium on issuing permits. Once the community has evaluated the magnitude, scope, and general location of potential substantially damaged structures, the community may remove the moratorium. When mitigation projects such as floodplain buyouts, elevation-in-place, or other measures are considered, it may be reasonable to delay rebuilding until the pros and cons of such projects are evaluated.

29. What is the FEMA *Substantial Damage Estimator* (SDE) and how can it help in determining substantial damage?

The SDE software offers a formalized approach to develop reasonable estimates of structure values and reasonable estimates of the costs to repair or reconstruct buildings. The SDE enables local officials to calculate a reasonable and defensible estimate of whether structures have been substantially damaged and make substantial damage determinations. The SDE is described in the *Substantial Damage Estimator (SDE) User Manual and Field Workbook, Using the SDE Tool to Perform Substantial Damage Determinations* (FEMA P-784).



See Section 7.5.1. of the *SI/SD Desk Reference*.



Making Determinations
See Question 10.

The SDE can be used to evaluate damage by any cause (flood, tornado, earthquake, etc.). The software allows users to develop damage estimates by examining individual structure elements. Users can estimate damage percentages for each described structure element. Using these percentages, the SDE produces an aggregate “percent damage” for the structure as a whole. Because the SDE uses localized cost data and estimates of market value (typically based on property assessments), communities should establish a procedure to handle property owner appeals, especially when owners provide more detailed data for costs to repair and market value.

30. When buildings and manufactured homes are substantially damaged by flooding, how can local officials help property owners obtain the financial benefits of the Increased Cost of Compliance (ICC) coverage that is as part of NFIP standard flood insurance policies?

NFIP standard flood insurance policies on buildings and manufactured homes in SFHAs include ICC coverage. This coverage was authorized by Congress to help pay the added costs of bringing structures that are substantially damaged by flooding into compliance with the community’s floodplain management requirements for new construction. ICC claims are paid any time flood damage qualifies and when local officials make substantial damage determinations, not just when major disasters are declared. Processing ICC claims, which involves insurance adjusters, property owners, and local officials, must be accomplished within specific timeframes. As of 2018, the ICC coverage provides up to \$30,000 toward the cost of bringing insured structures into compliance. Additional guidance, brochures, frequently asked questions, and a policyholder processing checklist are available online at <https://www.fema.gov/increased-cost-compliance-coverage>.



See Section 7.6. of the *SI/SD Desk Reference*.

Compliance measures that can be paid with the ICC claim payment include elevation, relocation, demolition, and dry floodproofing (non-residential structures only).

The community's role helping property owners with ICC claims includes:

- Requiring compliance with all NFIP and local requirements.
- Collecting information and making substantial damage determinations.
- Informing property owners/policyholders about the requirement to bring structures into compliance and working with them to determine the appropriate options to achieve compliance.
- Providing property owners/policyholders with letters documenting the substantial damage by flooding determination; the owner provides a copy to the claims adjuster to process the ICC claim.
- Issuing permits and inspecting construction.
- Performing final inspections and issuing certificates of occupancy or letters stating the work to bring the structure into compliance has been completed satisfactorily and that no variance was granted. This evidence is required before policyholders receive the final installment of their ICC claim payments.

31. What steps can local officials take to inform citizens about the permit process and substantial damage determinations?

Local officials should recognize that citizens will have questions about recovery and the process of obtaining inspections and permits. Distributing substantial damage determinations may generate a number of questions. Local officials should be prepared to answer questions throughout the post-disaster recovery phase.



See Sections 5.5 and 7.9 of the *SI/SD Desk Reference*.

Communities should consider developing and distributing guidance to citizens, property owners, contractors, and design professionals on:

- The importance of having damaged structures inspected before repair work is started
- Activities that require a permit
- Activities that do not require a permit
- The floodplain management requirements that apply when structures in the SFHA are substantially damaged and what it means to bring those structures into compliance
- The availability and benefits of the ICC coverage that is part of NFIP standard flood insurance policies on structures in mapped SFHAs
- The importance of hiring licensed contractors and cautions about fraudulent and unlicensed entities that may take advantage of victims in areas affected by significant events
- The importance of including damage-reduction measures to minimize future flood damage, even if such measures are not required by the community's floodplain management regulations

32. Because of the trauma and inconvenience people experience during and after disasters, can communities suspend permit requirements for the repair of damaged buildings and manufactured homes in post-disaster situations?

No, requirements for buildings and structures in SFHAs must not be suspended or waived. Sometimes there is pressure on local officials to suspend issuing permits or to waive requirements that are perceived



See Section 7.1. of the *SI/SD Desk Reference*.

to delay recovery, but returning structures to their pre-flood condition leads to repetitive flood damage. Yielding to such pressure would expose people and their properties to future damage. In addition, allowing repairs and reconstruction of substantially damaged structures means the owners would have very costly NFIP flood insurance premiums. Moreover, if a community fails to properly administer its floodplain management requirements for substantially damaged structures, its standing in the NFIP could be jeopardized.



NFIP Insurance Rates

See Question 9.

Communities may decide to waive permit fees after significant damage events to be responsive to the needs of property owners. However, waiving fees does not waive the requirement for property owners to obtain permits and comply with the requirements.

33. Can variances to the substantial damage requirements be granted?

Generally, no. Local floodplain management regulations have criteria for variances that must be satisfied even in the post-disaster recovery period. A variance is a grant of relief from the terms of a code or regulation. If granted, a variance allows construction in a manner that is otherwise prohibited. Granting variances to the requirements would allow property owners to repair and rebuild in ways that will continue to expose their buildings to flooding. Especially when damage was caused by flooding, it is difficult to conceive of situations where waiving the requirement to elevate substantially damaged buildings could be justified.



See Sections 5.6.7 and 7.8 of the *SI/SD Desk Reference*.

NFIP flood insurance policies written on new construction and substantially improved buildings are rated based on risk (primarily elevation relative to BFE). Even if variances are issued to allow the substantially damaged buildings to be repaired without elevating and bringing them into compliance, the cost of flood insurance policies will be high.



NFIP Insurance Rates

See Question 9.

34. What steps can communities take to prepare to implement the substantial damage requirement during the post-disaster period?


There are several ways communities can effectively administer floodplain management responsibilities after disasters occur. Some successful actions include:


- Brief elected officials as soon as possible after an event to inform them of the community's responsibilities to:
 - Issue permits for repair and reconstruction
 - Make substantial damage determinations for buildings located in mapped SFHAs
 - Explain what it means to bring substantially damaged structures into compliance with current floodplain management standards
 - Explain the NFIP ICC coverage that is part of NFIP flood insurance policies on buildings in SFHAs
 - Share the materials developed to communicate with citizens



See Section 7.2 of the *SI/SD Desk Reference*.


- Ask electric utility companies and community utility departments to turn on service only when property owners provide copies of building permits or evidence that permits are not required
- Establish a routine to drive through affected areas to check for unpermitted construction work
- Depending on the scale and severity of damage, institute a full or partial moratorium on issuing permits to allow evaluation of potential substantially damaged structures and possible mitigation projects
- Keep records in a format that allows plotting by a geographic information system (GIS) to easily document the status of damaged structures
- Plan ahead to handle the workload, perhaps by developing mutual aid agreements, interlocal agreements, or other support, and by learning to use the SDE before disasters to facilitate use after disasters

 **Federal Assistance**
See Question 36.

 **Substantial Damage Estimator (SDE)**
See Question 29.

35. What information should local officials share with property owners during the post-disaster period?


Communications with property owners will take place throughout the post-disaster recovery period. Immediately after an event, communities should be prepared to provide information about cleanup and repairs and to caution property owners not to perform any work that requires a permit until a permit is obtained, except work necessary to temporarily stabilize structures so they are safe to enter.

 See Section 7.9 and a sample Notice for Property Owners, Contractors, and Design Professionals in Appendix D of the *SI/SD Desk Reference*.

Local officials should recognize that there may be questions from property owners about permit requirements and what it means if they receive a substantial damage determination. Many communities distribute notices to property owners, contractors, and design professionals summarizing the SI/SD requirements and listing costs to be included in estimates. This booklet can be made available to property owners, contractors, engineers, architects, and other interested parties.

36. Are there grant programs available to communities to help property owners whose buildings or manufactured homes have been substantially damaged?

Yes. FEMA, working through the States, administers a number of mitigation grant programs that allow communities to apply for funds to implement a variety of flood mitigation projects. Projects that may help owners of substantially damaged structures include acquisition of property (and demolition or relocation of structures), elevating structures in-place on higher foundations, relocating structures to sites outside of SFHAs, and dry floodproofing (applicable only to non-residential structures and historic structures).

 See Chapter 8 of the *SI/SD Desk Reference*.

Each of FEMA's hazard mitigation grant programs has specific requirements, notably that projects must be cost effective, which may be determined by a benefit-cost analysis. Visit <https://www.fema.gov/hazard-mitigation-assistance> for more information about the following grant programs:

- **Pre-Disaster Mitigation (PDM) Program.** This nationally competitive program provides funds to States, territories, federally-recognized tribes, and local governments to implement cost-effective hazard mitigation activities that complement a comprehensive mitigation program.
- **Hazard Mitigation Grant Program (HMGP).** These funds are available following Presidential disaster declarations. Eligible applicants include States, territories, federally-recognized tribes, local governments, and some private non-profit organizations. Communities may apply for HMGP assistance on behalf of affected individuals and businesses, and all funds must be used to reduce or eliminate losses from future disasters.
- **Flood Mitigation Assistance (FMA) Program.** This program provides funding to States, territories, federally-recognized tribes, and local governments to implement measures that reduce or eliminate the long-term risk of flood damage to buildings and manufactured homes that are insured by the NFIP.

Appendix A

Publications and Resources

Free hard copies of FEMA Building Science's current publications may be ordered by calling the FEMA Publication Warehouse at 1-800-480-2520, Monday through Friday between 8:00 AM and 5:00 PM (EST), by faxing a request to 1-240-699-0525, or by emailing FEMA-Publications-Warehouse@fema.dhs.gov. Please include the publication title and number, quantity of each publication, and the requestor's name, address, zip code, and daytime telephone number.

FEMA F-084, *Answers to Questions about the National Flood Insurance Program*. Washington, DC: Federal Emergency Management Agency, 2011.

<https://www.fema.gov/media-library/assets/documents/272>

FEMA P-85, *Protecting Manufactured Homes from Floods and Other Hazards: A Multi-Hazard Foundation and Installation Guide*, Second Edition. Washington, DC: Federal Emergency Management Agency, 2009.

<https://www.fema.gov/media-library/assets/documents/2574?id=1577>

FEMA P-259, *Engineering Principles and Practices of Retrofitting Flood-Prone Residential Structures*, Third Edition. Washington, DC: Federal Emergency Management Agency, 2012.

<https://www.fema.gov/media-library/assets/documents/3001?id=1645>

FEMA 301, *Increased Cost of Compliance Coverage: Guidance for State and Local Officials*. Washington, DC: Federal Emergency Management Agency, 2003.

<https://www.fema.gov/increased-cost-compliance-coverage>

FEMA P-312, *Homeowner's Guide to Retrofitting: Six Ways to Protect Your Home from Flooding*, Third Edition. Washington, DC: Federal Emergency Management Agency, 2014.

<https://www.fema.gov/media-library/assets/documents/480>

FEMA P-347, *Above the Flood: Elevating Your Floodprone House*. Washington, DC: Federal Emergency Management Agency, 2000.

<https://www.fema.gov/media-library/assets/documents/725>

FEMA P-467-2, *Floodplain Management Bulletin: Historic Structures*. Washington, DC: Federal Emergency Management Agency, 2008.

<https://www.fema.gov/media-library/assets/documents/13411?id=3282>

FEMA P-499, *Home Builder's Guide to Coastal Construction: Technical Fact Sheets*. Washington, DC: Federal Emergency Management Agency, 2010.

<https://www.fema.gov/media-library/assets/documents/6131?id=2138>

FEMA 511, *Reducing Damage from Localized Flooding: A Guide for Communities*. Washington, DC: Federal Emergency Management Agency, 2005.

<https://www.fema.gov/media-library/assets/documents/1012>

FEMA 551, *Selecting Appropriate Mitigation Measures for Floodprone Structures*. Washington, DC: Federal Emergency Management Agency, 2007.

<https://www.fema.gov/media-library/assets/documents/10618?id=2737>

FEMA F-663, *Increased Cost of Compliance Brochure*. Washington, DC: Federal Emergency Management Agency, 2017.

<https://www.fema.gov/media-library/assets/documents/12164>

FEMA P-758, *Substantial Improvement/Substantial Damage Desk Reference*. Washington, DC: Federal Emergency Management Agency, 2010.

<https://www.fema.gov/media-library/assets/documents/18562?id=4160>

FEMA P-784, *Substantial Damage Estimator (SDE) User Manual and Field Workbook, Using the SDE Tool to Perform Substantial Damage Determinations*. Washington, DC: Federal Emergency Management Agency, 2017.

<https://www.fema.gov/media-library/assets/documents/18692>

FEMA P-936, *Floodproofing Non-Residential Buildings*. Washington, DC: Federal Emergency Management Agency, 2013.

<https://www.fema.gov/media-library/assets/documents/34270>

FEMA P-1080, *Answers to Frequently Asked Questions About Increased Cost of Compliance*. Washington, DC: Federal Emergency Management Agency, 2017.

<https://www.fema.gov/media-library/assets/documents/142200>

FEMA, *NFIP Technical Bulletin Series*. Washington, DC: National Flood Insurance Program.

<https://www.fema.gov/nfip-technical-bulletins>

U.S. Government Printing Office. Title 44, Code of Federal Regulations, Emergency Management and Assistance, (Parts 59 and 60).

<https://www.gpo.gov/fdsys/pkg/CFR-2017-title44-vol1/content-detail.html>

Appendix B

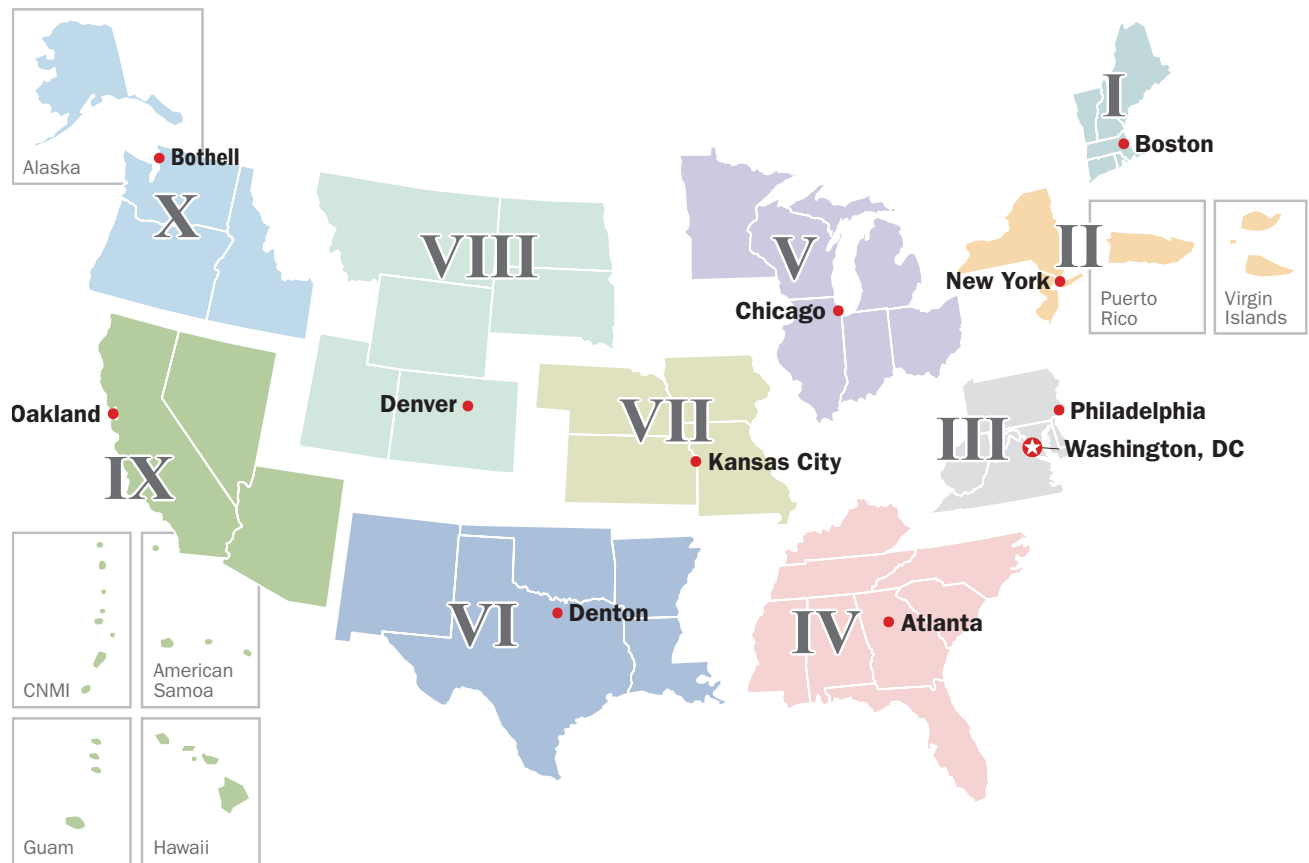
Contact Information for NFIP State Coordinating Agencies and FEMA Regional Offices

NFIP State Coordinating Agencies

Every State and territory has an office or agency designated as the NFIP State Coordinating Agency, usually called the NFIP State Coordinator. Contact information is available at <http://www.floods.org>.

FEMA Regional Offices

Regional office addresses and contact information are shown below and are available at <https://www.fema.gov/fema-regional-office-contact-information>.



FEMA Regions and Location of Regional Offices

FEMA Region Contact Information

FEMA Region	States and Territories	Address	Telephone
Region I	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont	Federal Emergency Management Agency 99 High Street Boston, MA 02110	877.336.2734
Region II	New Jersey, New York, Puerto Rico, U.S. Virgin Islands	Federal Emergency Management Agency 26 Federal Plaza New York, NY 10278-0002 Region II Caribbean Address Federal Emergency Management Agency Caribbean Division New San Juan Office Building 159 Calle Chardon, 6th Floor Hato Rey, PR 00918	212.680.3600
Region III	Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia	Federal Emergency Management Agency 615 Chestnut Street One Independence Mall, Sixth Floor Philadelphia, PA 19106-4404	215.931.5500
Region IV	Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee	Federal Emergency Management Agency 3003 Chamblee Tucker Road Atlanta, GA 30341	770.220.5200
Region V	Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin	Federal Emergency Management Agency 536 South Clark Street, 6th Floor Chicago, IL 60605	312.408.5500
Region VI	Arkansas, Louisiana, New Mexico, Oklahoma, Texas	Federal Emergency Management Agency FRC 800 North Loop 288 Denton, TX 76209-3698	940.898.5399
Region VII	Iowa, Kansas, Missouri, Nebraska	Federal Emergency Management Agency 9221 Ward Parkway, Suite 300 Kansas City, MO 64114-3372	816.283.7061
Region VIII	Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming	Federal Emergency Management Agency Denver Federal Center Building 710, Box 25267, Denver, CO 80225-0267	303.235.4800
Region IX	Arizona, California, Guam, Hawaii, Nevada, Commonwealth of Northern Mariana Islands, Republic of the Marshall Islands, Federated States of Micronesia, American Samoa	Federal Emergency Management Agency 1111 Broadway, Suite 1200 Oakland, CA 94607-4052	510.627.7100 Pacific Area Office: 808.851.7900
Region X	Alaska, Idaho, Oregon, Washington	Federal Emergency Management Agency Federal Regional Center 130 228th Street, Southwest Bothell, WA 98201-8627	425.487.4600



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