
NFIP Reform: Phase III Report



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I. About NFIP Reform

The Federal Emergency Management Agency (“FEMA”) is engaged in a multi-phase participatory process to review, rethink, and reform the National Flood Insurance Program (“NFIP”). As the primary source of flood insurance and flood hazard mitigation grants for the vast majority of U.S. residential homes and small commercial buildings, and as the federal entity primarily responsible for setting floodplain management standards and mapping flood risk, the NFIP has periodically been the focus of public debate since its inception. Ongoing efforts to modernize flood maps have often depicted an increasing flood risk, creating discontent among impacted citizens and communities who are required to purchase flood insurance. Additionally, a series of unusually severe floods in the program’s recent past has crystallized long-standing concerns about the NFIP’s financial self-sufficiency and the extent to which it continues to appropriately balance various objectives.

In response to these concerns, FEMA established the NFIP Reform Working Group (“Working Group”), which is tasked with designing, evaluating, and recommending policies to reform the NFIP and place it on a more sustainable pathway.

In Phase I, the Working Group held an NFIP Listening Session to collect input from stakeholders in the public, private, and non-profit sectors regarding the focus and direction of reform efforts. Phase I concluded with release of a final report entitled [NFIP Stakeholder Listening Session: Findings and Next Steps](#).

In Phase II, the Working Group analyzed stakeholder input to develop a set of guiding principles to underpin its reform efforts. These guiding principles were further distilled into a set of evaluation criteria that serve as the yardstick by which to evaluate the relative merits of various policy proposals. The Working Group concluded this phase in May 2010 and released a final report entitled [NFIP Reform: Phase II Report](#).

During Phase III, the Working Group identified and developed a set of policy alternatives, which were then evaluated by an independent economic and public policy consulting firm, Keybridge Research. This report summarizes the Phase III process.

The key findings in the Phase III analysis concluded that:

- Reform is needed.
- No one “pure” policy option clearly emerges as the unequivocal best approach, but the existing programmatic structure offers a strong platform for change.
- Elements of the other “pure” policy options could also be considered.

II. Evaluation Criteria

The Working Group developed a set of evaluation criteria based on an analysis of stakeholder viewpoints and the objectives for reform embedded within each of these perspectives. These reform objectives were aggregated to form the final set of evaluation criteria providing a common yardstick by which to evaluate the merits of the five policy alternatives. The eight evaluation criteria include:

(1) Cost of flood borne by individuals

A national flood insurance policy should encourage individuals to assume the risk of flooding to their property (and secondarily, communal and public resources) commensurate with the level of risk they have taken on through personal choices. When individuals realize these costs, they will rationally

account for their flood risk when making decisions. These individual costs are relative to the costs assumed by other taxpayers through federal disaster assistance.

(2) Individuals incur costs of increased risk gradually

Floods are a dynamic and uncertain risk. The actual risk, the assessment of that risk and, ultimately, the cost of the risk can change. When faced with substantial cost increases because risk has changed, individuals may react by rejecting the assumption of risk. A national flood insurance and mitigation policy that allows for gradually increasing costs may encourage individuals to voluntarily purchase flood insurance and participate in assuming the cost of their risk.

(3) Assistance provided to those who cannot afford the cost of flood

Some living at risk of flood may not be able to afford the cost of protecting themselves from this risk, nor can they afford the cost to avoid the risk. A national flood insurance and mitigation policy should consider affordability issues.

(4) Minimize exposure to flood hazards

Occupancy rates in areas exposed to flood hazards are increasing. Furthermore, individual and collective actions throughout our nation's watersheds often result in an increase in society's exposure to flood hazards. A national flood insurance and mitigation policy should minimize exposure to flood hazards to avoid loss of life and property.

(5) Maximize natural and beneficial functions of the floodplain

Managing water quantity, water quality, and the habitat of fish and wildlife complement activities to reduce flood losses. A national flood insurance and mitigation policy should maximize natural and beneficial functions of the floodplains as a means to reduce flood losses and support community sustainability.

(6) Efficiency - maximize the benefit/cost ratio

Any policy designed to protect the nation's citizens from flood hazards will have economic impacts. A national flood insurance and mitigation policy should maximize the economic benefits relative to the economic costs.

(7) Administrative feasibility

Administration of the nation's flood insurance and mitigation policy requires involvement by governments at federal, state, tribal, and local levels. A national flood insurance and mitigation policy should minimize the complexity of these interactions and the costs associated with the potential transition to, and operation of, a flood program.

(8) Political acceptability

There are many contradictory viewpoints regarding the solution for addressing flood hazards. A national flood insurance and mitigation policy must balance and preserve these perspectives to ensure its successful adoption, implementation, and long-term sustainability.

III. Policy Options: The Current NFIP & Alternatives for Reform

The Working Group worked to identify and develop a set of four policy alternatives to the current program. Refined through internal deliberations, a public comment period and a series of public meetings, these "pure" policy alternatives represent distinct philosophies regarding the federal government's role in the provision of flood insurance. The policy alternatives are intentionally provocative and represent a broad range of possible pathways forward. The following sections provide brief summaries of the current program and the four policy alternatives evaluated.

3.1 Current NFIP

Under the existing NFIP framework, the federal government offers flood insurance in participating communities to cover flood-related losses and damages sustained by residential and commercial structures. Although all flood risk insured under this program is underwritten by the federal government, most flood insurance policies are written and serviced by private Write-Your-Own ("WYO") insurance companies. FEMA, however, promulgates the terms and conditions of federal flood insurance and sets premium rates. Additionally, FEMA dictates minimum floodplain management standards and identifies flood hazards by producing Flood Insurance Rate Maps (FIRMs). Not all premiums reflect full risk rates; the program provides for some structure-based subsidies for structures pre-dating the publication of a community's FIRM. Community participation in the program, and access to federally-backed flood insurance for individual property owners within that community, is voluntary and contingent upon community adoption and enforcement of minimum floodplain management standards and the FIRM. The mandatory purchase of flood insurance requirement (also known as the mandatory purchase requirement, or "MPR") prohibits lenders from making federally backed loans secured by property in Special Flood Hazard Area ("SFHAs") unless the building is covered by flood insurance. Enforcement of the MPR is delegated to lending regulators. Additional provisions under the program incentivize the adoption of standards and mitigation beyond the federally-mandated minimums.

3.2 NFIP Modified

NFIP Modified outlines modifications to the current program to address key weaknesses and challenges while building upon its strengths and benefits within the existing policy framework. Options for program modifications include addressing the actuarial soundness of the program and insurance affordability; improving flood hazard identification and mapping to better identify risk; improving floodplain management standards to reduce risk; addressing environmental compliance issues; and improving incentives to promote better mitigation.

3.3 Privatization

The Privatization option explores ways to expand the role of the private sector in servicing and underwriting flood insurance policies. There are many potential benefits associated with leveraging the private sector, including greater innovation, greater market penetration, and the actuarial pricing of flood risk. Stakeholders suggested that this option is only viable if it provides private insurance companies with the freedom to set rates and terms and conditions of insurability, including rejecting risky property, and avoids the risk of insurer insolvency after a catastrophic event. For the purposes of this evaluation, it is assumed that the federal government would be required to retain a residual market for uninsurable properties.

3.4 Federal Assistance

Under the Federal Assistance option, federally-backed flood insurance would be replaced by expanded eligibility for disaster assistance. The federal government would provide disaster assistance in communities that enact flood mitigation and preparedness measures. Failure of a community to enact such measures could result in a significant reduction in federal disaster assistance and ineligibility for pre- and post-disaster grants. The Working Group explored two policy models in this option. Under the first model, the Community Rating Model, more rigorous mitigation and preparedness measures voluntarily enacted by a community would be rewarded with a greater percentage of damages being eligible for disaster assistance and a more favorable cost share for other federal mitigation programs. In the second model, the Federal-Private Loss Share Model, the federal government would cover a greater portion of public and private flood disaster losses for all participating communities. However, with a greater financial commitment for disaster losses, the federal government would also require significantly higher mitigation standards as a condition for community participation. For the purpose of evaluation, it is assumed that the Community Rating Model is implemented and that the distribution of communities along the sliding cost-share scale corresponds to the distribution of communities in the current Community Rating System program.

3.5 Community Based Insurance

Under the Community Based Insurance option, the federal government would continue to offer flood insurance in exchange for community adoption and enforcement of minimum floodplain management standards. The federal government would also continue to issue FIRMs and perform structure-based risk assessments. However, under this policy, communities – not the individual property owner - would be the policyholder. The single, community-wide premium would be determined by aggregating the dollar sum of all the individual risk assessments conducted on structures throughout that community. For the purposes of evaluation, it is assumed that participating communities would generally choose to distribute the cost of the premium according to an individual's assessed flood risk, and that non-CRS communities would elect to not participate in the program.

IV. Analytical Approach

In the second stage the five policy options were analyzed relative to the eight evaluation criteria. The policy analysis phase consisted of two distinct approaches: (1) a qualitative approach utilizing expert panel assessments; and (2) a quantitative approach utilizing data analysis. While the expert panel assessments considered all eight criteria in evaluating the policy alternatives, the data analysis was more limited in scope, evaluating the alternatives against only five of the criteria. The following section summarizes the different methodologies employed by these two approaches.

4.1 Expert Panel Assessment

The qualitative assessment employed a three-stage process. In the first stage, the Working Group used stakeholder surveys to determine the relative importance of the evaluation criteria. In the second stage, the Working Group convened a series of panel discussions among subject-matter experts, providing panel members an opportunity to ask clarifying questions about the policy alternatives and share their observations and insights. In the third stage, individual panel members were tasked with

completing an online survey designed to assess the extent to which policy alternatives are likely to satisfy a given criterion.

The expert survey responses were collected and analyzed by Keybridge within an Analytic Hierarchy Process ("AHP") framework. A widely accepted and applied multi-decision criteria method, AHP is designed to decompose complex problems into a hierarchy of elements (e.g., criteria and policy alternatives) that can be more easily understood, analyzed, and evaluated. Subjective evaluations are performed via a series of pairwise comparisons in which the evaluator indicates a preference between two competing elements. Subjective evaluations of each "local" element are converted to numerical scores, normalized, and aggregated to yield a "global" score and ranking for each alternative.

In the current context, an AHP framework was used to decompose the evaluation into two distinct "stages." In the first stage, the Working Group surveyed 290 stakeholders regarding the relative importance of the reform criteria. Individual survey responses were classified into one of six different stakeholder groups. Individual responses were normalized and aggregated to form the criteria weights for each stakeholder group. The results were then averaged across the six stakeholder groups to form the final criteria weights used in the analysis.

In the second stage, subject-matter experts were tasked with assessing the policy alternative relative to a given criterion. To facilitate this assessment, the eight criteria were organized into five distinct panels with three to four academic experts assigned to consider the criteria(ion) included in each panel. The Working Group then undertook a systematic process to identify, nominate, and select members to participate in each panel. Ultimately, 15 experts from a diversity of universities and think tanks participated in the expert panel process. Structured panel discussions via webinar provided experts with an opportunity to learn about the five policies, ask clarifying questions, and share their expertise. Following the panel discussion, experts were tasked with completing an online survey of pairwise comparisons for their assigned criterion. Survey responses were then collected, analyzed, and aggregated to form composite scores and rankings for each policy alternative.

4.2 Data Analysis

The second approach to policy evaluation employed detailed data analysis to estimate the potential direction, timing, and/or magnitude of impacts of each policy on key metrics, such as insurance rates, penetration rates, and the extent of mitigation activities. Due to data and resource constraints, the scope of the data analysis was limited to five of the eight criteria¹: (1) cost of flood borne by individuals; (2) individuals incur the cost of increased risk gradually; (3) assistance is provided to those who cannot afford the cost of flood; (4) minimize exposure to flood hazards; and (5) efficiency.²

The point-of-departure for the data analysis was a comparative assessment of detailed policy frameworks for each of the policy alternatives, with the goal of revealing significant differences across policies in 12 fundamental policy design elements (e.g., subsidies, mandatory purchase requirement, and mitigation standards and incentives). The policy elements were mapped into the five criteria to

¹ Three criteria were excluded from the data analysis because they were either not amenable to quantification or considered inconsistent with the scope, nature, and timeline of this particular effort. The three criteria include: (1) maximize the natural and beneficial functions of the floodplain, (2) administrative feasibility, and (3) political acceptability.

² The lack of credible and consistent data regarding the social costs and benefits associated with implementing the alternative policies ultimately precluded a full benefit-cost analysis. Therefore, evaluation of the efficiency criterion was limited to a qualitative discussion of relevant factors.

identify relevant areas of analysis, and then analyzed to estimate the direction, timing, and/or magnitude of their impact on key metrics. Based upon a comprehensive interpretation of these quantitative results, each policy was assigned a score indicating the extent to which it is likely to satisfy a given criterion.

The quantitative assessment relied on a wide variety of public and private data sources, including NFIP policies and claims data, Community Rating System data, the latest publication of the NFIP Actuarial Rate Review, and the U.S. Census Bureau's American Community Survey. This data was used to construct a series of analytical modules, with each module organized around and customized to a group of policy elements or a specific criterion. Each policy was evaluated against key metrics and a range of outcomes were then simulated by adjusting key parameters according to the policy design frameworks.

The analysis also relied on a variety of carefully documented assumptions regarding insurance rates, incentives, mandates, and individual and market behavior. In many instances, these assumptions were based on estimates provided in the academic literature. In others, existing research was uninformative and the assumptions used in the analysis were specified by Working Group members in consultation with the data analysis team.

V. Evaluation Results & Key Insights

Reform is needed.

NFIP Reform is a concerted effort to respond to concerns from a wide array of stakeholders regarding the extent to which the current program continues to meet the evolving needs of the public, including at-risk individuals, participating communities, and general taxpayers. The stakeholder input gathered in Phase I of the reform process provided significant anecdotal evidence to suggest the NFIP fails to effectively and efficiently satisfy several key program objectives. The results of the analysis conducted in Phase III are highly consistent with this anecdotal evidence, validating stakeholder concerns regarding the current program and confirming the need for reform.

The results of the expert panel assessments, in particular, provide evidence that the current program suffers from a variety of significant challenges. As shown in Table 1, expert panel members ranked the Current NFIP option last among all five policy alternatives. This unfavorable overall assessment reflects the Current NFIP's poor performance on a majority of the evaluation criteria, including ensuring that the costs of flood are borne by individuals, affordability issues, and minimizing exposure to flood hazards. The results of the data analysis are generally consistent with these findings.

Importantly, the results of the analysis phase not only indicate that the current NFIP suffers from significant challenges, but also that alternative approaches have the potential to address them. For instance, the expert panelists expressed a preference for NFIP Modified over Current NFIP on each of the eight criteria. Expert panel assessments also indicate, though somewhat less emphatically, that the Community Based Insurance, Federal Assistance, and Privatization options offer select opportunities to improve upon the status quo. As shown in Table 2, the results of the data analysis are generally consistent with these findings.

Though the analysis identified weaknesses within the current NFIP, this should not diminish the impact the NFIP has had to date. The NFIP has made major contributions to the welfare of the nation since the passage of the National Flood Insurance Act in 1968. Prior to the creation of the program, flood insurance was not available on reasonable terms to homeowners and small businesses. The federal

government assumed responsibility for providing financial assistance after flooding events. No standardized methodology for modeling and mapping flood hazards existed, and floodplain management requirements were sparse or nonexistent in most places.


Table 1. Expert Panel Results: Policy Rankings by Criteria



Criteria	Policy Options				
	Current NFIP	NFIP Modified	Privatization	Federal Assistance	Community Based
Costs of Flood Borne by Individuals	5	2	1	4	3
Individuals Incur Costs Gradually	2	1	3	5	4
Assistance Provided to Those Who Cannot Afford the Cost of Flood	5	1	3	2	4
Minimize Exposure to Flood Hazards	4	3	5	2	1
Maximize Natural & Beneficial Functions of the Floodplain	4	2	5	1	3
Efficiency	4	2	1	5	3
Administrative Feasibility	2	1	3	4	5
Political Acceptability	3	2	1	4	5

Table 2. Data Analysis: Summary Policy Evaluations by Criteria



Criteria	Current NFIP	NFIP Modified	Privatization	Federal Assistance	Community Based
Cost of Flood is Borne by Individuals					
Individuals Incur the Cost of Increased Risk Gradually					
Assistance is Provided to Those Who Cannot Afford the Cost of Flood					
Minimize Exposure to Flood Hazards					

No one pure policy option clearly emerges as the unequivocal best approach, but the existing programmatic structure offers a strong platform for change.

The results of the analysis phase clearly indicate that reform is needed, but they are more ambiguous regarding the best approach forward. A pattern of “dominance” in the results would have offered the most compelling evidence that one particular option is best.³ While there are limited cases in which one policy dominates another, there was no instance in which one policy option dominated all of the other alternatives.⁴ Indeed, no one policy option even begins to approach dominant status.

The absence of a pattern of dominance effectively heightens the importance of criteria weights, which provide some guidance regarding the relative importance of reform objectives. When the criteria weights are factored into the analysis, the results suggest NFIP Modified is likely to outperform the other policies. The Working Group recognizes, however, that the criteria weights merely represent the views of those stakeholders surveyed, and not necessarily the broad preferences of society. Furthermore, although the differences in performance between NFIP Modified and the four other alternatives are discernable and potentially significant, it is difficult to conclude that they are overwhelming or decisive in all instances.

Expert panel members rated NFIP Modified highly with respect to both administrative feasibility and political acceptability. Other alternatives, however, performed poorly on at least one of these criteria.

Both the expert panel assessments and the data analysis highlight the fact that the Community Based Insurance, Federal Assistance, and Privatization options suffer from significant design and implementation uncertainties, which require additional study prior to adoption of such policies.

Elements of the other pure policy options could also be considered.

Although the Community Based Insurance, Federal Assistance, and Privatization options are unlikely to serve as foundations for reform in the near term due to design and implementation uncertainties, additional study could continue.

For example, a key feature of the Community Based Insurance option is that it provides comprehensive compliance and coverage within participating communities. However, the analysis suggests that such an approach may not be administratively feasible or politically acceptable for many communities – thereby limiting the overall scope of the program. A voluntary approach that limits deployment of this model to communities that are both willing and able to implement it may serve as a valuable complement to a more broad-based policy.

As another example, the Privatization option could offer several potential benefits, particularly with respect to cost and efficiency criteria. Yet the analysis suggests that the role of private markets is likely to be limited in the near term, with private insurers focusing on low-risk policies and ceding moderate and high-risk policies to the federal government. This option would require development of the private

³ For instance, Policy A would dominate Policy B if it performed just as well or better on all eight criteria.

⁴ For example, the expert panel assessments suggest that the NFIP Modified dominates Current NFIP, as it performs just as well or better across all eight criteria. It does not, however, dominate the Community Based Insurance, Federal Assistance, or Privatization options.

flood insurance market to gain the experience and confidence needed to expand coverage to moderate and high-risk structures over time.

Lastly, the Federal Assistance option is designed to address the need for strong mitigation incentives and effective floodplain management standards at a more structural level than many of the other alternatives, acknowledging that reducing risk exposure and flood-related damages is key to the long-term viability and success of a national flood insurance program. Although analysis indicates that many of the incentives to mitigate proposed by this alternative may have relatively little impact on policyholders' behavior, elements of the Federal Assistance option may prove more effective when incorporated with another policy paradigm. But such a program would have to compete with other agency programs and priorities and would be subject to the availability of Federal appropriations.

Ultimately, the Working Group believes that certain elements of the Community Based Insurance, Federal Assistance, and Privatization options have the potential to augment a package of policy reforms. The challenge will be integrating elements of these policies in such a manner that allows them to serve those sections of the flood insurance market for which they are best suited.

VI. Conclusion: Toward a Hybrid Policy

Both the panel assessment and data analysis indicate that each policy has its own unique mix of strengths and weaknesses. The Working Group believes that, rather than concentrating exclusively on one pure policy option, the reform effort should focus on integrating features from multiple policies. Specifically, the Working Group believes that the reform effort should focus on developing a hybrid policy that integrates elements of each policy considered, when feasible. If designed properly, such a hybrid policy has the potential to leverage the unique strengths of each pure policy option to meet the public's need for flood insurance in a more effective, efficient, and equitable manner.

Glossary of Terms

ASCE: American Society of Civil Engineers

Base Flood: A flood having a 1 percent chance of being equaled or exceeded in any given year.

Base Flood Elevation (BFE): The elevation shown on the FIRM for Zones AE, AH, A1–A30, AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO, V1–V30, and VE that indicates the water surface elevation resulting from a flood that has a 1 percent chance of equaling or exceeding that level in any given year.

Building: A structure with two or more outside rigid walls and a fully secured roof that is affixed to a permanent site; a manufactured home or a mobile home without wheels, built on a chassis and affixed to a permanent foundation, that is regulated under the community’s floodplain management and building ordinances or laws. “Building” does not mean a gas or liquid storage tank or a recreational vehicle, park trailer, or other similar vehicle.

Community Rating System (CRS): A program developed by FEMA to provide incentives for those communities in the NFIP that have gone beyond the minimum floodplain management requirements to develop extra measures to provide protection from flooding.

Cost share: The portion of the costs of a federally assisted project or program not borne by the federal government.

Flood Insurance Rate Map (FIRM): Official map of a community on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community.

Flood Protection System: Those physical works for which funds are authorized, appropriated, and expended and which have been constructed specifically to modify flooding to reduce the extent of the area subject to a special flood hazard and the extent of the depths of the associated flooding. Flood protection systems typically include hurricane tidal barriers, dams, reservoirs, levees, or dikes.

Floodplain: Any land area that FEMA has determined has at least a 1 percent chance in any given year of being inundated by floodwaters from any source.

Floodplain Management: The operation of an overall program of corrective and preventive measures for reducing flood damage, including but not limited to, emergency preparedness plans, flood control works, and floodplain management regulations.

Floodway: The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Communities regulate development in these floodways to ensure that there are no increases in upstream flood elevations.

Freeboard: An additional amount of height above the BFE used as a factor of safety (e.g., 2 feet above the base flood) in determining the level at which a structure’s lowest floor must be elevated or flood proofed to be in accordance with state or community floodplain management regulations.

Grandfathering: A flood insurance rate classes introduced early in the NFIP's history to support floodplain management by facilitating the adoption of revised maps showing an increased flood hazard. Grandfathering is the administrative procedure of allowing structures to use a prior FIRM to determine the rating zone and elevation difference from the mapped base flood elevation. Structures may always use the FIRM in effect at the time of construction. Alternatively, a structure may use a previous more favorable FIRM as long as the property owner continually keeps flood insurance coverage in force. By allowing existing construction to use an older map for rating purposes, grandfathering reduces resistance to map changes.

Hazard Mitigation Plan: The plan resulting from a systematic evaluation of the nature and extent of vulnerability to the effects of natural hazards present in society that includes the actions needed to minimize future vulnerability to hazards.

Letter of Map Revision (LOMR): A letter issued by FEMA to revise the effective FIRM/ DFIRM, FBFM, and/or FIS report for a community to change BFEs, floodplain and floodway boundary delineations, and/or flood insurance risk zone designations.

Letter of Map Revision Based on Fill (LOMR-F): A LOMC issued by FEMA when FEMA determines that a legally defined parcel of land or structure has been elevated above the BFE based on the placement of earthen fill after the date of the first NFIP map.

Presidential Major Disaster: Any natural catastrophe (including any hurricane, tornado, storm, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm, or drought), or, regardless of cause, any fire, flood, or explosion, in any part of the United States, which in the determination of the President causes damage of sufficient severity and magnitude to warrant major disaster assistance under the Stafford Act to supplement the efforts and available resources of states, local governments, and disaster relief organizations in alleviating the damage, loss, hardship, or suffering caused thereby.

Manufactured (Mobile) Home: A structure, transportable in one or more sections built on a permanent chassis and designed for use with or without a permanent foundation when attached to the required utilities.

Mitigation: Any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event.

Non-Residential Structure: Includes, but is not limited to: small business concerns, places of worship, schools, farm buildings (including grain bins and silos), pool houses, clubhouses, recreational buildings, mercantile structures, agricultural and industrial structures, warehouses, hotels and motels with normal room rentals for less than 6 months' duration, and nursing homes.

Post-FIRM Building: A building for which construction or substantial improvement occurred after December 31, 1974, or on or after the effective date of an initial FIRM, whichever is later.

Pre-FIRM Building: A building for which construction or substantial improvement occurred on or before December 31, 1974, or before the effective date of an initial FIRM.

Repetitive Loss Structure: An NFIP-insured structure that has had at least two paid flood losses of more than \$1,000 each in any 10-year period since 1978.

Special Flood Hazard Area (SFHA): Land within a community subject to a 1 percent or greater annual chance of flooding. An area having special flood, mudflow, or flood-related erosion hazards, and shown on a Flood Hazard Boundary Map or a FIRM as Zone A, AO, A1–A30, AE, A99, AH, AR, AR/A, AR/AE, AR/AH, AR/AO, AR/A1– A30, V1–V30, VE, or V.

Structure: For floodplain management purposes, a walled and roofed building, including a gas or liquid storage tank that is principally above ground, as well as a manufactured home. For flood insurance purposes, a walled and roofed building, other than a gas or liquid storage tank, that is principally above ground and affixed to a permanent site, as well as a manufactured home on a permanent foundation.

Substantial Damage: Damage of any origin sustained by a building whereby the cost of restoring the building to its before-damaged condition would equal or exceed 50 percent of the market value of the building before the damage occurred.