National Flood Insurance Program: Background, Challenges, and Financial Status

Rawle O. King
Analyst in Financial Economics and Risk Assessment

July 30, 2009

Congressional Research Service
7-5700
www.crs.gov
R40650

CRS Report for Congress
Prepared for Members and Committees of Congress

Summary

In 1968, the U.S. Congress established the National Flood Insurance Program (NFIP) to address the nation's flood exposure and challenges inherent in financing and managing flood risks in the private sector. Private insurance companies at the time claimed that the flood peril was uninsurable and, therefore, could not be underwritten in the private insurance market. A three-prong floodplain management and insurance program was created to: (1) identify areas across the nation most at risk of flooding; (2) minimize the economic impact of flooding events through floodplain management ordinances; and (3) provide flood insurance to individuals and businesses. Major changes were made to the program in 1973, 1994, and 2004.

Despite investing significant resources to identify flood risk and shape floodplain and coastal development, flood costs have risen over the past recent decade. The unprecedented losses in 2005 from Hurricanes Katrina and Rita and the 2008 Midwest flood and Hurricanes Ike and Gustav have focused national attention on hurricane risk and the impact of storm surge on property, inland flooding on rivers, and the financial viability of the NFIP.

The NFIP was self-supporting from 1986 until 2005 as policy premiums and fees covered all expenses and claim payments. In 2005, the NFIP incurred approximately $21 billion in flood claims caused by Hurricanes Katrina, Rita and Wilma. This amount exceeded the $2.2 billion in annual premiums and the $1.5 billion in borrowing authority from the U.S. Treasury. As a result, Congress passed and the President signed into law legislation to increase NFIP borrowing authority first to $3.5 billion (P.L. 109-65) and then to $18.5 billion (P.L. 109-106) in November 2005, and finally to $20.775 billion (P.L. 109-208) on March 23, 2006. As of January 31, 2009, the outstanding debt and accrued interest cost from the 2005 hurricanes and the 2008 Midwest flood and Hurricane Ike stood at $19.2 billion. Under current law, the funds borrowed from the U.S. Treasury must be repaid with interest. The program, however, is not in a position to repay the debt. At the conclusion of the 110th Congress, conferees attempted, unsuccessfully, to resolve key differences in the House and Senate flood insurance reform bills (H.R. 3121 and S. 2284).

The 111th Congress has acted to ensure that basic NFIP authorities remain in force while the debate on reform proposals continues. On March 11, 2009, the Congress extended the NFIP's authority through September 30, 2009 (the Omnibus Appropriations Act of 2009, P.L. 111-8. On July 29, 2009, the House considered and passed H.R. 3139 under suspension of the rules to reauthorize the NFIP through March 31, 2010 and make other relatively minor changes.

In addition, several flood insurance-related bills are currently before the 111th Congress. Representative Taylor has introduced legislation (H.R. 1264) to add wind coverage to the NFIP. Also, Representative Pallone has introduced H.R. 777 to suspend flood map changes until the Administrator of the Federal Emergency Management Agency submits a community outreach plan to Congress. H.R. 777 would also create a tax credit for flood insurance premiums on property not previously in a mapped floodplain but included on a new flood hazard map.

Contents

Tables

Appendixes

Contacts

This report provides an analysis of the NFIP and its financial status, summarizes the major challenges facing the program, including issues affecting its long-term financial solvency, presents some alternative approaches for managing and financing the flood losses and describes pending legislation on this issue.

Background

Historically, floods have been among the most costly natural disasters in the United States. Flooding along river banks has been a main public policy concern for years. In addition, today the challenge is flooding caused by weather-related coastal hazards – hurricanes, storm surges, and tornadoes. Weather-related natural hazards are increasing in frequency and severity, creating an unprecedented threat to U.S. coastlines and Midwestern states where floods that would historically occur once every 20 years are projected to happen every 4 to 6 years.[1] This has become a concern of policymakers because over half of the U.S. population now live in coastal watershed counties or floodplain areas and approximately 50% of the nation's gross domestic product ($4.5 trillion in 2000) is generated in those Gulf and Atlantic coastal areas.[2] One estimate from Lloyds of London and Risk Management Solutions (RMS) predicts that flood losses along the Gulf and Atlantic coastlines would increase 80% by 2030 with a one foot rise in the sea level.[3] The corresponding surge in economic losses from coastal hazards arguably demands a national policy response to better manage the costs of existing coastal risks.

Governments in the United States have a long history of regulating private economic activity for the purpose of promoting economic recovery and protecting or supporting particular economic groups. For example, economic uncertainty stemming from widespread flooding in the mid-1960s, the need for economic relief and recovery for flood victims, and calls for a reduction in the financial burden on taxpayers led to economic regulation of the nation's floodplains and insurance markets. The government became a regulator of certain economic activity in flood-prone areas in order to reduce the physical and economic risks associated with flood hazards. In the absence of a sufficient supply of insurance to meet societal demand, the government took action to safeguard the economic interests of consumers, businesses, communities, and taxpayers.

Economic regulation was accomplished in two ways. First, the government acted to limit the discretion of individuals and companies engaged in economic activity in flood prone areas. Depending on whether a building is located in a government-designated special flood hazard area (SFHA), flood insurance may be required as a condition of obtaining a federally secured mortgage loan. Homeowners typically discover they need flood insurance during the home-

[1] National Science and Technology Council, Climate Change Science Program and the Subcommittee on Global Change Research, *Weather and Climate Extremes in a Changing Climate - Regions of Focus: North America, Hawaii, Caribbean, and U.S. Pacific Islands*, June 2008,located at http://www.climatescience.gov/Library/sap/sap3-3/final-report/sap3-3-final-all.pdf.

[2] *United States Commission on Ocean Policy, An Ocean Blueprint for the 21St Century*, Sep. 2004, located at http://oceancommission.gov/documents/full_color_rpt/000_ocean_full_report.pdf.

[3] Lloyds of London and Risk Management Solutions, *Coastal Communities and Climate Change: Maintaining Insurability*, 2008, located at http://www.lloyds.com/NR/rdonlyres/38782611-5ED3-4FDC-85A4-5DEAA88A2DA0/0/FINAL360climatechangereport.pdf.

buying process that includes a disclosure of where the property is located relative to the SFHA that is mapped on a flood insurance rate map (FIRM).

Second, economic regulation was accomplished through "managerial regulation," with the government providing subsidized flood insurance for individuals and businesses in communities that undertook specific steps to regulate the floodplain through land use zoning ordinances and building standards.[4]

In the wake of Hurricanes Katrina, Rita, and Wilma in 2005 and Hurricane Ike and the Midwest floods of 2008, Members of Congress may wish to examine the viability of the NFIP's structure, function and financial solvency. Some also question whether the government should continue to underwrite insurance in support of coastal development and rebuilding in flood-prone areas. Meanwhile, federal expenditures for federal relief payments and insurance claims in coastal communities and along riverbanks continue to be a major challenge for the NFIP.

Economic Regulation and Recovery from Flood Hazards

Congress has a responsibility through the "general welfare" and "interstate commerce" clauses of the U.S. Constitution to promote national economic growth. One factor affecting the nation's economic well-being is the proper functioning of markets for natural disaster risk: do economic markets provide a sufficient amount of insurance against flood hazards? Further, to the extent that flood insurance exists, are the insuring firms sufficiently capitalized so that widespread insolvencies would not occur? These were just a few of the key questions the nation faced in the 1960s, as hurricanes caused increased havoc along the U.S. Gulf and Atlantic coasts.

There were four very broad underlying causes for economic regulation – government intervention – in the market for flood insurance in the 1960s. *First*, people insisted that social and ethical values as well as economic values should be reflected in the operation of the economy. Persons suffering economic distress or dislocation from flood hazards sought and received governmental aid in dealing with their problem. The aid was in the form of disaster relief assistance, subsidized flood insurance, and government spending on flood risk identification and mapping.

Second, government action was viewed as being necessary to bring about more efficient coordination and utilization of resources. Economic regulatory programs were thought to be needed to prescribe certain land use zoning ordinances and building code standards to govern economic or business behavior to reduce the physical and economic risks associated with coastal hazards.

Third, as the nation experienced widespread flooding in the 1960s, people became interested in their personal security and, thus, in shifting some or all of the risk of economic life from themselves to government. In response, policymakers changed the way economic risk of flooding

[4] James Anderson, "Economic Regulation," *Encyclopedia of Policy Studies*, Stuart S. Nagel, ed. (New York; Dekker Publishers), 1994, p. 404.

was defined and the means of achieving security for the individual. Economic hazards, whether man-made or natural, were initially considered inevitable or "acts of God" but came to be viewed as public problems that required government action to protect individuals, businesses, communities, and taxpayers. Government assistance in the form of subsidized insurance premiums was viewed as a solution to reduce the future costs and risks of investing in flood-prone areas.

Fourth, sole reliance on insurance markets for flood risks was not an option. This situation provided a rationale for possible government intervention in the economy to ensure that the costs and benefits of living in flood-prone areas were not ignored. Individuals and insurers at risk of flooding, however, have in the past lacked the information necessary for the market system to operate effectively. Insurers did not always have flood hazard maps, as they do now, and thus had no reliable, consistent, and cost-effective way to identify and assess flood risk. Homeowners did not and sometimes still do not, have the information needed to make rational economic decisions about real estate investments. All this resulted in a misallocation of resources which required and still requires government intervention to protect the public interest.

Evolution of the National Flood Insurance Program

Flood hazards in the United States, whether from hurricanes and the impact of storm surge on property or inland flooding on rivers, lakes and streams, was largely deemed commercially uninsurable. The standard multiperil homeowners insurance did not provide coverage against flood hazards. Floods were perceived to be uninsurable for three reasons: (1) adverse selection meant that only individuals in flood-prone areas would purchase coverage; (2) risk-based premiums were too costly for the average household; and (3) insurers could not generate sufficient premiums to insure against a catastrophic flood event. Government mapping of areas prone to flooding, subsidized flood insurance, and floodplain management regulations were key to the program's structure and function. These concerns about flood insurance market failure led to the passage of the National Flood Insurance Act of 1968.

Traditional insurance principles indicated that private insurers would not be able to gather a large enough pool of independent risks to allow the actuarial technique of "law of large numbers" to reduce the risk. Most property owners in floodplains usually face the same flood hazard and their risks tend to be highly correlated – not independent. Correlated risks means the insurer must charge higher premiums to reflect a larger risk load or administrative cost that accounts for the uncertainty faced by the insurer in predicting future losses of the pool. In other words, the premium level that private insurers needed to adequately underwrite flood hazards would be so high that few would be willing to purchase coverage.

The NFIP was a public policy response to the flood peril and escalating costs of taxpayer-funded disaster relief for flood victims. Federally backed flood insurance was made available to home and business owners in communities that voluntarily agreed to adopt and enforce floodplain management ordinances designed to reduce flood-related property losses. The creation of the NFIP marked a significant shift in U.S. flood control policy away from a "levee-only" flood reduction approach towards a risk identification, risk financing and floodplain management approach that was intended to foster individual responsibility and build local self-sufficiency in terms of land-use zoning ordinances and construction standards.

Federal flood insurance was considered to be an economically efficient way to indemnify flood victims and to have individuals internalize some of the risk of locating property in the floodplains.[5] The federal government would utilize its capacity to spread losses over time with the NFIP's ability to borrow money from the U.S. Treasury to offset program deficits. A federal government insurance program, it was thought, could also link the availability of flood insurance to land use regulation and building codes that would, in theory, reduce long-term flood risk.

Today, under the NFIP, the federal government is required to take certain actions to:

- identify and map areas across the country that are at high risk of flooding;
- indemnify individuals and businesses against flood losses by making flood insurance widely available at actuarially sound rates or with legally mandated premium subsidies; and
- reduce future flood losses through floodplain management regulations and actions.[6]

The NFIP has undergone major changes largely in response to significant flood events over the years. For example, the program was created after Hurricane Betsy devastated the Gulf Coast in 1965. After Hurricane Agnes in 1972, recognizing the low market penetration of flood insurance, Congress enacted the Flood Disaster Protection Act of 1973[7] to establish a mandatory flood insurance purchase requirement for structures located in identified special flood hazard areas (SFHA). After the 1973 Act, federally regulated lenders were obligated to require flood insurance on any loan secured by improved real estate in a FEMA-designated SFHA in a participating community.

After the 1993 Midwest floods, it became apparent to Congress that homeowners were still not adequately complying with the mandatory insurance purchase requirement. The Midwest flood of 1993 provided the impetus for strengthening lender compliance through the mandatory purchase provisions in the 1994 National Flood Insurance Reform Act.[8] Recognition of the impact of properties prone to repetitive flooding on the financial condition of the program led to the passage of the Flood Insurance Reform Act of 2004[9] which established a pilot program for the mitigation of severe repetitive–loss properties (SRLPs) and the funding of mitigation activities for individual SRLPs.

While the NFIP faces many challenges, and there is widespread agreement that the program needs to be reformed, the evidence continues to suggest broad support for the basic principle of using an insurance pooling mechanism for those who have chosen to live in high-risk areas. Some of the policy questions for the 111th Congress include: Is the NFIP currently encouraging unwise

[5] Dan R. Anderson, The National Flood Insurance Program: Problem and Potential, *The Journal of Risk and Insurance*, 1974, vol.16 (4), p. 579-599.

[6] Flood damage reduction is thought to be achievable through extensive flood control structures, such as levees and dams and non-structural methods, including land use ordinances, buy-outs, and elevation of existing buildings and roads.

[7] P.L. 93-234, 87 Stat 975.

[8] P.L. 103-325, 108 Stat. 2255.

[9] P.L. 108-264, 118 Stat. 712.

construction in floodplains? Are taxpayers subsidizing unwise construction as a result of inaccurate maps? If the program does encourage unwise construction or rebuilding in high-risk areas without proper first-floor elevation, what steps should policymakers take to keep the promises of safer construction made to taxpayers at the inception of the program? If premiums are inadequate to finance programs, is Treasury debt the only answer?

Recent Developments

2009 Flooding

According to the National Weather Service, in March and April 2009, the nation once again experienced severe flooding in several Midwestern states. Specific concerns were expressed about surface water flooding along the Red River that runs through Fargo, North Dakota and Moorehead, Minnesota, and its effects on the financial status of the NFIP given the NFIP has already had to borrow $1.8 billion from the Treasury so far in 2009 to cover losses from 2008 hurricanes and Midwest floods.

2008 Flooding

The 2008 Atlantic hurricane season was among the costliest on record for flood losses and resulted in a large infusion of taxpayers' money to cover uninsured disaster losses. [10] Hurricane Ike alone caused about $2 billion in NFIP claims along the coastal areas of Texas and Louisiana and further inland, including many areas not typically subject to tropical rain events. In addition to flooding from Hurricane Ike there was extensive 500-year flood damage in the Midwest that was not anticipated by current out-of-date methodologies. According to FEMA, more than 11 million people in nine Midwestern states were affected by the 2008 Midwest floods as major rivers in Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, and Wisconsin overflowed their banks and levees. Especially hard hit states were Iowa, Indiana, and Illinois, where the river levels surpassed levels reached in the Great Flood of 1993.

Impact of Hurricanes on NFIP

Table 1 provides a list of the top fifteen flood events in the United States in terms of NFIP payouts. The devastation from Hurricane Katrina emerged as a pivotal event in the history of federal flood control policy, with wind and flooding estimated to have caused over $200 billion in economic damages (both insured and uninsured) and over 1,700 deaths. Hurricane Katrina convinced many of a trend increase in the cost of floods and the frequency of major flood disasters. Flood-related property losses have risen to $6 billion a year, from approximately $3.3 billion in the mid-1980s.[11]

---

[10] Ernest B. Abbott, "Floods, Flood Insurance, Litigation, Politics – and Catastrophe: The National Flood Insurance Program", *Sea Grant Law and Policy Journal*, vol. 1, no. 1, June 2008, located at http://www.olemiss.edu/orgs/SGLC/National/SGLPJ/Vol1No1/7Abbott.pdf.

[11] Alex Frangos, "U.S. Launching a Massive Effort to Redraw Nation's Flood Maps," *Wall Street Journal*, September 19, 2003, p. A 1.

Table 1. Top Fifteen Significant Flood Events Covered by the National Flood Insurance Program

(1978- March 31, 2009, $ Nominal)

Rank	Event	Date	Number of Paid Losses	Amount Paid	Average Paid Loss
1	Hurricane Katrina	Aug. 2005	166,682	$16,055,393,803	$96,324
2	Hurricane Ike	Sep. 2008	43,926	2,331,208,210	53,071
3	Hurricane Ivan	Sep. 2004	27,585	1,573,349,939	57,036
4	Tropical Storm Allison	Jun. 2001	30,662	1,103,765,221	35,998
5	Louisiana Flood	May 1995	31,343	585,072,008	18,667
6	Hurricane Isabel	Sep. 2003	19,850	491,504,384	24,761
7	Hurricane Rita	Sep. 2005	9,468	463,278,852	48,931
8	Hurricane Floyd	Sep. 1999	20,439	462,270,253	22,617
9	Hurricane Opal	Oct. 1995	10,343	405,528,543	39,208
10	Hurricane Hugo	Sep. 1989	12,843	376,493,066	29,315
11	Hurricane Wilma	Oct. 2005	9,599	363,036,286	37,820
12	Nor'Easter	Dec. 1992	25,141	346,151,231	13,768
13	Midwest Flood	Jun. 1993	10,472	272,827,070	26,053
14	PA, NJ, NY Floods	Jun. 2006	6,410	226,830,179	35,387
15	Nor'Easter	Apr. 2007	8,628	224,814,700	26,056

Source: Federal Emergency Management Agency, U.S. Department of Homeland Security.

Hurricane Ike in 2008 was the second most costly flood disaster in the program's history with approximately $2.3 billion in flood-related claims. Although the 2008 Midwest floods caused dozens of levees to be breached, destroying thousands of homes and businesses, and inundating thousands of acres of agricultural cropland, the flooding did not rank among the NFIP's top 15 most costly events. Payments under the NFIP were relatively low because of low flood insurance purchases in the affected areas. Similarly, although the 1993 Midwest flood was the most devastating flooding in the region's history, it ranks 13th among the leading NFIP flood events with $273 million in NFIP claims.

The devastating flooding caused by Hurricanes Katrina and Rita resulted in approximately $200 billion in economic losses, of which $21.9 billion will likely be covered under the NFIP. The massive flood losses from Hurricanes Katrina and Rita financially overwhelmed the NFIP. It also focused public attention on: (1) the economics of government risk-bearing through federal flood insurance when private insurers do not offer affordable coverage; (2) the exposure of the federal taxpayer to losses when program revenues do not cover costs; and (3) the effectiveness, arguably limited, of the nation's floodplain management strategy in reducing federal disaster relief expenditures.

Lessons from Katrina and the 2008 Midwest Floods

Several lessons emerged from Hurricane Katrina and the 2008 Midwest floods that could help inform Members of the 111th Congress during policy deliberations on the reform and reauthorization of the NFIP.

- **Program Participation to Reduce Uninsured Losses**. Most homeowners do not completely recognize or internalize their flood risk and are overly optimistic about the magnitude of the flood risk to which they are exposed. Consequently, the NFIP has not achieved the level of individual participation originally envisioned by Congress. A study of the NFIP's mandatory purchase requirement nationwide conducted by the Rand Corporation indicated that only about 49% of single family homes in SFHA are covered by flood insurance.[12] In the absence of flood insurance, the cost of repairing flood damaged property is usually borne either by the property owner from their own financial resources, or by federal relief payments instead of by flood insurance payments. This situation has resulted in billions of dollars of uninsured property losses and arguably results in higher social costs. The high degree of uninsured flood losses during the 2008 Midwest floods has raised the policy question of who should appropriately bear the cost of the decision to live in potentially high-risk areas, including areas behind flood control structures.
- **Inadequate Floodplain Management.** The altering of rivers and streams by construction of dams, levees, and other flood control structures arguably increased the risk of major floods and development throughout the affected floodplains. Policymakers learned that there are hidden costs to water resources and flood control structures and that steps must be taken to reduce the risk of future flood disasters. There is the recognition of the need to strengthen the NFIP community land-use and building standards to reduce floodplain development, improve public awareness of flood risk, and reduce cost to U.S. taxpayers. The U.S. Army Corps of Engineers has undertaken cost-benefit analysis of water resources projects. The findings of these studies could be used to better manage the NFIP's floodplain management standards.
- **Flood Risk Assessment and Mapping.** Nationwide actuarial rates and underwriting process may not reflect the actual flood risk in a given location. Property owners affected by Hurricane Katrina and the 2008 Midwest floods may have made location choices that did not consider all of the costs because of inaccurate or outdated flood hazard maps. The price charged for federal flood insurance could understate the risk; premiums may be too low or higher than the actual risk would dictate. Economists note that if property owners had to incur more of the cost of locating in flood-prone areas with the purchase of insurance, they would make more efficient location decisions. Moreover, the maps did not delineate areas of storm water and groundwater flooding or capture increases in

[12] Rand Institute for Civil Justice, The National Flood Insurance Program's Market Penetration Rate: Estimates and Policy Implications http://www.rand.org/pubs/technical_reports/2006/RAND_TR300.pdf.

localized storm water runoff flooding resulting from development, deforestation, and other land use changes.

- **Residual Risk Behind Levees.** Flood damage in 2008 was relatively high because of the over-reliance on levees and the false sense of security they provide. Homeowners may have thought that because they resided behind a certified levee, they were not subject to flood risk. There are significant potential economic risks of not pricing or establishing sufficient loss reserves to cover residual risks behind flood control structures. Based on the certification of levees as providing at least protection from the 1% annual chance flood, property owners may not be required to purchase flood insurance, yet they may face significant uninsured losses if the levee is overwhelmed. FEMA has consistently sought to communicate to the public the fact that certified levees do not eliminate the risk of flooding. The lack of understanding of the national flood risk, the inadequate communication of that risk, and diminished capabilities in flood risk management due to inaccurate or out-of-date flood hazard maps have been deemed major weaknesses in the program.
- **Inadequate Pricing of Flood Risks.** The most costly flood in the 41-year history of the NFIP was caused not by rainfall-river flooding but by breeched or overtopped levees that did not protect the City of New Orleans from coastal storm surges. According to FEMA, some 75-80% of the area behind the levees protecting New Orleans was designated SFHA (high risk zone) due to rainfall and there was an explicit flood insurance purchase requirement in effect in the affected areas. Still, the NFIP assumed the levees were going to hold back storm surge floods and the program did not adequately price the policies to reflect the possible failure or overtopping of levees.
- **Availability of Federal Disaster Assistance.** Flood victims may have thought, in retrospect correctly, that the purchase of flood insurance was not necessary to receive some compensation for flood related losses from the federal government. The availability of federally-subsidized flood insurance in high-risk areas arguably encouraged too many people to locate in flood-prone areas and to not take appropriate steps to mitigate loss, leaving these financial losses to be either uncompensated or transferred to third-parties, including taxpayers via federal disaster assistance. Economists maintain that the assurance of federal assistance in the event of a repeated disaster creates a “moral hazard” by lowering the incentives to avoid risk. In some ways, this situation arguably counteracts one of the original objectives of the NFIP, namely to minimize future flood damages and the corresponding need for federal disaster relief.

Financial Status

This section examines the current financial status of the program and borrowing from the U.S. Treasury.

Table 2 shows that the NFIP currently has over 5.6 million policies-in-force nationwide covering approximately $1.19 trillion in property in almost 20,000 participating communities. Policyholders paid $3.1 billion in premiums in 2008. The NFIP experienced only one catastrophic loss year, in 2005, in its 41 year history, and the Midwest floods of 2008 severely tested the

financial resiliency of the NFIP. In an attempt to both protect the NFIP's integrity after the 2005 hurricanes and ensure FEMA had the financial resources to cover its existing commitments, Congress passed, and the President signed into law, legislation to increase the NFIP's borrowing authority to allow the agency to continue to pay flood insurance claims: first to $3.5 billion on September 20, 2005; to $18.5 billion on November 21, 2005; and finally to $20.775 billion on March 23, 2006. FEMA had to borrow another $2.6 billion over the 2007 through 2009 period to pay claims from Hurricane Ike and the Midwest floods of 2008. The program's outstanding debt to the Treasury stands at $19.3 billion. FEMA is not likely to be able to repay the debt because of the considerable amount of interest associated with that level of borrowing. Interest payments on the program's debt to the Treasury is almost $1 billion annually.

Table 2. NFIP Program Statistics

(As of January 31, 2009, $ Nominal)

Calendar Year	Number of Policies in Force	Total Written Premium	Total Face Value of Coverage	Total Number of Claims Paid	Total Payments Made to Policyholders
1972-1977	NA	NA	NA	4,441	$18,035,656
1978	1,446,354	$111,250,585	$50,500,956,000	29,122	147,719,252
1979	1,843,441	141,535,832	74,375,240,000	71,652	493,008,836
1980	2,103,851	159,009,583	99,259,942,000	41,918	230,414,295
1981	1,915,965	256,798,488	102,059,859,000	23,261	127,118,031
1982	1,900,544	354,842,356	107,296,802,000	32,831	198,295,820
1983	1,981,122	384,225,425	117,834,255,000	51,584	439,454,937
1984	1,926,388	420,530,032	124,421,281,000	27,688	254,642,874
1985	2,016,785	452,466,332	139,948,260,000	38,676	368,238,794
1986	2,119,039	518,226,957	155,717,168,000	13,789	126,388,812
1987	2,115,183	566,391,536	165,953,402,000	13,399	105,422,538
1988	2,149,153	589,453,163	175,764,175,000	7,758	51,022,523
1989	2,292,947	632,204,396	265,218,590,000	36,247	661,668,435
1990	2,477,861	672,791,834	213,588,265,000	14,766	167,919,559
1991	2,532,713	737,078,033	223,098,548,000	28,554	353,684,967
1992	2,623,406	800,973,357	236,844,980,000	44,651	710,247,980
1993	2,828,558	890,425,274	267,870,761,000	36,044	659,069,808
1994	3,040,198	1,003,850,875	295,935,328,000	21,584	411,079,605
1995	3,476,829	1,140,808,119	349,137,768,000	62,441	1,295,581,467
1996	3,693,076	1,275,176,752	400,681,650,000	52,679	828,040,301
1997	4,102,416	1,509,787,517	462,606,433,000	30,338	519,505,659
1998	4,235,138	1,668,246,681	497,621,083,000	57,349	886,305,129
1999	4,329,986	1,719,652,696	534,117,781,000	47,246	754,971,355
2000	4,369,087	1,723,824,570	567,568,653,000	16,362	251,719,208
2001	4,458,470	1,740,331,079	611,918,920,000	43,588	1,276,986,570

Calendar Year	Number of Policies in Force	Total Written Premium	Total Face Value of Coverage	Total Number of Claims Paid	Total Payments Made to Policyholders
2002	4,519,799	1,802,277,937	653,776,126,000	25,314	433,634,571
2003	4,565,491	1,897,687,479	691,786,140,000	36,833	779,908,320
2004	4,667,446	2,040,828,486	765,205,681,000	55,762	2,226,942,412
2005	4,962,011	2,241,264,140	876,679,658,000	211,954	17,646,657,418
2006	5,517,089	2,615,890,367	1,054,087,148,000	24,562	638,824,231
2007	5,653,949	2,854,071,096	1,139,822,517,000	23,003	$607,055,453
2008	5,610,895	$3,074,184,710	1,185,136,863,800	69,466	$3,045,743,940

Source: U.S. Department of Homeland Security, Federal Emergency Management Agency's Office of Legislative Affairs.

NFIP Treasury Borrowing

Table 3 shows the history of U.S. Treasury borrowing and repayments under the NFIP from 1981 to 2009. The NFIP was self-supporting from 1986 until 2005, covering all administrative expenses and claim payments out of premium income and fees. Since Hurricane Katrina struck in August 2005, FEMA has had to borrow $19.3 billion, which includes amounts to pay claims from Hurricanes Ike and the 2008 Midwest floods. It is unlikely that the $19.3 billion Treasury debt will be repaid within the next 10 years given annual interest payments of about $900 million and annual premium income of approximately $3.1 billion. Experts agree that even if FEMA increased flood insurance rates up to the maximum amount allowed by law (10% per year), the program would still not have sufficient funds to cover future obligations for policyholder claims, operating expenses, and interest on debt.

Table 3. History of U.S. Treasury Borrowing Under the National Flood Insurance Program

(As of April 31, 2009, $ Nominal)

Fiscal Year	Amount Borrowed	Amount Repaid	Cumulative Debt
Prior to FY1981 a	$917,406,008	$0	$917,406,088
1981	164,614,526	624,970,009	457,050,435
1982	13,915,000	470,965,435	0
1983	50,000,000	0	50,000,000
1984 b	200,000,000	36,879,123	213,120,877
1985	0	213,120,877	0
1994 c	100,000,000	100,000,000	0
1995	265,000,000	0	265,000,000
1996	423,600,000	62,000,000	626,600,000
1997	530,000,000	239,600,000	917,000,000
1998	0	395,000,000	522,000,000

Fiscal Year	Amount Borrowed	Amount Repaid	Cumulative Debt
1999	400,000,000	381,000,000	541,000,000
2000	345,000,000	541,000,000	345,000,000
2001	600,000,000	345,000,000	600,000,000
2002	50,000,000	650,000,000	0
2005 d	300,000,000	75,000,000	225,000,000
2006	16,660,000,000	0	16,885,000,000
2007	650,000,000	0	17,535,000,000
2008	50,000,000	225,000,000	17,360,000,000
2009 to date	1,987,988,421	0	19,347,988,421
Total			

Source: U.S. Department of Homeland Security, Federal Emergency Management Agency's Office of Legislative Affairs.

Notes: Borrowings through 1985 were repaid from congressional appropriations. Borrowings since 1994 have been repaid from premium and other income. (a) Balance forward from U.S. Department of Housing and Urban Development; (b) Figure for the $213.1 million in cumulative debt in 1984 provided by FEMA reflects additional cost outside of the insurance program; (c) Of the $100 million borrowed, only $11 million was needed to cover obligations; (d) NFIP borrowed $300 million in 2005 to pay claims from the 2004 hurricane season, but Hurricanes Katrina, Rita and Wilma struck on August 29, 2005 and claims were submitted after the 2006 fiscal year began.

Factors Affecting Financial Solvency

Homeowners are required to purchase flood insurance coverage if they have a federally insured mortgage. Many policyholders, however, cancel their NFIP policy after a few years pass and they have not experienced a flood loss. As a result, when the flood hazard does occur, there are a large number of uninsured flood victims and the federal government is usually called upon to provide disaster assistance. In order to stabilize future government spending to compensate flood victims, it is important to maintain the long-term financial solvency of the NFIP. In considering the NFIP's financial solvency, one should recognize two things: (1) the NFIP was not capitalized at inception by Congress; and, (2) the program does not operate under the traditional insurance definition of fiscal solvency that requires the insurer to have sufficient capital/surplus to obtain authorization to sell insurance policies.

With respect to the financial solvency of the NFIP, several issues are of concern to Congress. They include:

- flood insurance premium discount (i.e., actuarial soundness and premium rate adequacy);
- repetitive loss properties' disproportionate share of total losses in the program;
- lack of enforcement of mandatory flood insurance purchase requirements;
- impact of outdated flood maps on the program;
- enforcement of floodplain management regulations; and
- debate over the inclusion of optional windstorm coverage in the NFIP policy.

The next six sections examines each of these concerns.

Flood Insurance Premium Discounts

The NFIP arguably faces a long-term solvency challenge because the program does not have a financing mechanism for handling catastrophic losses other than borrowing from the federal Treasury; annual premiums are not likely to cover the program's long-term expenses, claim costs, and interest and principal debt repayment to the U.S. Treasury. Taxpayers could therefore be exposed to greater financial risks as a result of the potential for future catastrophic flooding.[13]

NFIP was not established on an actuarially sound basis since it charges less-than actuarial rates for pre-FIRM structures. FEMA's rate-setting structure is designed to generate premiums at least sufficient to cover losses and loss adjustment expenses relative to the "historical average loss year."[14] There is no contingent amount added to premium for profit margins in order to build a surplus. When losses and expenses exceed premiums the program is authorized to borrow from the U.S. Treasury but must repay the funds with interest. Thus, because the program does not build loss reserves for the infrequent but very catastrophic loss years and rates are by statute underpriced to make rates affordable, the program's financial structure could impose negative externalities on taxpayers. Federal taxpayers ultimately subsidize any financial shortfalls created by the NFIP's financial structure and the tendency to underprice the insurance coverage.

The NFIP uses a two-tier rate classification system that consists of "actuarial" rates and "subsidized" rates.[15] Actuarial flood insurance premiums are calculated based on the amount of coverage, location, age, and building occupancy and, for a building in a SFHA, the elevation of the building. Based on expected losses derived from flood probability estimates and adding expected loss adjustments and other operating expenses (i.e., risk loading), FEMA is able to calculate an actuarial rate. Buildings constructed after December 31, 1974 or after the publication of a flood insurance rate map (FIRM) are charged an actuarial premium that reflects the property's risk of flooding.

Subsidized rates, on the other hand, are determined by a statutory mandate that requires rates to be affordable so individuals are encouraged to participate. Owners of properties built prior to the issuance of a community's flood hazard map or January 1, 1974, usually pay subsidized rates and are exempted from the NFIP's floodplain management standards. Even properties that are remapped into higher-risk areas pay the subsidized rates, which further contributes to the financial inadequacies of the NFIP.

---

[13] U.S. Government Accountability Office, *FEMA's Rate-Setting Process Warrants Attention*, GAO-09-12, Oct. 31, 2008.

[14] In contrast, commercial insurance premiums are typically set at a level that covers expected losses and expenses plus an amount for a profit margin. A portion of each premium dollar collected is then set aside in loss reserves which are invested and the income used to pay claims and expenses.

[15] A third category of premium discounts involve "grandfathered" policies that occur when a structure is built in compliance with the local floodplain regulation in effect at the time of construction but is later placed in a different risk zone when a flood map is changed. The structure is grandfathered so that pre-FIRM structures continue to pay the subsidized rates.

Premium subsidies were initially considered necessary because occupants often did not understand the flood risk when they built in floodplains (flood maps were not available), there were no public safeguards prohibiting the occupancy on the floodplain, and premium subsidies on pre-FIRM structures could provide an incentive to local communities to participate in the program and discourage unwise future floodplains construction. Premium subsidies were intended to be phased out over time as the number of pre-FIRM properties gradually diminished when they were damaged and rebuilt or relocated under stronger floodplain management and building codes. The NFIP requires all new and substantially improved buildings to be constructed at or above the elevation of the 1%-annual-chance flood (100-year floodplain).

Repetitive Flood Loss Properties

Properties that experience repetitive flood losses, known as a "repetitive-loss properties" (RLP) and "severe repetitive loss properties"(SRLP), account for a disproportionately large share of all the flood insurance claims filed and paid under the NFIP.[16] Historically, it is estimated that approximately 1% of the properties insured under the NFIP have accounted for over a third of claims paid. About one in ten homes that suffer repetitive flood damages have cumulative flood insurance claims that have exceeded the value of the house. [17] FEMA approximates that 90% of all RLPs were built prior to December 31, 1974, or before the adoption of a FIRM – and, hence, are subject to premium discounts.[18] Importantly, the annual increase in new RLPs is outpacing FEMA mitigation efforts by a factor of 10 to 1.[19] After the 1993 Midwest flood, FEMA and other federal government agencies spent hundreds of millions to remove frequently flooded properties from the floodplain.

Table 4 shows that since 1978 a total of 148,148 RLPs have had 428,583 claims paid which have cost the National Flood Insurance Fund a total of $10.1 billion in nominal dollars. **Table A-1** shows RLPs by State. The average claim for these properties was $23,591. According to FEMA, there were 8,909 insured SRLP and 71,680 insured RLPs in the NFIP, as of February 28, 2009. The agency awarded $34.9 million to mitigate 168 properties under the SRLP program and $28.1 million under the Repetitive Flood Claims program. The Inspector General at the Department of Homeland Security estimates that it would cost about $1.8 billion to mitigate the current inventory of SRLP.[20]

---

[16] A repetitive loss property (RLP) is defined as an insured property that experiences two or more flood losses greater than $1,000 within any 10-year period. A subset of RLPs, called severe repetitive loss properties (SRLP), have incurred at least four NFIP claim payments of at least $5,000 each or the cumulative amount of such claims payments exceeds $20,000 or for which at least two separate claims have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

[17] *U.S. Department of Homeland Security, Office of Inspector General*, "FEMA's Implementation of the Flood Insurance Reform Act of 2004," OIG-09-45, March 26, 2009, p. 4, located at http://www.dhs.gov/xoig/assets/mgmtrpts/OIG_09-45_Mar09.pdf.

[18] Ibid.

[19] Ibid, p. 13.

[20] *DHS Inspector General Report*, p. 1.

FEMA has undertaken several actions over the years to address the RLP problem. The initial strategy, announced in 1999, was to identify the nation's inventory of RLPs and focus on structures that were substantially damaged (i.e., damaged 50% or more of market value) at which time they would be reconstructed, elevated, or floodproofed to prevent future damage. One reported difficulty has been reluctance and inconsistency at the local community level in declaring structures substantially damaged.

Table 4. Total Repetitive Flood Loss Properties in the NFIP: 1978 – 2009

(Nominal dollars)

As of Feb. 28, 2009

Building Payments	$7,686,059,344
Contents Payments	$2,424,908,942
Total payments	$10,110,968,286
Average payment	$23,591
Losses	428,583
Properties	148,148

Source: U.S. Department of Homeland Security, Federal Emergency Management Agency.

FEMA also pursued a strategy of phasing out premium subsidies on RLPs through voluntary buyouts or the imposition of full actuarially based rates for RLP owners who refuse to accept FEMA's offer to mitigate the effect of flood damage. In addition, the agency incorporated special incentives into the Community Rating System and provided data to states and communities to help them address the RLPs.

The Flood Insurance Reform Act of 2004 required FEMA to establish the Repetitive Flood Claims and the Severe Repetitive Loss Grant programs to provide funding to reduce or eliminate the long-term risk of flood damage under the NFIP. The RFC grant program provides grants to help states provide subgrants to local government to acquire properties and either demolish or relocate the structure, or elevate or otherwise floodproof the structure. Congress has appropriated $10 million annually to the RFC grant program since 2006. Going forward, a policy challenge will be to find a way to mitigate RLP given that FEMA cannot directly compel property owners in flood hazard areas to mitigate losses or impose actuarial rates on RLP.

Mandatory Flood Insurance Purchase Requirement

FEMA lacks nationwide data on the number of properties in floodplains: it is therefore difficult to make an accurate assessment of NFIP market penetration. However, estimates of penetration rates in the 100-year floodplain are arguably consistently low. A 2006 Rand Corporation study estimated that about 49% of properties in SFHAs purchased NFIP flood insurance, and 1% of properties outside SFHAs purchased insurance.[21] Concerns have also been expressed about the

[21] Rand Institute for Civil Justice, The National Flood Insurance Program's Market Penetration Rate: Estimates and Policy Implications http://www.rand.org/pubs/technical_reports/2006/RAND_TR300.pdf.

large number of homes that are not mortgaged and thus are not required to be insured against flood risks. The low participation rates in flood-prone areas may be of concern to Congress.

The intent and success of the NFIP rests on making insurance widely available and property owners and renters purchasing coverage. Since 1973, federal regulations have required flood insurance on all structures located in the 1% annual chance floodplain (100-year floodplain). Also, since 1994, recipients of certain flood disaster assistance have been required to purchase and hold flood insurance to protect against future flood losses, under penalty of receiving no federal disaster aid in subsequent floods.[22] Despite the existence of this mandatory flood insurance purchase requirement, take-up rates for flood insurance have historically been low and the federal government's exposure to uninsured property losses from flooding remains substantial. There are at least five possible explanations for the low market penetration for flood insurance: (1) flood insurance is not seen as being worth the cost (i.e., a poor investment); (2) the individual has misperceptions about low-probability risks and lacks information about the NFIP;[23] (3) private insurance agents do not market NFIP policies; (4) lack of compliance with the mandatory purchase requirement or failure to ensure that property owners maintain coverage for the life of the loan; (5) many homeowners in risky areas either do not have a mortgage or have a mortgage from an unregulated lender that is not subject to the mandatory purchase requirement.

Flood Hazard Mapping

FEMA is required by statute to identify and map the Nation's floodplain areas and to establish flood-risk zones in such areas. FIRMs are used for setting flood insurance rates, regulating floodplain development and communicating information about the 1%-annual-chance flood hazard to those who live in floodplains. FIRMs also are used to determine whether property owners are required by law to obtain flood insurance as a condition of obtaining mortgage loans or other federally related financial assistance. Without accurate and updated flood hazard maps, property owners and small businesses could underestimate their exposure to flood risks and make poor financial decisions about protecting their properties – i.e., where to build and whether to purchase flood insurance or take other measures to protect their properties.

A major challenge facing the NFIP is ensuring the accuracy of the nation's inventory of FIRMS and improving the mapping, communication, and management of flood-related data. Other flood risk assessment and mapping issues that may be of concern to Congress include (1) the sudden inclusion in a floodplain that can result from FEMA Map Modernization program; (2) large areas that appear to be outside of SFHA that should actuarially be in the high-hazard area; (3) hazard mitigation and local planning for capital investments behind suspect levees and below aging dams so property owners will continue to be exempt from the mandatory purchase requirements;(4) expiring Provisional Accredited levee agreements; and (5) certification/liability issues with levee-like structures.[24]

---

[22] CRS Report RS22945, *Flood Insurance Requirements for Stafford Act Assistance*, by Edward C. Liu.

[23] Howard C. Kunreuther, "The Changing Societal Consequences of Risks from Natural Hazards." Annals of the American Academy of Political and Social Science 1979, vol. 443, p. 104-116.

[24] *Recommendations for a National Levee Safety Program: A Report to Congress from the National Committee on Levee Safety*, Jan. 15, 2009, located at http://www.iwr.usace.army.mil/ncls/docs/NCLS-Recommendation-Report_012009_DRAFT.pdf.

When FEMA's map modernization program began in 2003, nearly 70% of the nation's 92,222 flood maps were more than 10 years old and many of these maps did not reflect the current flood hazard risk or new estimation techniques. In many cases, water flow and drainage patterns have changed due to surface erosion, land use and natural forces. The probability of inland and riverine flooding in certain areas has changed along with these factors. Most experts agree that flood maps with high-accuracy and high-resolution land surface elevation data would be helpful. The benefits of accurate flood hazard maps include improved risk zone designations as well as insurance premiums and building restrictions that reflect actual flood risks facing individuals and businesses.

The Map Modernization program called for FEMA to produce a new nationwide Flood Insurance Study (FIS) and the accompanying FIRMs.[25] FEMA is now completing the update and conversion to digital food hazard maps using new technologies such as Light Detection And Ranging (LiDAR) and other remote sensing technologies within a geographic information system (GIS) format to systematically update floodplain maps on a watershed scale.

Any community that currently participates in the NFIP, or is now identified as having flood hazard prone areas in the FIS and on the new FIRMs, must officially adopt the county-wide FIS and the accompanying FIRMs. Such official action is the most critical community action that FEMA requires of all communities having flood hazard prone areas. Any participating community failing to meet the FEMA map adoption deadline faces immediate suspension or sanctions from the NFIP.

In October 2008, FEMA announced the discontinuation of the paper FIRMS, flood insurance study (FIS) reports, and related flood hazard map products.[26] Only digital map images and digital geospatial flood hazard data will be distributed by FEMA and are equivalent to the paper maps for official activities under the NFIP. The paper maps will still be available through the FEMA Map Service Center. This change is expected to result in printing and distribution cost savings for FEMA during the map modernization process by eliminating the need to generate large format film negatives to support offset printing.[27] FEMA has also announced its Risk Mapping, Assessment, and Planning Strategy aims to follow-up to the Map Modernization initiative. The new strategy aims to combine flood hazard mapping, risk assessment tools, and mitigation planning into one seamless program.

Floodplain Management Regulations

FEMA is prohibited from providing flood insurance to property owners residing in communities that do not participate in the NFIP.[28] Local communities must adopt and enforce certain minimum floodplain management ordinances as a condition of participation in the NFIP. FEMA estimates that $1.2 billion in flood losses are avoided each year from community floodplain management

[25] For more information on FEMA's Map Modernization see *FEMA Map Modernization: An Overview*, http://www.fema.gov/plan/prevent/fhm/mm_main.shtm.

[26] U.S. Department of Homeland Security, Federal Emergency Management Agency, *FEMA: Availability of Flood Hazard Maps and Data*, Federal Register, vol. 73, no. 206, Oct. 23, 2008, p. 63184.

[27] Ibid.

[28] 44 CFR 59.21.

requirements. Efforts to guide construction and development away from high-risk areas through community-based land use and zoning ordinances, however, have reportedly been subordinated to building and elevation requirements that lead to further development of the floodplains, according to the National Wildlife Federation.[29] Even in hazard-prone floodways and coastal areas, building and rebuilding are allowed under NFIP standards, with the cost of insurance varying with property elevation.

An important floodplain management issue for the 111th Congress is reconciling FEMA's implementation of its policy on federal assistance for recovery and hazard mitigation projects located in coastal velocity zones – the so-called V zones on FIRMS – with that of other federal departments and agencies charged with implementing Executive Order 11988.[30] President Jimmy Carter signed into law Executive Order 11988 to require federal agencies to avoid direct and indirect support of floodplain development by taking action "to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities."[31]

Although the regulatory guidelines for Executive Order 11988 are clearly outlined in 44 CFR Part 9, there have been inconsistencies and uncertainty in interpreting those guidelines to determine whether officials are to support recovery and community development in V Zones. FEMA staff must: (1) determine eligibility and required elevation of all new construction in coastal high hazard areas on the Gulf Coast; and (2) decide whether new structures or the costs of repair or replacement of facilities in V Zones are eligible for FEMA funding. The decision to approve and obligate FEMA recovery funds for public assistance projects located in V Zones is an essential element in the reconstruction or redevelopment of coastal areas devastated by Hurricane Katrina.

Federal Multi-Peril Insurance Program

In the aftermath of Hurricanes Katrina and Rita, individuals and businesses in Louisiana, Mississippi, and Alabama protested against what they claimed were inappropriate obstacles to the payment of their property damage insurance claims. When insurance adjustors and damage experts assessed the properties damaged by Hurricane Katrina, they were faced with the issue of allocating damages between wind (a covered loss) and flood (an excluded loss). Post-Katrina insurance claims litigation and the delays and economic uncertainty generated for consumers and insurers raised concerns about post-event judicial interpretations of the scope of insurance coverage. [32]

[29] National Wildlife Federation, *Heavy Rainfall and Increased Flooding Risk: Global Warming's Wake-up Call for the Central United States*, 2008, located at http://www.nwf.org/extremeweather/pdfs/Heavy_Rainfall_and_Increased_Flooding-Wake-Up_Call_for_Central_U.S2.pdf'

[30] *U.S. Department of Homeland Security*, Office of Inspector General, "FEMA Policy Related to Coastal Velocity Zones," OIG-09-71, May 27, 2009, located at http://www.dhs.gov/xoig/assets/mgmtrpts/OIG_09-71_May09.pdf.

[31] U.S. President Jimmy Carter, "Floodplain Management" Executive Order 11988, *Federal Register*, May 24, 1977, p. 26951, located at http://www.fema.gov/plan/ehp/ehplaws/attachments-laws/eo11988.pdf.

[32] For more information, see CRS Report RL33892, *Post-Katrina Insurance Issues Surrounding Water Damage Exclusions in Homeowners' Insurance Policies*, by Rawle O. King.

One issue of contention that emerged from the wind vs. water claims dispute was the interest in expanding the NFIP to allow policyholders to purchase optional wind coverage. In the 110th Congress the House passed H.R. 3121, the Flood Insurance Reform and Modernization Act, in 2007, that included an amendment offered by Representative Gene Taylor to expand the NFIP to include wind damage insurance. When the Senate Banking Committee reported the Senate companion bill, S. 2284, the legislation did not include the Taylor Amendment. No further action occurred on either bill.

Proponents of adding the wind peril provision argue it is necessary to eliminate coverage disputes when wind and flood both contribute to a loss. Optional wind coverage is also said to be needed because of the difficulty that property owners have in obtaining affordable private wind coverage in states along the Gulf and Atlantic coasts. Private insurers have dramatically increased premiums and deductibles, reduced coverage or withdrawn altogether from these areas out of concern about catastrophic risk exposure. In those areas, homeowners must instead purchase their wind coverage from state pools, where the premiums can be prohibitively expensive.

Opponents of adding wind coverage to the NFIP believe that there is adequate wind coverage capacity in every state through either the traditional private market or through the state residual market program (e.g., wind pools). Some critics of the optional wind proposal would instead like to see the development of federal programs to provide economic incentives to encourage the adoption and enforcement of stronger building codes and other loss mitigation efforts. According to these critics, expanding the NFIP to add wind coverage would dramatically increase the exposure of the NFIP, losses to the federal government and the potential for huge taxpayer subsidies. Concerns have also been expressed about the NFIP's ability to determine actuarially sound rates for the windstorm portion of this coverage and avoid wide-scale financial deficits in the program following a catastrophic flood event. Even if actuarial rates are implemented they may not produce sufficient premium income to bear program administration costs and losses in the event of a catastrophic event.

The Government Accountability Office (GAO) issued a recent report that outlined some difficulties that FEMA could face in implementing an optional wind coverage provision. Some of the obstacles included (1) the concern about "adverse selection" or the likelihood that only those property owners at highest risk would purchase coverage; (2) wind hazard prevention standards that communities would have to adopt in order to receive coverage; (3) uncertainty about the adoption of programs to accommodate wind coverage; (4) difficulties in establishing a new rate-setting process; (5) enforcement of new building codes; and (6) administration and oversight of the program.

A letter to President Barack Obama from a coalition of consumer, insurance and reinsurance groups outlined a different approach to the insurance availability and conflict of interest concerns. The coalition supports the creation of a bipartisan Commission on Natural Catastrophe Risk Management and Insurance that consist of experts in areas such as insurance, reinsurance, policyholder concerns, risk mitigation, public finance, flood hazard mapping, building standards, emergency management and environmental issues.[33] The Obama Administration has expressed

[33] Memorandum from Consumer Federation of American and other Organizations, *National Catastrophe Policy Legislation*, Dec. 9, 2008, located at http://smartnatcat.org/files/coalition_transition_memorandum.pdf.

opposition to adding wind coverage to the NFIP based on the arguments that coverage was available in the private sector and through state-sponsored wind pools.

Options for Managing and Financing Flood Risk

Despite investing significant resources in managing flood risk and minimizing future disaster relief costs, the United States has not been able to curb the rising costs of flood damage. This was the conclusion of the Gilbert F. White National Flood Policy Forum held in November 2007 at George Washington University. The Forum brought together 92 diverse experts to consider the future of floodplain management under a "business-as-usual scenario" and under an alternative scenario of aggressive action to address increasing flood risk in the Nation. The experts at the forum concluded that (1) an unprecedented set of conditions (e.g., population growth and migration, changes in climate, and degradation of water-based resources) now face the U.S. that could increase flood losses more rapidly in the near future; and (2) existing programs and policies at all levels are short-sighted, fragmented, focused on economic development at the expense of sustainability and that future losses must be managed more pro-actively than in the past.

What should the policy response be to the current financial and management challenges facing the NFIP? There are five main policy options.

- **Reform and modernize the NFIP.** Reform of the NFIP could include (1) a gradual phase in of actuarial rates for non-residential properties, non-primary residences and RLPs; (2) strengthening floodplain management regulations designed to restrict development in high-risk areas, and require new construction to be elevated three feet above the base flood elevation (BFE); (3) authorizing an ongoing program to review, update, and maintain flood insurance program maps and include 500-year floodplains and areas that are behind levees, downstream of a dam, or in a coastal area that could see a major hurricane; (4) strengthening and enforcing mandatory insurance purchase requirements; (5) forgiving the full debt owed by the NFIP to the Treasury; (6) eliminating the current subsidy for older structures and expand to include areas where a flood or storm surge is likely if a weather event reaches catastrophic levels; (7) creating a catastrophe reserve fund for extremely rare catastrophic loss years; and (8) encouraging private sector incentives for participation.
- **Long-term flood insurance contracts** (LTFI) coupled with mitigation loans arguably would encourage investment in risk-reduction measures.[34] The idea is for private insurers to offer 5-, 10-, or 20-year flood insurance contracts combined with long-term mitigation loans (e.g., for retrofitting, elevation, and floodproofing of structures) tied to the mortgage. Mitigation loans would be offered to help finance the high upfront costs associated with investing in mitigation measures. The long-term flood insurance policies would have a

[34] See Carolyn Kouky and Howard Kunreuther, "Improving Flood Insurance and Flood Risk Management: Insights from St. Louis, Missouri," *Resources for the Future*, Feb. 2009, located at http://www.rff.org/rff/documents/rff-dp-09-07.pdf

maturity that corresponds to the length of the mortgage on the property and the policy would not terminate when the property owner sells the property.

The economic rationale for using LTFI to pre-fund disaster costs is that insurers, generally, need guaranteed premiums for a long time period if rates are to be based on expected losses. By lengthening the term of the property insurance contract, and spreading the risk through a mandatory purchase requirement, LTFI contracts could implicitly permit insurers to compensate for their present inability to prepare adequately for rare and unpredictable flood events.

- **Shift flood insurance back into the private sector.** FEMA has a responsibility to examine the NFIP's contingent liabilities and recommend ways to provide financial stability to the federal flood insurance program. This activity is performed in conjunction with the program's annual rate-setting process. Recognizing the shortcomings of the current financing arrangement, two basic alternatives have emerged: an all-hazard insurance approach and a federal-insurance (reinsurance) framework that would enable private insurers to cover more flood risks.

  With the development of computer simulation catastrophe risk models and remote sensing technologies, some private insurers have argued that flood hazards are now insurable by private companies working in partnership with government. Some economists have suggested that floods and other catastrophic risks are now insurable because of insurer's ability to transfer catastrophic risks to the capital markets through securitization of the risk. In this context, FEMA could require private insurers to "make available" private flood insurance policies at actuarially determined prices in flood-prone areas with the federal government providing federal reinsurance. FEMA could also open the NFIP to a competitive bid contractor to have one firm take over the entire Write-Your-Own program and the government reinsure the risk.

  In 2000, FEMA undertook a study to explore alternative financing arrangements to reduce the need for U.S. Treasury borrowing. FEMA was concerned about the NFIP's erratic cash flow and the potential for catastrophic losses within a short period of time. The option that received the most attention was to create a reinsurance vehicle to finance catastrophic losses. After review by the Office of Management and Budget (OMB), this option was not adopted because it was determined that the cost to borrow from the U.S. Treasury was lower.

- **Community Group Flood Insurance Policy.** The local community purchases a group policy from the NFIP on behalf of residents in a designated SFHA. Policies are issued to all residents and paid either through property taxes or as a utility payment. Professor Dwight Jaffee at Berkley and Howard Kunreuther at the Wharton School are the leading advocates for the long-term flood insurance contract proposal.[35]

[35] Dwight Jaffee and Howard Kunreuther and E. Michael-Kerja, "Long-Term Insurance for Addressing Catastrophic risk," *National Bureau of Economic Research Working Paper*, August 2008.

- **Interstate Compacts for Flood Control and Management.** In response to recurring flooding on the Red River, Members of the 111th Congress may wish to consider addressing the long-term flooding challenges facing residences along the Red River Valley. One way to do this would be to create a Red River Valley Interstate Compact Authority with the power to address water quality and flooding issues in the Red River watershed. This could serve as a model for the nation. Officials from North Dakota, South Dakota, and Minnesota envision this entity as an efficient and cost-effective approach to handling the high cost of maintaining dams and levees, land purchases for water retention, diversion of the river, and reducing the time it takes to complete water management projects. Before the request for an interstate compact is presented to Congress, the state legislatures in North Dakota, South Dakota and Minnesota would need to approve separate resolutions to set up the compact. The status quo is an ad hoc approach with multiple states each responding to its own flood hazards and the federal government providing post-disaster relief assistance.

Legislative Action

At the conclusion of the 110th Congress, Senate Banking Committee Chairman Christopher Dodd and House Financial Services Committee Chairman Barney Frank were working in conference to resolve key differences in the House and Senate versions of flood insurance reform bills (H.R. 3121 and S. 2284). Some of the areas of change to the NFIP debated during the conference included (1) ensuring long-term financial solvency of the National Flood Insurance Fund (i.e., whether to require the NFIP to establish a reserve fund, increase the limit on annual rate increases, forgive the program's outstanding Treasury debt, phase out subsidized premium for some policyholders, and prohibit FEMA from subsidizing new ore previously unsubsidized policies); (2) expanding mandatory coverage to more at-risk properties, including those beyond flood control structures like levees and dams; (3) increase the maximum coverage limits for all classes of insurable property; (4) updating the nation's flood hazard maps to include the 500-year floodplain and areas that would be flooded if a dam or levee failed; (5) adding optional windstorm coverage to the NFIP policy; and (6) strengthen mitigation of flood risk so taxpayers can realize the NFIP's promise of reducing taxpayer exposure in the future.

Congress might choose to consider a range of legislative options to comprehensively reform and modernize the NFIP. Several flood insurance-related bills are before the 111th Congress. Representative Gene Taylor has reintroduced his Multiple Peril Insurance Act, H.R. 1264, which would add wind coverage to the NFIP. Also, Representative Frank Pallone has introduced H.R. 777 to prohibit the Administrator of FEMA from updating flood maps until the Administrator submits to Congress a community outreach plan. H.R. 777 would also create a tax credit for flood insurance premiums on property not previously in a mapped floodplain but included on a new map.

On September 30, 2008, President George W. Bush signed into law H.R. 2638, the "Consolidated Security, Disaster Assistance, and Continuing Appropriations Act of 2009"[36] that included a

[36] P.L. 110-329; 122 Stat. 3575, 3581.

provision to extend the NFIP's authority to issue new policies, increase coverage on existing policies, and issue renewal policies until March 6, 2009. After approving a five-day Continuing Resolution that Congress passed and President Barack Obama signed into law on March 11, 2009,[37] Congress enacted the Omnibus Appropriations Act of 2009 which extended the NFIP through September 30, 2009.[38]

[37] P.L. 111-6; 123 Stat 522.

[38] P.L. 111-8; 123 Stat. 988.

Appendix. Repetitive Flood Loss Properties in the National Flood Insurance Program

Table A-1. Repetitive Flood Loss Properties in the National Flood Insurance Program

($ Nominal)

(As of Feb. 28, 2009)

State Name	Building Payments	Contents Payments	Total Payments	Average Payment	Losses	Properties
Alabama	$393,092,368.03	$79,103,294.37	$472,195,662.40	$35,296.43	13,378	4,746
Alaska	670,015.90	111,023.15	781,039.05	11,833.93	66	26
Arizona	6,416,295.62	1,301,575.04	7,717,870.66	13,708.47	563	245
Arkansas	14,589,085.43	6,300,487.87	20,889,573.30	15,270.16	1,368	492
California	149,890,383.20	36,748,972.80	186,639,356.00	21,015.58	8,881	3,247
Colorado	907,408.11	334,172.67	1,241,580.78	10,094.15	123	53
Connecticut	46,440,356.38	16,646,881.12	63,087,237.50	15,436.07	4,087	1,384
Delaware	21,147,972.41	12,319,920.72	33,467,893.13	35,794.54	935	345
District Columbia	581,743.34	16,919.85	598,663.19	20,643.56	29	12
Florida	1,027,255,883.88	273,673,719.91	1,300,929,603.79	32,092.40	40,537	16,061
Georgia	57,145,015.84	16,618,640.44	73,763,656.28	22,144.60	3,331	1,233
Guam	350,626.18	52,467.45	403,093.63	13,899.78	29	14
Hawaii	9,493,533.40	2,199,862.67	11,693,396.07	24,669.61	474	170
Idaho	577,539.26	99,298.69	676,837.95	11,280.63	60	24
Illinois	97,910,660.14	23,307,974.88	121,218,635.02	11,716.47	10,346	3,440
Indiana	40,998,960.41	8,932,887.22	49,931,847.63	14,972.07	3,335	1,235
Iowa	39,851,921.99	8,898,364.76	48,750,286.75	21,131.46	2,307	907
Kansas	16,659,677.66	8,865,407.37	25,525,085.03	22,118.79	1,154	419
Kentucky	64,297,899.14	21,745,431.94	86,043,331.08	17,520.53	4,911	1,527
Louisiana	1,894,665,529.35	607,625,788.56	2,502,291,317.91	26,854.09	93,181	29,446
Maine	8,931,382.07	2,699,006.41	11,630,388.48	20,332.85	572	218
Maryland	38,362,365.25	14,378,881.58	52,741,246.83	26,397.02	1,998	851
Massachusetts	108,577,982.61	23,592,910.05	132,170,892.66	17,054.31	7,750	2,727
Michigan	11,138,124.96	4,672,158.33	15,810,283.29	10,347.04	1,528	596
Minnesota	18,346,566.93	3,042,146.81	21,388,713.74	15,299.51	1,398	573
Mississippi	418,196,518.64	124,798,955.97	542,995,474.61	32,686.94	16,612	5,842
Missouri	180,591,223.32	87,915,249.57	268,506,472.89	16,390.34	16,382	4,770
Montana	789,889.65	114,904.58	904,794.23	9,327.78	97	44
Nebraska	6,724,661.79	2,592,140.92	9,316,802.71	11,293.09	825	335

State Name	Building Payments	Contents Payments	Total Payments	Average Payment	Losses	Properties
Nevada	6,955,145.75	3,436,879.89	10,392,025.64	59,383.00	175	76
New Hampshire	14,879,929.25	2,330,394.65	17,210,323.90	22,645.16	760	312
New Jersey	369,238,723.50	139,422,392.12	508,661,115.62	17,947.89	28,341	9,273
New Mexico	1,101,361.25	49,475.85	1,150,837.10	13,228.01	87	38
New York	224,708,052.65	79,949,917.08	304,657,969.73	13,524.73	22,526	8,314
North Carolina	333,459,846.73	58,225,499.25	391,685,345.98	19,388.44	20,202	7,483
North Dakota	10,321,744.29	1,518,550.88	11,840,295.17	23,492.65	504	224
Ohio	68,745,492.09	23,561,189.40	92,306,681.49	17,612.42	5,241	1,921
Oklahoma	42,380,779.14	13,113,203.88	55,493,983.02	19,024.33	2,917	908
Oregon	16,407,790.89	5,453,937.15	21,861,728.04	25,332.25	863	336
Pennsylvania	315,625,689.09	101,863,089.77	417,488,778.86	24,377.48	17,126	6,389
Puerto Rico	14,646,719.93	37,255,363.89	51,902,083.82	8,748.03	5,933	2,072
Rhode Island	10,400,456.25	8,187,606.70	18,588,062.95	29,089.30	639	213
South Carolina	69,062,474.30	15,315,615.75	84,378,090.05	23,091.98	3,654	1,459
South Dakota	2,307,168.13	399,432.09	2,706,600.22	15,205.62	178	83
Tennessee	21,169,718.05	9,375,910.38	30,545,628.43	14,069.84	2,171	753
Texas	1,175,308,859.37	425,712,661.54	1,601,021,520.91	26,408.17	60,626	19,496
Utah	895,525.28	202,236.88	1,097,762.16	18,296.04	60	24
Vermont	1,491,997.34	537,561.24	2,029,558.58	13,530.39	150	64
Virgin Islands	11,595,843.24	18,351,300.44	29,947,143.68	46,357.81	646	246
Virginia	135,343,012.55	38,198,691.25	173,541,703.80	22,415.62	7,742	2,965
Washington	65,556,993.36	13,420,570.92	78,977,564.28	24,211.39	3,262	1,136
West Virginia	82,966,263.98	36,112,490.50	119,078,754.48	16,529.53	7,204	2,806
Wisconsin	16,681,900.28	4,174,490.83	20,856,391.11	16,080.49	1,297	565
Wyoming	206,266.45	31,034.15	237,300.60	10,786.39	22	9
TOTAL	$7,686,059,344.03	$2,424,908,942.18	$10,110,968,286.21	$23,591.62	428,583	148,148

Source: U.S. Department of Homeland Security, Federal Emergency Management Agency.

Author Contact Information

Rawle O. King
Analyst in Financial Economics and Risk Assessment
rking@crs.loc.gov, 7-5975