



## Testimony

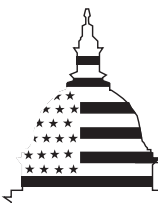
Before the Subcommittee on VA, HUD, and  
Independent Agencies, Committee on Appropriations,  
U.S. Senate

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# FLOOD INSURANCE

## Emerging Opportunity to Better Measure Certain Results of the National Flood Insurance Program

Statement for the Record by  
JayEtta Hecker, Director,  
Physical Infrastructure Issues



G A O

Accountability \* Integrity \* Reliability

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Mr. Chairman and Members of the Subcommittee:

We are pleased to provide a statement for the record discussing the preliminary results of our ongoing review of the National Flood Insurance Program (NFIP). According to the Federal Emergency Management Agency (FEMA), floods have collectively been the most destructive natural hazard in terms of economic loss to the nation. From fiscal year 1992 through fiscal year 1999, 20 major flooding disasters caused over \$97 billion in damages. The recent flooding in the Midwest again demonstrated the destructive nature of this hazard to the nation.

The NFIP is administered by FEMA's Federal Insurance Administration (FIA) and Mitigation Directorate. This program, which includes building standards aimed at minimizing flood losses, is a major component of the federal government's efforts to provide flood-related assistance. Other major components are low-interest loans provided by the Small Business Administration and individual and family grants provided by FEMA. As you know, we are reviewing aspects of the NFIP at the request of this Subcommittee and the Senate Committee on Banking, Housing, and Urban Affairs and its Subcommittee on Economic Policy. We plan to report the results of our assessment this fall.

Our statement today will focus on issues associated with measuring the performance of the NFIP. Specifically, we will address (1) whether FEMA could better evaluate the program's results by adding to the performance goals it currently uses a goal tied to rates of participation in the program—the percentage of structures in flood-prone areas that are insured; and (2) what obstacles and opportunities exist for measuring these participation rates.<sup>1</sup> To meet these objectives, we reviewed FEMA reports that provide some information on participation rates, analyzed FEMA's performance goals, and interviewed officials from FEMA and other federal agencies on mapping technologies that can help determine participation rates. This statement will also summarize other work we have under way at FEMA.

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<sup>1</sup>Our work on the NFIP also includes reviewing the policies and procedures that federal depository institution regulators, Government Sponsored Enterprises, and federal lending agencies and loan guarantors have developed to monitor and enforce lenders' compliance with the mandatory flood insurance purchase requirement. We are also assessing whether there are any gaps in information and responsibilities in the processes that may impede lenders' compliance. Our report will include any recommendations or options we can identify to improve controls over lenders' compliance.

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In summary, we found the following:

FEMA has a number of performance goals aimed at improving the results of the NFIP, including increasing the number of insurance policies in force. While these goals provide valuable insights into how well the NFIP's mission of reducing flood-related losses is being carried out, they do not assess the degree to which the most vulnerable residents—those living in flood-prone areas—participate in the program. Capturing data on the numbers of uninsured and insured structures in flood-prone areas can provide FEMA with another indication of how effectively the program is penetrating those areas most at risk of flooding, whether the financial consequences of floods in these areas are increasing or decreasing, and where marketing efforts can better be targeted.

However, before participation rates can be used to measure the success of the NFIP, better data are needed on the total number of structures in flood-prone areas. While FIA tracks data on the number of insurance policies in these areas, data on the overall number of structures are incomplete and inaccurate. Some communities are developing more accurate data on the number of structures in flood-prone areas. FEMA is also working to improve the quality of its data on the number of structures in flood-prone areas and is participating in the development of new mapping technologies that could facilitate the collection of such data. The cost of using the new technologies to gather data on the number of structures is not fully known, but this expense will be shared through partnerships with federal, state, and local agencies.

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## Background

The NFIP seeks to minimize human suffering and flood-related property losses by making flood insurance available on reasonable terms and encouraging its purchase by people who need flood insurance protection—particularly those living in flood-prone areas known as special flood hazard areas (SFHA).<sup>2</sup> Prior to the flood insurance program's inception, private insurance companies generally did not offer coverage for flood disasters because of the high risks involved, such as high-risk homeowners being more likely to purchase flood insurance.

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<sup>2</sup>An SFHA is an area determined by FEMA to have a 1-percent or greater chance of being flooded in any given year—these areas are also called 100-year flood plains. Flood insurance for federally related mortgages is required only in SFHAs located in communities that participate in the NFIP.

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The National Flood Insurance Act of 1968 (P.L. 90-448) established the program to identify SFHAs, make flood insurance available to property owners living in communities that joined the program,<sup>3</sup> and encourage floodplain management efforts to mitigate flood hazards and thereby reduce federal expenditures on disaster assistance. In order for a community to join the program, any structures built within an SFHA after it has been identified as such are required to be built to the program's building standards, which are aimed at minimizing flood losses. FEMA estimates that its implementation of the program's standards for new construction is now saving about \$1 billion annually in flood damage avoided.

The 1973 Flood Disaster Protection Act (P.L. 93-234) required flood insurance for borrowers whose mortgages are on structures located in SFHAs in participating communities and are originated, guaranteed, or serviced by federal agencies or federally regulated institutions.<sup>4</sup> Subsequently, the National Flood Insurance Reform Act of 1994 (P.L. 103-325) directed federal regulators of lending institutions to assess penalties on any regulated lending institution found to have a pattern or practice of violating the act. Violations include failing to require flood insurance coverage for properties in SFHAs used to secure mortgage loans. In addition, the act mandated that regulated lenders (1) purchase flood insurance for borrowers who are required to have it but fail to purchase it and (2) escrow funds for flood insurance premiums if other funds are also escrowed. The owners of properties in SFHAs with no mortgages or properties with mortgages held by unregulated lenders are not legally required to buy flood insurance. Because risk levels are the same for homeowners in SFHAs regardless of whether flood insurance is required, FEMA encourages all homeowners residing in SFHAs to buy flood insurance.

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<sup>3</sup>A participating community is any community that voluntarily elects to participate in the NFIP and adopts and enforces floodplain management regulations and building codes that are consistent with the standards of the NFIP. In exchange, NFIP flood insurance becomes available for most residential and commercial buildings in the community. If FEMA discovers that a participating community is not complying with the NFIP, it may suspend that community from the program. As of May 10, 2001, there were 19,635 participating communities, 278 suspended communities, and 5 communities on probation. There were also 1,713 communities that have been mapped and contain floodplains, but do not participate in the program.

<sup>4</sup>A federally regulated institution means any bank, savings and loan association, credit union, farm credit bank, federal land bank association, production credit association, or similar institution subject to the supervision of a federal entity for lending regulation.

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FEMA's Mitigation Directorate maintains and updates flood insurance rate maps (FIRM),<sup>5</sup> which identify the geographic boundaries of SFHAs. FIRMs are derived from base maps, which show the basic geographic and political boundaries of a community. Various mapping technologies are used to establish flood elevations on FIRMs and to delineate the boundaries of SFHAs. Base maps are generally obtained from local communities or the U.S. Geological Survey (USGS). While flood maps should be updated as necessary to remain accurate, approximately 63 percent of the nation's 100,000 flood maps are at least 10 years old. Consequently, the Mitigation Directorate has developed a Flood Map Modernization Plan to update the maps and convert them to a digital format.<sup>6</sup> Digital mapping processes, along with other technologies, will improve the collection of data on structures in SFHAs and allow for the electronic distribution of these data through the Internet and on CD-ROM.

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## Emerging Opportunity to Better Measure the NFIP's Results

In accordance with the Government Performance and Results Act (GPRA),<sup>7</sup> FEMA has established various goals and strategies to determine the success of the NFIP in fulfilling its mission to minimize property losses after flood disasters and to reduce losses from future disasters. According to FEMA officials, these goals allow the agency to monitor its progress in meeting its performance goals and address key outcomes.

While the results achieved under these goals—increasing the number of insurance policies in force and reducing flood-related losses—provide valuable insights into how well the NFIP's mission is being accomplished, they do not gauge participation in the program by the most vulnerable residents—those living in SFHAs. Participation rates—the percentage of structures in SFHAs that are insured—are an effective way to measure the results of the NFIP because they are objective, measurable, and

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<sup>5</sup>A FIRM is the official map of a community on which FEMA has delineated both the SFHAs and the risk premium zones applicable to the community. FIRMs are used for both insurance and floodplain management purposes.

<sup>6</sup>In our report *Disaster Assistance: Opportunities to Improve Cost-Effectiveness Determinations for Mitigation Grants* (GAO/RCED-99-236, Aug. 4, 1999), we pointed out that many of FEMA's maps are out of date or incomplete and that analysts conducting cost-benefit determinations must rely on evidence from local officials or residents to establish the frequency and severity of a flood. Our report contained a recommendation aimed at revising flood hazard map information.

<sup>7</sup>GPRA seeks to shift the focus of government decision-making and accountability from activities to results.

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quantifiable. By using participation rates to measure performance, FEMA could assess other program results, such as the extent to which the most vulnerable residents are participating in the program; determine whether the financial risk to the government from floods is increasing or decreasing; and focus marketing and compliance activities to maximize program participation in SFHAs.

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Performance Goals Strive  
to Measure Success in  
Achieving FEMA’s Mission

Like other federal agencies, FEMA is mandated under GPRA to develop annual performance plans that link the agency’s long-term strategic planning to its daily activities. FEMA established three performance goals that pertain to the flood insurance program. These goals include reducing flood losses, increasing the number of flood insurance policies sold, and improving the program’s financial status. These endeavors are part of FEMA’s mission to protect lives and reduce losses from future disasters through insurance and mitigation efforts.

Table 1 describes FEMA’s fiscal year 2002 Performance Plan goals for the NFIP and the strategies by which the agency intends to accomplish these goals.

**Table 1: FEMA’s Fiscal Year 2002 Performance Plan**

Performance goal	Strategies
Flood-Loss Reduction—Collect, validate, and refine building and flood-loss data. Confirm that the reduction in estimated losses from NFIP activities exceeds \$1 billion.	<ul style="list-style-type: none"> <li>• Apply insurance coverage and premium rates as an economic incentive or disincentive to reinforce mitigation through building requirements that reflect sound floodplain management.</li> <li>• Conduct a floodplain management program including technical assistance and monitoring.</li> <li>• Conduct a comprehensive review of NFIP to measure accomplishments and increase effectiveness and efficiency.</li> </ul>
Flood Insurance Policy Growth—Increase the number of NFIP policies in force by 5 percent.	<ul style="list-style-type: none"> <li>• Conduct comprehensive marketing and advertising campaigns to increase awareness and promote policy sales.</li> <li>• Coordinate mandatory flood insurance purchase requirements with regulatory and lending institutions.</li> <li>• Continue outreach efforts to create partners in the real estate community.</li> <li>• Develop a market-segmented approach to increasing policies in force that balances the risks incurred by growth.</li> <li>• Promote changes to program processes that simplify the sale and purchase of insurance.</li> <li>• Continue promotion of flood mitigation.</li> </ul>
Repetitive Loss, Subsidy Reduction, and Operations Modernization—Improve NFIP’s combined loss-and-expense ratio <sup>a</sup> by 1 percent.	<ul style="list-style-type: none"> <li>• Identify and target repetitive-loss properties for select insurance and mitigation actions.</li> <li>• Develop and implement proposals to reduce the subsidy provided to certain properties.</li> <li>• Continue implementation of the business improvement process begun at the end of fiscal year 1999.</li> </ul>

<sup>a</sup>NFIP’s combined loss-and-expense ratio is the sum of claims paid plus expenses divided by the total premium income. A ratio of less than 1 means a net profit on insurance operations. A ratio greater than 1 represents a net loss.

Source: FEMA, Final Annual Performance Plan, Fiscal Year 2002.

## Information on Participation Rates Could Better Measure Program Results

In developing annual performance goals, agencies should focus on the results they expect their programs to achieve—the differences the programs will make in people’s lives. The three NFIP performance goals address the program’s objectives of minimizing human suffering and property losses caused by floods. However, opportunities are developing for FEMA to obtain valuable information about the program’s success through analysis of the rate of participation for those communities involved in the program. The participation rate is obtained by dividing the number of properties located in SFHAs with flood insurance by the total number of properties in these SFHAs. This information would allow FEMA to assess whether the program is penetrating those areas most at risk of flooding, determine whether the financial risks to the government in these areas are increasing or decreasing, and better target marketing efforts to increase participation. In other words, through analysis of participation rates, FEMA would be better able to maximize the effectiveness and efficiency of the program in protecting lives and reducing financial losses.

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FEMA currently collects data on the number of active flood insurance policies. Its goal is to increase the number of NFIP policies in force by 5 percent annually. While FEMA tracks the growth in the number of active policies, its estimates of the number of households located in SFHAs without flood insurance coverage vary.

A DeKalb County, Georgia, study illustrates why participation-rate data can be a more useful measure of the program's success than a tally of policies in force. According to the study, the number of policies in force in DeKalb County grew from the previous year by 13 percent in 1998 and by 17 percent in 1999 but fell to 3 percent in 2000. In fiscal year 1999, DeKalb County officials conducted a study of NFIP participation. This study was initiated to provide information about flood hazards, prevention, and mitigation. Local officials made flood-zone determinations on every structure in the county using FIRMs, tax maps, and limited geographic information system technology. This effort resulted in the creation of an electronic database of the addresses of all structures in the SFHAs. According to the data collected, there were 17,078 buildings in the SFHAs, of which 3,145, or 18 percent, had flood insurance. Thus, while an analysis of the number of policies in force showed significant growth in 1998 and 1999, these data did not capture the fact that fewer than 20 percent of the homeowners in DeKalb County's SFHAs had flood insurance.

FEMA's policy growth target also does not take into account whether the policy growth is greater or less than the population change in DeKalb County's SFHAs. For example, a 5-percent increase in the number of policies at a time when the SFHA's population is increasing by 20 percent may not represent program success for DeKalb County or any other community participating in the NFIP. Nor does the policy growth target take into account changes that occur when flood maps are updated, which could result in the addition of some structures to an SFHA. Such information is important for communities like DeKalb County, where new maps took effect this month.

Knowledge of DeKalb County's participation rate would also help FEMA better market its flood insurance program there. As noted in table 1, marketing and educational outreach efforts are two of FEMA's strategies to increase the number of policies in force. A 5-percent increase in the number of policies might lead to the erroneous conclusion that DeKalb County did not need additional marketing or outreach campaigns to increase public awareness of flood insurance. A participation rate of 18 percent, however, might indicate that, among other things, additional



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marketing and educational outreach was necessary for DeKalb County residents.

Increasing the share of structures in SFHAs with flood insurance would provide added income to the NFIP's insurance fund and decrease the financial burden that flooding places on the federal government and the citizens who are victims of floods when uninsured structures suffer flood damage and may qualify for other forms of federal disaster relief. Moreover, increased participation would provide a broader base of policyholders so that the primary objective of insurance—the pooling of risk—would be more fully realized. FIA officials agree that program participation rates are a useful measure that can provide insights for measuring the program's success, including the effectiveness of marketing.

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## Available Participation-Rate Data Not Always Accurate, But Technology Promises Improvement

The data currently available to determine flood insurance participation rates within SFHAs are not always accurate or complete. While FIA maintains data on the number of flood insurance policies, the information it has on the total number of structures within SFHAs is poor, according to FIA's Acting Administrator. FIA acknowledges weaknesses in its estimates of the total number of structures within SFHAs nationwide and is taking steps to obtain more accurate data. New technologies are also becoming available that may be used to estimate the number of structures within floodplains, thereby increasing the reliability of the data needed to determine participation rates. Similarly, local communities are increasingly using these technologies to obtain a more reliable count of the number of structures within SFHAs. While the cost of obtaining more reliable data is not fully known, FEMA is engaging in partnerships to test new technologies that will allow it to share the costs with local communities and other federal agencies.

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## Key Data Needed to Determine Participation Rates Are Incomplete and Inaccurate

Two numbers are needed to determine participation rates in the NFIP—the number of insured structures and the total number of structures located within SFHAs. When flood insurance policies are sold, private insurance companies that have agreements with FIA to sell NFIP policies collect information on the insured structure, such as whether it is located within an SFHA, its address, and the name of the mortgage lender. They report this information to FIA, which maintains a database on the number of flood insurance policies in force including the number in SFHAs.

FEMA also maintains a database containing estimates of the number of structures within SFHAs. However, FIA's Acting Administrator

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acknowledges that the data on both the national and local community levels are of varying quality. FEMA has been unable to identify one definitive source of information on the number of structures within SFHAs but is taking steps to obtain more reliable information.<sup>8</sup>

FEMA collects data for its Biennial Report on the number of structures within SFHAs from local communities participating in the NFIP. Every 2 years, participating communities report on, among other things, the number of structures within SFHAs as well as within the entire community. However, communities do not always report or provide accurate information. According to a Mitigation Directorate official, about 10 percent of the communities do not report any information. Consequently, older data on the number of structures in these communities are used. Moreover, the communities that do report such information do not always update or report accurate data, since they use different ways to determine the number of structures within SFHAs. For example, some communities have submitted reports showing no increase in the number of structures, but significant increases in population. In other cases, communities reported more structures within the SFHA than within the entire community. According to this official, smaller rural communities may rely on local officials to use their personal knowledge or conduct drive-bys to estimate the number of structures within the SFHA. In contrast, large urban areas typically use technologies such as geographic information systems<sup>9</sup> (GIS) to estimate the number of structures within the SFHA.

FIA officials also told us they have information on the number of structures in SFHAs from other databases, but the accuracy of these data is also low. For example, FEMA has a database that estimates the number of structures in SFHAs nationally at six to eight million. However, FIA officials told us that these data are based on the assumption that there is a

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<sup>8</sup> FEMA is developing a Flood Module as part of its HAZUS natural hazard loss estimation methodology, which will be available in late 2002. Among other things, the model will be able to provide estimates of numbers of structures in flood hazard areas that will probably be more accurate than the data currently available. This information will allow FEMA to develop a more accurate estimate of market penetration at the national level and possibly at the state and community level.

<sup>9</sup> A geographic information system is a network of computers, software, and data that automate various features of a geographic area for mapping. Geographically referenced data are represented as different layers in a GIS system, where each layer holds data about a particular feature. Each feature is then linked to a position on the graphical image of a map.

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uniform distribution of structures in SFHAs. Other agencies, such as the U.S. Bureau of the Census, maintain data on street names, addresses, and locations, but their data are not in a format that is useful for determining the number of structures in SFHAs.

Similarly, data on the total number of structures cannot be captured from FIRMs, which FEMA currently uses to identify SFHAs, because FEMA's Mitigation Directorate does not include data on structures on these maps. Existing FIRMs identify only the boundaries of SFHAs, streams, and selected roads. Furthermore, FEMA's Mitigation Directorate does not use FIRMs to identify structures because (1) FEMA's regulations on floodplain mapping do not require the depiction of structures on FIRMs; (2) the map scales used for FIRMs are too small to legibly show structures, and enlarging the scales would be cost prohibitive; and (3) the information available on the location of structures is inconsistent.

Four studies conducted between 1997 and 2000 that were designed to examine compliance with the mandatory purchase of flood insurance provide some information on participation rates within SFHAs. One study was conducted by FEMA's Inspector General (IG), one was sponsored by FEMA, and private companies conducted the remaining two. Each of the studies was limited to a few communities; none produced nationally representative results or included all of the structures in the appropriate SFHAs in their analysis. See table 2 for a synopsis of each of these four studies.

**Table 2: Studies on NFIP Participation**

Study	Scope	Methodology	Findings
FEMA IG, August 2000	Residences built in 16 communities in 10 states (AL, DE, FL, KY, LA, MD, MO, NC, NE, and NJ) after the National Flood Insurance Reform Act of 1994.	Screened addresses through the FIA policy database; determined whether there was a lien with a regulated lender or an exemption from the insurance requirement.	30 percent of homes sampled did not have flood insurance; 10 percent of homes sampled should have had flood insurance but did not.
Geotrac, 1997	Grand Forks, ND properties totally within SFHA and with post-1994 Reform Act mortgages.	Screened addresses through the FIA policy database and local property records system.	28 percent of homes sampled did not have flood insurance.
FEMA Post-Disaster Compliance Study, 1999	11 counties in Vermont following two presidentially declared flood disasters.	Identified disaster assistance applicants, determined which lived in a local SFHA, and determined which applicants had flood insurance. Assessed whether those without flood insurance had a mortgage from a regulated lender.	84 percent of homes sampled did not have flood insurance; at least 45 percent of homes sampled should have had flood insurance.
Strategic Advocacy Group, 1999	2 counties in Kentucky following presidentially declared flood disasters.	Identified mortgaged parcels of land in SFHAs; compared these to FIA's policy database. Analyzed mortgages made before and after the Reform Act.	70 percent of the sample of homes mortgaged prior to the 1994 Reform Act, which required lenders to ensure the purchase of flood insurance when required, did not have flood insurance; 48 percent of the sample of homes mortgaged after the Reform Act did not have flood insurance.

Source: GAO's compilation of NFIP participation studies.

While these studies provide some useful information, they are of limited value in understanding the percentage of structures in SFHAs covered by flood insurance.

## Technologies Can Improve the Accuracy of Data Used to Determine Participation Rates

several current mapping technologies can be used to facilitate the collection of data on the number of structures in SFHAs. These technologies can be used not only to show buildings and houses on maps but also to pinpoint the exact location of such structures. Combining these technologies with the digital flood maps that FEMA is already producing would allow for increased accuracy in the identification of structures within SFHAs and the calculation of participation rates.

For example, USGS has produced computer-generated images of aerial photographs—that is, pictures taken from airplanes of the land below—for about 74 percent of the United States. These images are called digital

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orthophoto quadrangles (DOQ), and essentially combine the characteristics of a photograph with the geometric qualities of a map. FIA currently uses these images to produce some of its flood maps. While DOQs show pictures of structures, each structure must be digitized in order to be identified by a geographic information system.

Local communities are also beginning to use these emerging technologies, although to widely differing degrees. In DeKalb County, Georgia, local officials have purchased DOQs of its 270 square miles from a contractor and digitized the structures in the photos. The county plans to geographically reference each of the structures to create a base map that shows the accurate location of structures. The county can then lay digital flood-maps over its base maps to determine the number of structures in the local SFHAs. According to county officials, once this technology is in place, it will be easy to determine the number of structures in local SFHAs. NFIP participation rates will also be easy to calculate. A DeKalb County official told us that this digitized mapping technology has many practical applications for the county, including engineering, planning and zoning, crime analysis, and disaster recovery, and it will allow maps to be generated for presentations at public hearings and other meetings.

FEMA officials told us that similar efforts are occurring in Charlotte, North Carolina, and Louisville, Kentucky. A 1998 survey by the National States Geographic Information Council and the Federal Geographic Data Committee found that 69 percent of the GIS data users from state, regional, and local governments responding to its survey create, update, integrate, and distribute digital geographic data. This indicates that a number of localities have some technology available to create digital base maps and that the potential exists for localities to use such technology to identify structures within SFHAs.

However, FIA officials told us that the number of communities that currently have detailed data available is small. They also told us that as more FIRMs are produced digitally and more communities improve the ability of their mapping technologies to collect data on properties and buildings, measuring the number of structures located within SFHAs will become easier and more efficient.

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### The Costs of Technology Are Not Fully Known, but Will Be Shared

The costs of using technology to accurately identify the number of structures in SFHAs are not fully known. In March 2000, FEMA estimated the total costs to modernize flood maps from fiscal year 2001 through fiscal year 2007 to be \$773 million above expected annual funding levels,

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with digitization and map maintenance costs alone totaling \$156 million.<sup>10</sup> The modernization of maps includes converting paper flood maps to a digital format, which is the first step in using available technology to identify the number of structures within SFHAs. FEMA continues to refine the cost estimate as it updates its projection of needs and improves its cost data, including the impacts on costs of partnerships with communities and other local, regional, state, and federal agencies, and new technologies.

The partnerships that FEMA has developed with state, local, and other federal agencies should reduce some of its costs to modernize its flood maps. Along with enabling the agency to share some of the costs to modernize flood maps, the partnerships will facilitate the development of technology that can be used to estimate the number of structures within SFHAs. For example, through FEMA's Cooperating Technical Partners initiative, 62 partnerships had been developed with local communities as of September 2000. Through this effort, communities, states, and regional agencies perform all or portions of data collection and mapping tasks to create their own FIRMs. An FIA official told us that the cost benefits to FEMA from this effort have not yet been determined.

FEMA has also entered into partnerships with other federal agencies to fund cooperatively the production of DOQs and high-accuracy elevation data. As discussed previously, DOQs provide detailed images of land, including the location of houses. Elevation data are useful because they help make flood maps more accurate. Both of these technologies can be manipulated with geographic information systems to more accurately identify the number of structures within SFHAs. While FIA has factored in the costs of cooperatively producing DOQs with other agencies in its mapping modernization cost estimate, funding arrangements to produce elevation data with other federal agencies have not yet been determined.

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<sup>10</sup>FEMA's IG has previously questioned the soundness of FEMA's then \$750 million estimate to modernize flood maps. While acknowledging that FEMA took into account some of the new cost-saving partnerships and technologies when preparing its cost estimate, the IG asserts that FEMA did not, in some instances, verify data, use reliable data, or establish a sound basis for some assumptions. Moreover, the IG also stated that FEMA did not fully factor in savings that could be realized from technology. The IG recommended that FEMA include in its mapping modernization plan the cost impact of partnerships, new mapping techniques, and technological advancements. See *Audit of FEMA's Cost Estimate for Implementing the Flood Map Modernization Plan* (H-09-00, September, 2000).

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## Observations

Program participation rates are an effective way to gain insights into and improve the performance of the NFIP program. Incorporating participation rates into FEMA's goals can provide results that are in line with GPRA—objective, measurable, and quantifiable. While it will be many years before the data needed to determine national participation rates become available, some communities are already collecting such data. These communities are using technologies that allow them to count the number of structures in SFHAs and some are using these technologies to determine participation rates. As our preceding discussion of DeKalb County, Georgia, demonstrates, such community-level data can provide FIA with useful information on the degree of participation by residents living in SFHAs.

In addition to our work on the NFIP, we have two other studies under way involving FEMA. The first responds to your request, in the September 16, 1999, Senate Report (106-161) accompanying the fiscal year 2000 appropriations bill, that we evaluate FEMA's processes for ensuring that disaster assistance funds are used effectively and efficiently. This report, which we expect to issue this summer, will provide information on (1) the adequacy of the criteria FEMA employs to determine if a presidential disaster declaration is warranted and the consistency with which FEMA applies these criteria and (2) the policies and procedures FEMA has developed to ensure that individual Public Assistance Program projects in disaster areas meet eligibility requirements.

We also plan to issue a report in late summer that looks at all federal agencies involved in combating terrorism—including FEMA—with a specific emphasis on (1) the overall framework for managing federal agencies' efforts; (2) the status of efforts to develop a national strategy, plans, and guidance; (3) the federal government's capabilities to respond to a terrorist incident; (4) federal assistance to state and local governments to prepare for an incident; and (5) the federal structure for developing and implementing a strategy to combat cyber-based terrorism.

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## Contact and Acknowledgments

For future information on this testimony, please contact JayEtta Hecker at (202) 512-2834. Individuals making key contributions to this testimony included Martha Chow, Lawrence Cluff, Kerry Hawranek, Signora May, John McGrail, Lisa Moore, Robert Procaccini, and John Strauss.

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# Related GAO Products

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Combating Terrorism: FEMA Continues to Make Progress in Coordinating Preparedness and Response ([GAO-01-15](#), Mar. 20, 2001).

Disaster Relief Fund: FEMA's Estimates of Funding Requirements Can Be Improved ([GAO/RCED-00-182](#), Aug. 29, 2000).

Observations on the Federal Emergency Management Agency's Fiscal Year 1999 Performance Report and Fiscal Year 2001 Performance Plan ([GAO/RCED-00-210R](#), June 30, 2000).

Disaster Assistance: Issues Related to the Development of FEMA's Insurance Requirements ([GAO/GGD/OGC-00-62](#), Feb. 25, 2000).

Flood Insurance: Information on Financial Aspects of the National Flood Insurance Program ([GAO/T-RCED-00-23](#), Oct. 27, 1999).

Flood Insurance: Information on Financial Aspects of the National Flood Insurance Program ([GAO/T-RCED-99-280](#), Aug. 25, 1999).

Disaster Assistance: Opportunities to Improve Cost-Effectiveness Determinations for Mitigation Grants ([GAO/RCED-99-236](#), Aug. 4, 1999).

Disaster Assistance: Improvements Needed in Determining Eligibility for Public Assistance ([GAO/RCED-96-113](#), May 23, 1996).

Flood Insurance: Financial Resources May Not Be Sufficient to Meet Future Expected Losses ([GAO/RCED-94-80](#), Mar. 21, 1994).



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