

February 2008

# DISASTER COST ESTIMATES

## FEMA Can Improve Its Learning from Past Experience and Management of Disaster-Related Resources

This report was revised on February 27, 2008, to correct the legend below the graphic displayed on the Highlights page. The second box of the legend, labeled “Mean,” was changed to “Median.”





Highlights of [GAO-08-301](#), a report to congressional committees

## Why GAO Did This Study

Public Law No. 110-28 directed GAO to review how the Federal Emergency Management Agency (FEMA) develops its disaster cost estimates. Accordingly, GAO addressed the following questions: (1) What is FEMA's process for developing and refining its cost estimates for any given disaster? (2) From 2000 through 2006, how close have cost estimates been to the actual costs for noncatastrophic (i.e., federal costs under \$500 million) natural disasters? (3) What steps has FEMA taken to learn from past experience and improve its management of disaster-related resources and what other opportunities exist? To accomplish this, GAO reviewed relevant FEMA documents and interviewed key officials. GAO also obtained and analyzed disaster cost data and determined that they were sufficiently reliable for the purposes of this review.

## What GAO Recommends

GAO makes a number of recommendations to the Secretary of Homeland Security to improve the information provided to decision makers; better inform future estimates, including the ability to incorporate past experience in those estimates; and improve the management of FEMA's disaster-related resources. In commenting on a draft of this report DHS generally agreed with these recommendations. In addition, FEMA provided technical comments, which were incorporated where appropriate.

To view the full product, including the scope and methodology, click on [GAO-08-301](#). For more information, contact Susan J. Irving at (202) 512-9142 or [irvings@gao.gov](mailto:irvings@gao.gov).

# DISASTER COST ESTIMATES

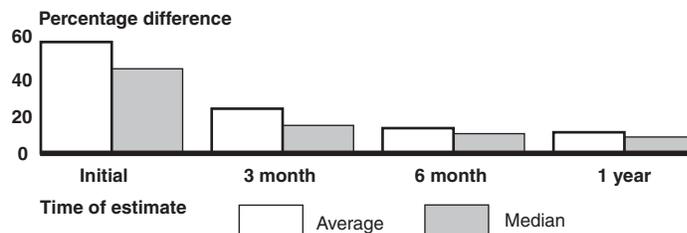
## FEMA Can Improve Its Learning from Past Experience and Management of Disaster-Related Resources

### What GAO Found

After a disaster is declared, FEMA staff deployed to a joint field office work with state and local government officials and other relevant parties to develop and refine cost estimates. The overall estimate comprises individual estimates for FEMA's assistance programs plus any related tasks assigned to other federal agencies (mission assignments) and FEMA administrative costs. The methods used to develop these estimates differ depending on program requirements including, in some cases, historical knowledge. FEMA officials told GAO that cost estimates are updated on a continuing basis.

Decision makers need accurate information to make informed choices and learn from past experience. FEMA officials stated that by 3 months after a declaration estimates are usually within 10 percent of actual costs—which they defined as reasonable. GAO's analysis showed that decision makers did not have cost information within this 10 percent band until 6 months after the disaster declaration. These results cannot be generalized since this comparison could only be made for the 83 (24 percent) noncatastrophic natural disaster declarations for which final financial decisions had been made. Disaster coding issues also hamper FEMA's ability to learn from past experience. For example, in several instances the code for the incident type and the description of the disaster declaration did not match.

**Percentage Difference between Estimated and Actual Disaster Costs for 83 Noncatastrophic Natural Disasters from 2000 through 2004**



Source: GAO analysis of data from FEMA's Disaster Financial Status Report database, as of June 30, 2007.

Note: This figure covers noncatastrophic disaster declarations for which all financial decisions have been made. At the end of this review none of the disasters declared in 2005 or 2006 met the criterion. Because individual estimates were either greater or less than actual costs, GAO used absolute value to treat them the same in calculating differences between the two.

Officials described several ways in which FEMA has learned from past disasters and improved its management of disaster-related resources. For example, FEMA uses a national average to predict costs for expected applicants for Individual Assistance. FEMA has also taken several actions to professionalize and expand the responsibilities of its disaster comptrollers. Nonetheless, FEMA could further learn from past experience by conducting sensitivity analyses to identify the marginal effect various factors have on causing fluctuations in its estimates. FEMA could improve its management of disaster-related resources by developing standard procedures for staff involved in entering and updating cost estimate data in its database.

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## **Abbreviations**

CFO	Chief Financial Officer
DFSR	Disaster Financial Status Report
DHS	Department of Homeland Security
DPR	Disaster Projection Report
EP&R	Emergency Preparedness and Response
FEMA	Federal Emergency Management Agency
GWOT	Global War on Terrorism
JFO	joint field office
OMB	Office of Management and Budget

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United States Government Accountability Office  
Washington, DC 20548

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February 22, 2008

The Honorable David E. Price  
Chairman  
The Honorable Harold Rogers  
Ranking Member  
Subcommittee on Homeland Security  
Committee on Appropriations  
House of Representatives

The Honorable Robert C. Byrd  
Chairman  
The Honorable Thad Cochran  
Ranking Member  
Subcommittee on Homeland Security  
Committee on Appropriations  
United States Senate

The mission of the Federal Emergency Management Agency (FEMA) is to lead the nation in mitigating, responding to, and recovering from major domestic disasters, both natural and man-made, including terrorist incidents. Budgeting for FEMA's mission is inherently difficult because the number, severity, and timing of disasters are unknown. In recognition of this fact, a large portion of FEMA's funding is provided in emergency supplemental appropriations when a disaster is declared.

In a recent report, we raised concerns about FEMA's ability to manage its day-to-day resources and the lack of information on how FEMA's resources are aligned with its operations.<sup>1</sup> More recently, the House Committee on Appropriations expressed its concern about FEMA's ability to manage resources in a manner that maximizes its ability to effectively and efficiently deal with disasters. One aspect of particular concern to the committee is how FEMA makes projections of funding needed in response to any given disaster or to address future disasters. The U.S. Troop Readiness, Veterans' Care, Katrina Recovery, and Iraq Accountability

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<sup>1</sup> GAO, *Budget Issues: FEMA Needs Adequate Data, Plans, and Systems to Effectively Manage Resources for Day-to-Day Operations*, [GAO-07-139](#) (Washington, D.C.: Jan. 19, 2007).

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Appropriations Act of 2007 enacted a directive from a House Committee on Appropriations report that we review how FEMA develops its estimates of the funds needed to respond to any given disaster.<sup>2</sup> Accordingly, this review addresses the following questions: (1) What is FEMA’s process for developing and refining its cost estimates for any given disaster? (2) From 2000 through 2006, how close have cost estimates been to the actual costs for noncatastrophic<sup>3</sup> natural disasters? (3) Given the findings from the first two questions and our relevant past work, what steps has FEMA taken to learn from past experience and improve its management of disaster-related resources and what other opportunities exist? To address these questions, we obtained and reviewed FEMA regulations, policies, procedures, training materials, and other documents and interviewed key FEMA, Department of Homeland Security (DHS) Inspector General, and Office of Management and Budget (OMB) staff. We also obtained and analyzed disaster estimate and cost data from FEMA. We determined that these data were sufficiently reliable for the purposes of our review.

We conducted this performance audit from June 2007 through February 2008 in accordance with generally accepted government auditing standards.

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## Results in Brief

Once a major disaster has been declared, FEMA staff deployed to a field office—located at or near the disaster site and jointly operated by the federal and state governments—work with state and local officials and other relevant parties (e.g., private nonprofit organizations, other federal agencies, etc.) to develop and refine cost estimates for the declared disaster. The overall estimate comprises individual estimates for the assistance programs that may be activated for a given disaster—Public Assistance, Individual Assistance, Hazard Mitigation grants—plus any related mission assignments (FEMA-issued tasks to other federal agencies) and FEMA administrative costs. Cost estimates for each of these five categories are developed using different methods depending on program requirements. Public Assistance officials, for example, told us

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<sup>2</sup> Pub. L. No. 110-28, 121 Stat. 112, 155 (May 25, 2007), incorporating by reference a directive in H.R. Rep. No. 110-60, at 211 (2007). The Appropriations Committee report directs us to complete our review within 6 months of enactment of Pub. L. No. 110-28. We fulfilled this requirement by briefing relevant committees in November 2007. This report expands upon the information provided in that briefing.

<sup>3</sup> For budget purposes, FEMA defines a disaster as catastrophic when related federal costs reach or exceed \$500 million.

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that they rely on applicants' past experience and historical knowledge of costs for similar projects. For administrative cost estimates major elements are the number of staff deployed, salary costs, rent for office space, and projected travel expenses. FEMA officials told us that an initial estimate is reported within 1 week of the joint field office opening. Updated estimates are entered into FEMA's Disaster Financial Status Report (DFSR) database on a monthly basis.

Decision makers need accurate information in order to make informed choices and learn from past experience. FEMA officials told us that at 90 days (3 months) after the declaration the overall estimate of costs related to any given noncatastrophic natural disaster is usually reasonable, which they defined as within 10 percent of actual costs. However, our analysis of FEMA's data for the 83 noncatastrophic natural disaster declarations from 2000 through 2006 with actual or close to actual costs (known as reconciled or closed, respectively) was not consistent with this.<sup>4</sup> Decision makers did not have cost information within 10 percent of actual costs until about 6 months after the disaster declaration.<sup>5</sup> What the results would be for the universe of noncatastrophic natural disaster declarations is unknown because our analyses could only include the 24 percent of declarations for which final financial decisions had been made. In addition, issues concerning the reliability of disaster coding could hamper FEMA's ability to learn from past experience and better inform its decisions. For example, in analyzing the data FEMA provided, we found several instances in which the code FEMA used to describe a disaster event and the related description from the disaster declaration did not match.<sup>6</sup> In addition, the multiplicity of codes and the fact that FEMA's database only allows for one code per declaration, even when the description lists several causes, further limits the ability to learn from analyses of past events.

FEMA officials described several ways in which the agency has learned from past disasters and improved the management of disaster-related resources. For example, Individual Assistance officials use demographic

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<sup>4</sup> None of these 83 disaster declarations occurred in 2005 or 2006.

<sup>5</sup> Because individual estimates were either greater or less than actual costs, we used absolute value to treat them the same in calculating the average difference between the two.

<sup>6</sup> These coding issues meant that we could not compare estimated and actual cost by type of disaster but did not affect our ability to look at disaster cost estimates in the aggregate.

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data and a national average of individual assistance costs to predict average costs for expected applicants. FEMA has also taken several actions to professionalize and expand the responsibilities of its cadre of disaster comptrollers. These actions include developing and updating a credentialing plan since 2002, converting six disaster comptrollers—who are normally temporary (disaster assistance) employees—into permanent positions, and combining the Disaster Comptroller and Finance/Administration Section Chief into one position at the joint field office to better manage financial activities. FEMA has also developed—but has not fully tested—a model to better predict costs prior to a major hurricane making landfall as well as while it occurs.

Nonetheless, we identified additional ways in which FEMA could further its learning from past experience and improve its management of disaster-related resources. For instance, some of the factors that can lead to changes in FEMA’s cost estimates are beyond its control, such as the discovery of hidden damage. Others are not, such as its management of mission assignments. Sensitivity analyses to identify the marginal effect of key cost drivers could provide FEMA a way to isolate and mitigate the effect of these factors on its early estimates. To better predict applicant costs for the Individual Assistance program, FEMA could substitute or add more geographically specific indicators for its national average. Moreover, FEMA does not have standard operating procedures or training for staff involved in entering and updating disaster cost estimate data in its database. Developing these could improve the management of disaster-related resources and ensure consistency among staff in regional offices and headquarters who are responsible for these data thus increasing their usefulness for future estimates. Finalizing decisions about how much funding is needed to complete work for “older” open declarations—those 5 years or older—would allow FEMA to better target its remaining resources. From a broader perspective, annual budget requests and appropriations for disaster relief do not include all known costs from still open disaster declarations, in particular those from catastrophic disasters. This leads to requests for supplemental appropriations not only for new disasters, but also for costs related to ongoing, past disasters. As a result, decision makers may not have a comprehensive view of overall funding claims and trade-offs.

We make a number of recommendations to the Secretary of Homeland Security to improve the information provided to decision makers; better inform future estimates, including the ability to incorporate past experience in those estimates; and improve the management of FEMA’s disaster-related resources. In commenting on a draft of this report, DHS

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generally agreed with these recommendations. FEMA also provided technical comments, which we have incorporated as appropriate.

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## Background

In response to concerns about the lack of a coordinated federal approach to disaster relief, President Carter established FEMA by Executive Order in 1979 to consolidate and coordinate emergency management functions in one location. In 2003, FEMA became a component of the Emergency Preparedness and Response (EP&R) Directorate in the newly created DHS. Much like its FEMA predecessor, EP&R's mission was to help the nation to prepare for, mitigate the effects of, respond to, and recover from disasters. While FEMA moved intact to DHS and most of its operations became part of the EP&R Directorate, some of its functions were moved to other organizations within DHS. In addition, functions that were formerly part of other agencies were incorporated into the new EP&R organization. After FEMA moved into DHS it was reorganized numerous times. FEMA's preparedness functions were transferred over 2 years to other entities in DHS,<sup>7</sup> reducing its mission responsibilities. However, recent legislation transferred many preparedness functions back to FEMA.<sup>8</sup> Today, once again, FEMA's charge is to lead the nation's efforts to prepare for, protect against, respond to, recover from, and mitigate the risk of natural disasters, acts of terrorism, and other man-made disasters, including catastrophic incidents.

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## Disaster Declaration Process

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act),<sup>9</sup> establishes the process for states to request a presidential disaster declaration. The Stafford Act requires the governor of the affected state to request a declaration by the President.<sup>10</sup> In this request the governor must affirm that the situation is of such severity and magnitude

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<sup>7</sup> From enactment of the Homeland Security Act of 2002, Pub. L. No. 107-296, in November 2002 to September 2005, 11 preparedness functions or authorities were transferred from FEMA. In October 2005, FEMA's remaining preparedness functions were transferred to DHS's new Preparedness Directorate, which was created to consolidate preparedness assets from across DHS, facilitate grants, and oversee nationwide preparedness efforts.

<sup>8</sup> Post-Katrina Emergency Management Reform Act of 2006, Pub. L. No. 109-295, Title VI, 120 Stat. 1355, 1394 (Oct. 4, 2006).

<sup>9</sup> The Stafford Act, as amended, is codified at 42 U.S.C. §§ 5121-5206.

<sup>10</sup> The Stafford Act defines "state" to include the District of Columbia, Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands.

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that effective response is beyond the capabilities of the state and the affected local governments and that federal assistance is necessary.<sup>11</sup>

Before a governor asks for disaster assistance, federal, state, and local officials normally conduct a joint preliminary damage assessment. FEMA is responsible for recommending to the President whether to declare a disaster and trigger the availability of funds as provided for in the Stafford Act.<sup>12</sup> When an obviously severe or catastrophic event occurs, a disaster may be declared before the preliminary damage assessment is completed.

In response to a governor's request, the President may declare that a major disaster or emergency exists.<sup>13</sup> This declaration activates numerous assistance programs from FEMA and may also trigger programs operated by other federal agencies, such as the Departments of Agriculture, Labor, Health and Human Services, and Housing and Urban Development, as well as the Small Business Administration to assist a state in its response and recovery efforts.<sup>14</sup> FEMA can also issue task orders—called mission assignments—directing other federal agencies and DHS components, or “performing agencies,” to perform work on its behalf to respond to a major

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<sup>11</sup> FEMA considers both quantitative and qualitative factors when evaluating a governor's request for a major disaster declaration. See 44 C.F.R. § 206.48. For the Public Assistance program, for example, quantitative factors include overall damage costs of \$1.22 or more per capita (for fiscal year 2007, adjusted annually with the Consumer Price Index) as an indicator that the disaster is of such size that it might warrant federal assistance and a minimum threshold of \$1 million in state public assistance damages per disaster. Qualitative criteria include heavy impact of a disaster on a particular area or the occurrence of multiple disasters in the same area within the last 12 months.

<sup>12</sup> FEMA also uses the data from the damage assessment to determine what resources are necessary to respond to the disaster, including the personnel required to staff joint field offices and the resources needed from other federal agencies involved in the disaster response.

<sup>13</sup> If the President declares an emergency, rather than a major disaster, the federal response is limited to the immediate and short-term assistance that is necessary to save lives, protect property and public health and safety, or lessen or avert the threat of a catastrophe. FEMA's expenditures may generally not exceed \$5 million under an emergency declaration, though the President may exceed this limitation if he makes certain determinations and notifies Congress of the nature and extent of the assistance requirements. Our review focused on disaster, not emergency, declarations.

<sup>14</sup> The Stafford Act grants the President broad authority to direct any federal agency to support disaster or emergency assistance efforts (42 U.S.C. §§ 5170a, 5192) although some agencies, such as the Federal Highway Administration and the Army Corps of Engineers, have authorities independent of the Stafford Act to initiate certain emergency assistance efforts without a presidential disaster declaration.

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disaster. The federal disaster assistance provided under a major disaster declaration has no overall dollar limit. However, each of FEMA's assistance programs has limits either in the form of federal-state cost share provisions or funding caps.

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## Disaster Assistance Provided by FEMA

FEMA provides assistance primarily through one or more of the following three grant programs:

- Public Assistance provides aid to state government agencies; local governments; Indian tribes, authorized tribal organizations, and Alaskan Native villages; and private nonprofit organizations or institutions that provide certain services otherwise performed by a government agency. Assistance is provided for projects such as debris removal, emergency protective measures to preserve life and property, and repair and replacement of damaged structures, such as buildings, utilities, roads and bridges, recreational facilities, and water-control facilities (e.g., dikes and levees).
- Individual Assistance provides for the necessary expenses and serious needs of disaster victims that cannot be met through insurance or low-interest Small Business Administration loans. FEMA provides temporary housing assistance to individuals whose homes are unlivable because of a disaster. Other available services include unemployment compensation and crisis counseling to help relieve any grieving, stress, or mental health problems caused or aggravated by the disaster or its aftermath. FEMA can cover a percentage of the medical, dental, and funeral expenses that are incurred as a result of a disaster.
- The Hazard Mitigation Grant Program provides additional funding (7.5 to 15 percent of total federal aid for recovery from the disaster)<sup>15</sup> to states and Indian tribal governments to assist communities in implementing long-term measures to help reduce the potential risk of future damages to facilities.

Not all programs are activated for every disaster. The determination to activate a program is based on the needs identified during the joint preliminary damage assessment. For instance, some declarations may provide only Individual Assistance grants and others only Public

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<sup>15</sup> This percentage changed twice from 2000 through 2006. Prior to November 1, 2004, Hazard Mitigation grants were calculated at 15 percent. They were calculated at 7.5 percent from that date until October 4, 2006, when it changed to the current sliding scale. In addition, for states with approved enhanced mitigation plans FEMA calculates Hazard Mitigation grants at 20 percent.

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Assistance grants. Hazard Mitigation grants, on the other hand, are available for most declarations.

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## Initial Response

Once a federal disaster is declared, the President appoints a federal coordinating officer to make an appraisal of the types of relief needed, coordinate the administration of this relief, and assist citizens and public officials in obtaining assistance. In addition, the federal coordinating officer establishes a joint field office at or near the disaster site. This office is generally staffed with a crew made up of permanent, full-time FEMA employees; a cadre of temporary reserve staff, also referred to as disaster assistance employees; and the state's emergency management personnel.

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## Objectives, Scope, and Methodology

Public Law No. 110-28, the U.S. Troop Readiness, Veterans' Care, Katrina Recovery, and Iraq Accountability Appropriations Act, 2007, directs us to review how FEMA develops its estimates of the funds needed to respond to any given disaster, as described in House Report No. 110-60. Accordingly, we addressed the following questions:

- (1) What is FEMA's process for developing and refining its cost estimates for any given disaster?
- (2) From 2000 through 2006, how close have cost estimates been to the actual costs for noncatastrophic natural disasters?
- (3) Given the findings from the first two questions and our relevant past work, what steps has FEMA taken to learn from past experience and improve its management of disaster-related resources and what other opportunities exist?

To address the first question, we examined FEMA policies, regulations, and other documents that govern its estimation processes. We interviewed senior staff from FEMA's Office of the Chief Financial Officer, as well as headquarters and regional personnel responsible for FEMA's disaster assistance programs (Public Assistance, Individual Assistance, and the Hazard Mitigation Grant Program). Although we looked at how the estimates from other federal, state, and local government and private nonprofit organizations feed into FEMA's process, we did not review the estimating processes of these entities. Also, we did not review whether FEMA implemented its cost estimation processes as described.

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To address the second question, we compared FEMA’s cost estimates at various points in time (initial; 1, 2, 3, 6 months; and a year) to actual costs to determine when estimates reasonably predicted actual costs. FEMA officials defined “reasonable” as within 10 percent of actual costs. Although the total number of disaster declarations from 2000 through 2006 was 363, we focused on noncatastrophic, natural disasters. Two of the 363 disaster declarations were not natural—they were related to the terrorist attacks of 9/11—and another 14 were considered catastrophic.<sup>16</sup> Of the remaining 347 disaster declarations, 83 (24 percent) had actual or close to actual costs—known as reconciled or closed, respectively—that could be compared to earlier estimates. None of these 83 disaster declarations occurred in 2005 or 2006. Although the analysis of these 83 disaster declarations is informative, it is not generalizable to all declarations as it does not represent the general population of disasters. Finally, to assess the reliability of FEMA’s estimate data, we reviewed the data FEMA officials provided and discussed data quality control procedures with them. We determined that the data were sufficiently reliable for purposes of this report.

To address the third question of how FEMA has improved its management of disaster-related resources and identify other opportunities for improvement, we reviewed available policies, procedures, and training materials for staff involved in developing disaster cost estimates or the management of disaster-related resources. In addition, we reviewed our earlier work that identified areas for improvement and discussed FEMA’s related management issues with DHS’s Deputy Inspector General for Disaster Assistance Oversight. We interviewed staff in FEMA’s Office of the Chief Financial Officer and OMB to learn more about FEMA’s planning for annual and supplemental requests for disaster-related resources. Finally, the work we did to address questions one and two provided valuable insights on other opportunities for FEMA to improve its management of disaster-related resources.

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<sup>16</sup> For budget purposes, FEMA defines a disaster as catastrophic when related federal costs reach or exceed \$500 million.

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## FEMA Uses Various Methods to Develop and Refine Cost Estimates Depending on Program Requirements

Once a major disaster has been declared, FEMA staff deployed to the joint field office, along with state and local officials and other relevant parties (e.g., private nonprofit organizations, other federal agencies, etc.), develop and refine cost estimates for each type of assistance authorized in the disaster declaration. According to FEMA officials, these estimates build upon and refine those contained in the preliminary damage assessment. They said that the estimates contained in the preliminary damage assessment are “rough” and are used primarily to ensure that the damage is of a severity and magnitude that the state requires federal assistance.

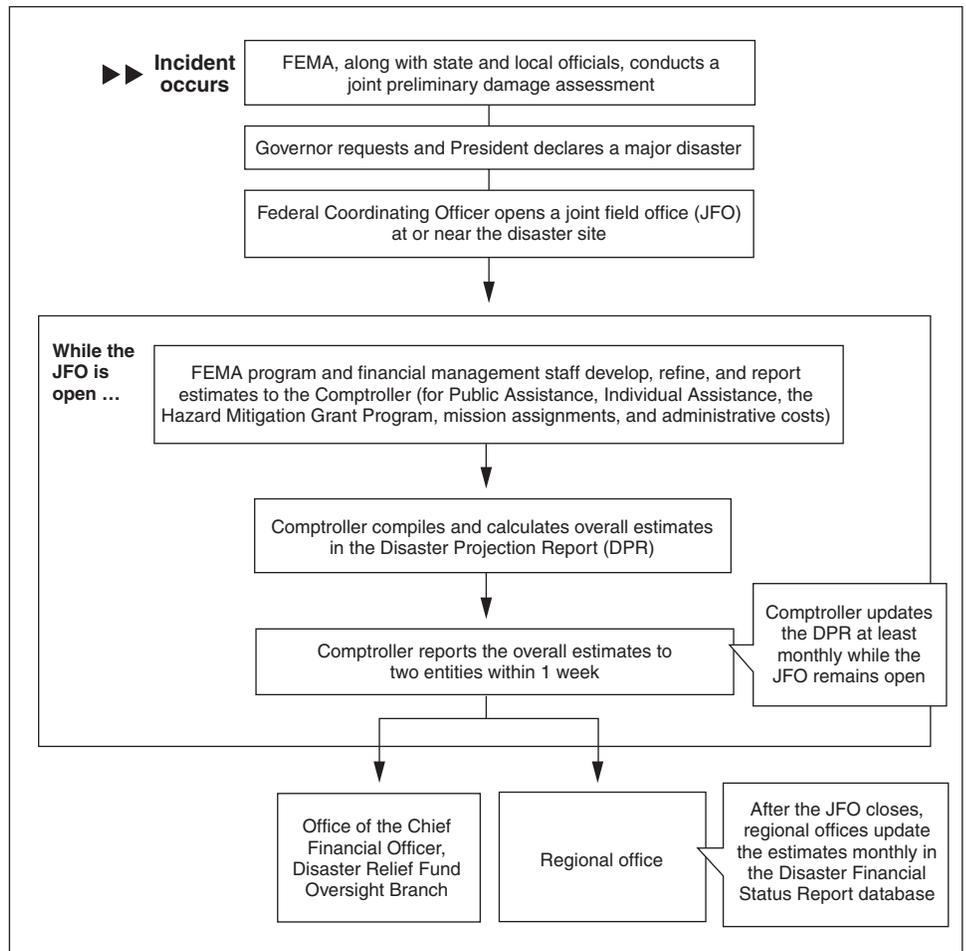
FEMA officials said that while the joint field office is open FEMA program and financial management staff work on a continuing basis to refine these estimates.<sup>17</sup> Staff provide these estimates to a disaster comptroller, who enters them into the Disaster Projection Report (DPR), which compiles and calculates the overall estimate. The disaster comptroller reports the estimates (via the DPR) to both the responsible regional office and the Disaster Relief Fund Oversight Branch within FEMA’s Office of the Chief Financial Officer. The first DPR is provided to these two entities within 1 week of the joint field office opening; updates are reported at least monthly or when large changes occur in the underlying estimates. However, regional office staff only enter updated estimates into the Disaster Financial Status Report (DFSR)—FEMA’s central database for disaster costs—on a monthly basis.

After the joint field office is closed, the responsible regional office updates estimates for the given disaster along with all others within its jurisdiction. Regional office program staff (i.e., staff in Public Assistance, Individual Assistance, and the Hazard Mitigation Grant Program) provide updated estimates for all ongoing declared disasters for monthly DFSR reporting. How this information is entered into the DFSR database varies by region; in some regional offices program staff update the estimates for their programs’ costs (e.g., Public Assistance) directly into DFSR, whereas in other regional offices this function is performed by financial management staff, who collect and enter updated disaster estimate data from the program staff. Figure 1 illustrates FEMA’s disaster cost estimation process.

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<sup>17</sup> According to FEMA officials, the joint field office generally opens within 1 week of the disaster declaration and remains open at the discretion of the federal coordinating officer.

**Figure 1: FEMA’s Disaster Cost Estimation Process**



Source: GAO analysis of information described by FEMA officials.

Note: We did not review whether this process was implemented as described.

## FEMA’s Estimation Processes and Related Costs Are Driven by the Types of Assistance Provided

FEMA’s overall estimate for any given disaster may cover programmatic and administrative costs in up to five different categories, and the methods for developing these underlying estimates vary. The overall cost estimate for any given disaster could include projected costs for Public Assistance, Individual Assistance, and Hazard Mitigation grants, depending on what type of assistance was authorized in the disaster declaration. In addition, the overall estimate may also cover projected costs for mission assignments—FEMA-issued tasks to other federal agencies or components within DHS, known as performing agencies—as well as administrative

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costs associated with operating the joint field office and administering disaster assistance. Our review focused on FEMA's policies and procedures for developing these estimates, as described in related documents and by FEMA officials; we did not review whether these processes were implemented as described.<sup>18</sup>

*Public Assistance* officials said that initial estimates for their program are prepared by category of work and then refined for specific projects. Working with potential applicants following a disaster, program staff will develop overall estimates for Public Assistance costs for each category of emergency and permanent work, as authorized. Costs for Public Assistance are shared between the federal and state governments. The minimum federal share is 75 percent; the President can increase it to 90 percent when a disaster is so extraordinary that it meets or exceeds certain per capita disaster costs, and to 100 percent for emergency work in the initial days after the disaster irrespective of the per capita cost. Later, the overall estimate is refined to reflect the estimates for individual projects. The Public Assistance program uses many methods to develop these estimates. Common methods include time and materials estimates and competitively bid contracts. Public Assistance officials told us that they rely heavily on the applicants' (state government agencies, local governments, etc.) prior experience and historical knowledge of costs for similar projects. For small projects (those estimated to cost less than \$59,700 in fiscal year 2007, adjusted annually), applicants can develop the estimates themselves—FEMA later validates their accuracy through a sample—or they can ask FEMA to develop the estimates. According to a senior Public Assistance official, most applicants choose the latter option. For large projects (estimated to cost more than \$59,700 in fiscal year 2007, adjusted annually), Public Assistance staff are responsible for working with applicants to develop project worksheets, which include cost estimates.

According to senior program officials, *Individual Assistance* cost estimates depend on individuals' needs. Using demographic, historical, and other data specific to the affected area, as well as a national average of costs, Individual Assistance staff project program costs. Depending on the type of Individual Assistance provided, estimates are refined as

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<sup>18</sup> At the request of the Senate Committee on Homeland Security and Governmental Affairs, we are reviewing the implementation of permanent work in the Public Assistance program in the Gulf Coast.

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individuals register and qualify for certain types of assistance or as FEMA and the state negotiate and agree upon costs. For housing and other needs assistance—such as disaster-related medical, dental, and funeral costs—estimates are based on the number of registrations FEMA receives, the rate at which registrants are found eligible for assistance, and the type and amount of assistance for which they qualify. For fiscal year 2007, federal costs for housing assistance were limited to \$28,600 per individual or household. This amount is adjusted annually. Other needs assistance is a cost-share program between the federal and state governments with the federal share set at 75 percent of costs. Disaster unemployment assistance is provided to those unemployed because of the disaster and not otherwise covered by regular unemployment insurance programs. The amount provided is based on state law for unemployment insurance in the state where the disaster occurred. The state identifies any need for crisis counseling services and FEMA works with the state mental health agency to develop the estimate for that. Individual Assistance officials also told us that although they set aside \$5,000 for legal services FEMA is rarely billed for these services.

*Hazard Mitigation Grant Program* costs are formulaic and based on a sliding scale. If a grantee (state or Indian tribal government) has a standard mitigation plan, the amount FEMA provides to the grantee is a statutorily set percentage of the estimated total amount provided under the major assistance programs. This percentage ranges from 7.5 to 15 percent<sup>19</sup> and is inversely related to the total; that is, when overall assistance estimates are higher, the percentage available for Hazard Mitigation grants decreases. Costs for Hazard Mitigation grants are shared among the federal government, grantees, and applicants (e.g., local governments), with a federal share of up to 75 percent of the grant estimate.<sup>20</sup> FEMA calculates and provides an estimate of Hazard Mitigation funding to grantees 3, 6, and 12 months after a disaster declaration. The 6-

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<sup>19</sup> For states with enhanced state mitigation plans, the percentage is set at 20 percent regardless of total costs. Enhanced state mitigation plans contain all elements of the standard plan and document (1) that the plan is integrated to the extent practicable with other state and/or regional planning initiatives; (2) the state's project implementation capability; (3) the state's effective use of existing mitigation programs to achieve its mitigation goals; and (4) the state's commitment to a comprehensive mitigation program. As of December 10, 2007, six states—Maryland, Ohio, Oklahoma, Oregon, Virginia, and Wisconsin—had approved enhanced state mitigation plans. Two additional states (Iowa and Washington) had such plans under review but FEMA had not yet approved them.

<sup>20</sup> Although typically 75 percent, the state may choose to request funding for specific activities with a federal share less than 75 percent.

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month figure is a guaranteed minimum.<sup>21</sup> At 12 months FEMA “locks in” the amount of the 12-month estimate unless the 6-month minimum is greater.

Cost estimates for *mission assignments* are developed jointly by FEMA staff and the performing agencies. Among the information included in a mission assignment are a description of work to be performed, a completion date for the work, an estimate of the dollar amount of the work to be performed, and authorizing signatures. Mission assignments may be issued for a variety of tasks, such as search and rescue missions or debris removal, depending on the performing agencies’ areas of expertise. The signed mission assignment document provides the basis for obligating FEMA’s funds. When federal agencies are tasked with directly providing emergency work and debris removal—known as direct federal assistance mission assignments—costs are shared in the same manner as Public Assistance grants.<sup>22</sup>

Estimates for FEMA’s *administrative costs* are developed by financial management staff in the joint field office. These costs are based on several factors including the number of staff deployed, salary costs, rent for office space, and travel expenses.

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## Time Needed to Predict Disaster Costs and Data Reliability Issues Hamper Decision Making

Although estimates developed in the immediate aftermath of a major disaster are necessarily based on preliminary damage assessments, decision makers need accurate cost information in order to make informed budget choices. FEMA officials told us that by 3 months after a declaration the overall estimate of costs related to any given noncatastrophic natural disaster is usually reasonable, that is, within 10 percent of actual costs. However, as figure 2 illustrates, our analysis of the 83 noncatastrophic natural disaster declarations with actual or close to actual costs shows that on average 3-month estimates were within 23 percent of actual costs and the median difference was around 14 percent. Although the average (mean) difference did not achieve the 10 percent

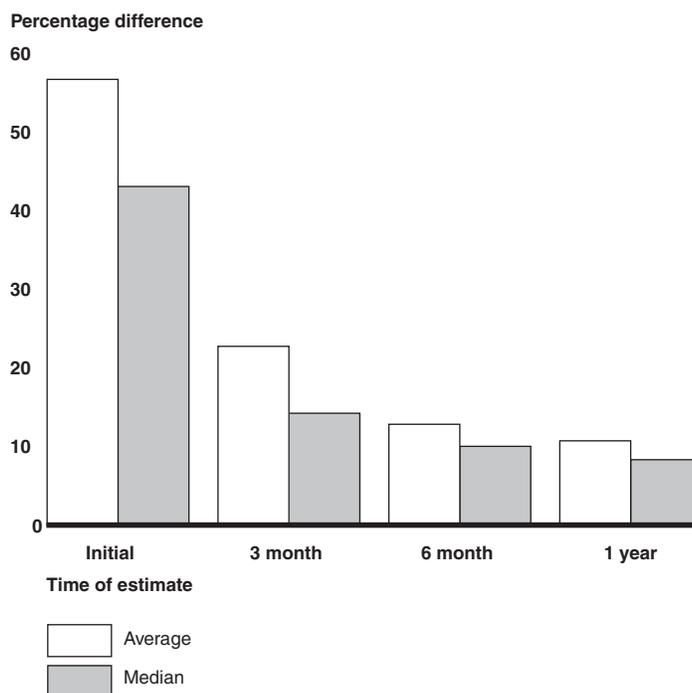
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<sup>21</sup> Even if the later estimate is lower, the state receives the amount of the 6-month estimate.

<sup>22</sup> The minimum federal share is 75 percent; the President can increase it to 90 percent when a disaster is so extraordinary that it meets or exceeds certain per capita disaster costs, and to 100 percent for emergency work in the initial days after the disaster irrespective of the per capita cost.

band until approximately 1 year, the median difference reached this band at 6 months.

**Figure 2: Percentage Difference between Estimated and Actual Costs for 83 Noncatastrophic Natural Disasters from 2000 through 2004**



Source: GAO analysis of data from FEMA's Disaster Financial Status Report database, as of June 30, 2007.

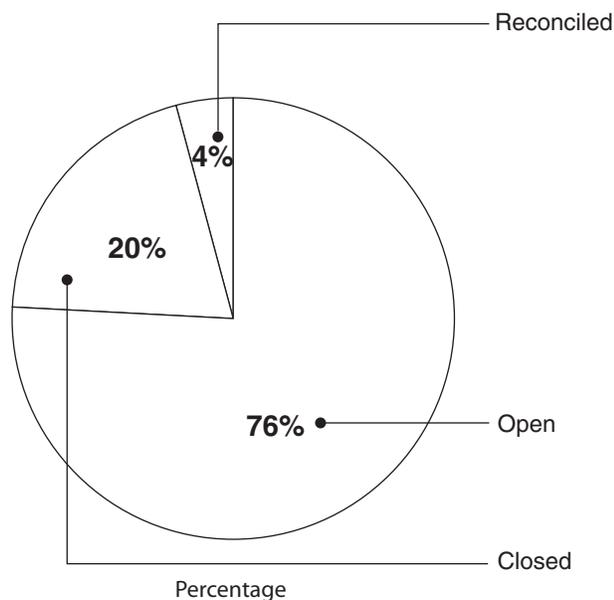
Note: This figure covers noncatastrophic natural disaster declarations for which all financial decisions have been made. At the time of our review none of the disasters declared in 2005 or 2006 met this criterion. Because individual estimates were either greater or less than actual costs, we used absolute value to treat them the same in calculating the average difference between the two.

These results, however, cannot be generalized to disaster declarations for which all financial decisions have not been made since we were only able to compare estimates to actual costs for about one-quarter of the noncatastrophic natural disasters declared from 2000 through 2006. From 2000 through 2006, there were 347 noncatastrophic natural disasters. As of June 30, 2007, 83 of these (approximately 24 percent) had actual or near actual costs to which we could compare estimates, as figure 3 illustrates. Fourteen disasters were “reconciled,” meaning that all projects were completed and the FEMA-State Agreement was closed and 69 disasters were “closed,” meaning that financial decisions had been made but all projects were not completed. The rest of the disasters (264) were

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“programmatically open,” meaning financial decisions were not completed, eligible work remains, and estimates are subject to change. According to FEMA officials, it takes 4 to 5 years to complete all work for an “average” disaster. Time frames for the underlying assistance programs vary. For example, according to a FEMA official, Individual Assistance takes approximately 18 months and Public Assistance 3 years to complete all work. Projects using Hazard Mitigation grants are expected to last 4 years although they can be extended to 6 years.

**Figure 3: Status of Noncatastrophic Natural Disaster Declarations from 2000 through 2006 (N=347)**



Source: GAO analysis of FEMA's Disaster Financial Status Report data, as of June 30, 2007.

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### Data Reliability Issues Hamper Decision Makers' Ability to Learn from Past Disasters

Accurate data permits decision makers to learn from previous experience—both in terms of estimating likely costs to the federal government and in managing disaster assistance programs. However, the way FEMA records disaster information, specifically the way in which it codes the disaster that occurred, inhibits rather than facilitates this learning process. The combination of a single-code limit to describe disasters, inconsistent coding of disasters with similar descriptions, and overlapping codes means that the data are not easily used to inform estimates and other analyses. Such issues mean that we could not

compare estimated and actual costs by type of disaster. Moreover, they limit FEMA’s ability to learn from past disasters.

Every disaster declaration is coded with an incident type to identify the nature of the disaster (e.g., earthquake, wildfire, etc.). As shown in table 1, there are 27 different incident codes in the DFSSR database. We found problems with these data. First, the coding of incident type did not always match the description of the disaster. For example, 31 declarations are coded as tsunamis, but many of these are described—and should be coded—as something else. Second, each disaster declaration can be coded with only one incident type even though most descriptions list multiple types of incidents. We found declarations with similar descriptions coded differently—FEMA has no guidance on how to select the incident type code to be used from among the types of damage. For example, a number of declarations are described as “severe storms and flooding” or “severe storms, flooding, and tornadoes,” but sometimes these were coded as flooding, other times as severe storms, and still other times as tornadoes.

**Table 1: FEMA’s Incident Type Codes**

Code	Description	Code	Description	Code	Description
0	Not Applicable	I	Terrorist	R	Fire
A	Tsunami	J	Typhoon	S	Snow
B	Biological	K	Dam/Levee Break	T	Tornado
C	Coastal Storm	L	Chemical	U	Civil Unrest
D	Drought	M	Mud/Landslide	V	Volcano
E	Earthquake	N	Nuclear	W	Severe Storm(s)
F	Flood	O	Severe Ice Storm	X	Toxic Substances
G	Freezing	P	Fishing Losses	Y	Human Cause
H	Hurricane	Q	Crop Losses	Z	Other

Source: FEMA Incident Type Code list dated April 24, 2007.

Note: Although our review focuses on natural disasters, this table illustrates all of FEMA’s incident codes, including those for man-made disasters.

Any coding system should be designed for the purpose it must serve. From the point of view of looking at the cause of damage (e.g., water, wind, etc.), many of the 27 incident codes track weather events but do not necessarily capture or elaborate on the type of information relevant to FEMA’s mission of providing disaster assistance. Moreover, they are not all mutually exclusive and thus some codes could be consolidated or eliminated. For example, coastal storms (C), hurricanes (H), and typhoons

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(J) might all be seen as describing similar events and therefore could be seen as candidates for consolidation.

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## FEMA Has Taken Steps to Learn from Past Disasters and Improve Its Management of Disaster-Related Resources but Further Opportunities Exist

FEMA officials identified several ways in which FEMA takes past experience into account and uses historical data to inform its cost estimation processes for any given disaster. For example, Individual Assistance officials told us that they use demographic data (such as population size and average household income) and a national average of program costs to predict average costs for expected applicants. Furthermore, based on past experience, Individual Assistance officials adjust cost estimates for different points in time during the 60-day registration period. Individuals with greater need tend to apply within the first 30 days of the registration period, according to Individual Assistance officials. This is usually followed by a lull in registrations, then an increase in registrations prior to the close of the registration period. The Public Assistance program has compiled a list of average costs for materials and equipment, which is adjusted for geographic area. As noted earlier, the Public Assistance program also relies heavily on the past experience and historical knowledge of its applicants for the costs of similar projects.

Staff within FEMA's Office of the Chief Financial Officer also contribute to FEMA's learning from past disasters. For example, in collecting and compiling estimates at the joint field office, the disaster comptroller may question certain estimated costs based on his or her past experience with similar disasters. Similarly, once these estimates are reported to the Disaster Relief Fund Oversight Branch, staff there will review the DPR and, based on their knowledge of and experience with past disasters, may question certain estimates and compare them to similar past disasters. Office of the Chief Financial Officer staff also have worked with others throughout FEMA to develop a model to predict costs for category 3 or higher hurricanes prior to and during landfall. Among other types of data, the model uses historical costs from comparable hurricanes to predict costs. Although the model is finished, it has not been fully tested; no category 3 or higher hurricanes have made landfall in the United States since it was developed.

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## FEMA Has Taken Steps to Improve Its Management of Disaster-Related Resources

FEMA has taken several steps to improve its management of disaster-related resources. In the past few years, FEMA has undertaken efforts to professionalize and expand the responsibilities of its disaster comptroller cadre. For example, FEMA has developed and updated credentialing plans since 2002 in an attempt to ensure that comptrollers are properly trained.

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The agency has also combined the Disaster Comptroller and Finance/Administration Section Chief into one position to better manage financial activities at the joint field office. The Office of the Chief Financial Officer introduced the DPR—developed by the Disaster Relief Fund Oversight Branch—as a tool for comptrollers to standardize the formulation and reporting of disaster cost projections. At the time of our review, FEMA was converting six disaster comptrollers from temporary to permanent positions. Officials told us that they plan to place two comptrollers in headquarters to assist with operations in the Office of the Chief Financial Officer, and four in regional offices to provide a “CFO presence” and to have experienced comptrollers on hand to assist with disasters.

FEMA has also taken steps to better prepare for disasters. According to FEMA officials, the agency is focusing on “leaning forward”—ensuring that it is in a state of readiness prior to, during, and immediately following a disaster. For example, FEMA officials told us that they pre-position supplies in an attempt to get needed supplies out more quickly during and after a disaster. Similarly, FEMA has negotiated and entered into a number of contingency contracts in an attempt to begin work sooner after a disaster occurs and to potentially save money in the future since costs are prenegotiated.

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### Other Opportunities Exist for FEMA to Learn from Past Experience and Improve Its Management of Disaster-Related Resources

According to FEMA officials, each disaster is unique, and because of this, FEMA “starts from scratch” in developing estimates for each disaster. Although each disaster may be unique, we believe that commonalities exist that would allow FEMA to better predict some costs and have identified a number of opportunities to further its learning and management of resources.

### Opportunities to Learn from Past Experience

FEMA officials told us that a number of factors can lead to changes in FEMA’s disaster cost estimates, some of which are beyond its control. For example, the President may amend the disaster declaration to authorize other types of assistance, revise the federal portion of the cost share for Public Assistance, or cover the addition of more counties. Also, hidden damage might be discovered, which would increase cost estimates. Fluctuations in estimates also may occur with events such as the determination of insurance coverage for individuals and public structures or higher-than-estimated bids to complete large projects (Public

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Assistance). Changes in the state or local government housing assistance strategies can also drive changes in costs.

However, that these are beyond FEMA's control does not mean FEMA has no way to improve its estimates. FEMA could conduct sensitivity analyses to understand the marginal effects of different cost drivers, such as the addition of counties to a declaration, revisions to the cost share, or the determination of insurance coverage, and to provide a range for the uncertainty created by these factors. We recently reported that as a best practice sensitivity analysis should be used in all cost estimates because all estimates have some uncertainty.<sup>23</sup> Using its experiences from prior disasters, FEMA could analyze the underlying causes of changes in estimates. This could help FEMA develop and provide to policymakers an earlier and more realistic range around its point estimate.

In addition, there are other areas where FEMA has greater control. FEMA could review the effect its own processes have on fluctuations in its disaster cost estimates and take actions to better mitigate these factors. For example, FEMA officials told us that mission assignments are generally overestimated but these are not corrected until the performing agencies bill FEMA. We previously reported that when FEMA tasks another federal agency with a mission assignment, FEMA records the entire amount up front as an obligation, but does not adjust this amount until it has received the bill from the performing agency, reviewed it, and recorded the expenditure in its accounting system.<sup>24</sup> The performing agency might not bill FEMA until months after it actually performs the work. If upon reviewing supporting reimbursement documentation FEMA officials determine that some amounts are incorrect or unsupported, FEMA may retrieve or "charge back" the moneys from the agencies. In these instances, agencies may also take additional time to gather and provide additional supporting documentation. We made several recommendations aimed at improving FEMA's mission assignment process and FEMA officials told us that they are reviewing the management of mission assignments.

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<sup>23</sup> GAO, *Cost Assessment Guide: Best Practices for Estimating and Managing Program Costs (Exposure Draft)*, [GAO-07-1134SP](#) (Washington, D.C.: July 2007).

<sup>24</sup> GAO, *Disaster Relief: Governmentwide Framework Needed to Collect and Consolidate Information to Report on Billions in Federal Funding for the 2005 Gulf Coast Hurricanes*, [GAO-06-834](#) (Washington, D.C.: Sept. 6, 2006).

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One official posited that overestimates of mission assignments could have caused the overall estimates to take longer than expected to reach the 10 percent band FEMA officials defined as a reasonable predictor of actual costs. If a review of the mission assignment process shows this to be the case, FEMA should take steps—such as working with performing agencies to develop more realistic mission assignment estimates up front and ensuring that these agencies provide FEMA with bills supported by proper documentation in a timely manner—to improve this process and lessen its effect on the overall estimates. If, however, the overestimation of mission assignments is not driving these changes, FEMA should focus on identifying what is and take appropriate actions to mitigate it. Another area that could warrant review is the determination of eligible costs for Public Assistance. For example, after Public Assistance projects are completed, FEMA sometimes adjusts costs during reconciliation to disallow ineligible costs or determine that other costs are eligible. Focusing on this issue earlier in the process might lead to a more accurate determination of costs eligible for reimbursement and so improve projections.

FEMA could also expand its efforts to better consider past experience in developing estimates for new disasters. For example, in tracking incident types, FEMA could improve both the accuracy and the usefulness of the data for its analytic and predictive purposes. A review and revision of incident type codes to reflect the cause(s) of damage would tie the data and coding to their purposes. This could permit making comparisons among similar disasters to better inform and enhance both cost estimates and decision making. Also, FEMA could ensure that for past declarations in the DFSR database, as well as for future declarations, incident codes match the related descriptions and are consistently entered. This effort could be aided by revising the DFSR database to allow for multiple incident types for each declaration to better reflect what occurred. Other opportunities may also exist for the assistance programs. For example, in predicting costs for the Individual Assistance program, the usefulness of a national average should be examined. The substitution or addition of more geographically specific indicators might better predict applicant costs.

In some ways, FEMA recognizes the value of using past experience to inform current estimates. For example, it draws upon the experience of its disaster comptrollers and staff in the Disaster Relief Fund Oversight Branch to question estimated costs. In addition, the aforementioned model to predict hurricane costs shows that FEMA recognizes that similar disasters may lead to similar costs, which can be analyzed and applied to better predict costs. According to FEMA officials, they are considering

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expanding the model to predict costs from other potentially catastrophic disasters, such as earthquakes. In the same vein, we believe that FEMA could expand upon this effort to better predict costs for other types of disasters, particularly those that are noncatastrophic and recur more frequently.

FEMA's opportunities to learn from past experience, especially from its disaster cost data, could be hampered by some costs that are no longer distributed to individual disaster declarations. FEMA officials told us that they use a "surge account" to support federal mobilization, deployment, and preliminary damage assessment activities prior to a disaster declaration. FEMA records subsequent costs by declaration. In the past these surge account costs were distributed on a proportional basis to each disaster declared in the year—so the data for the 83 disaster declarations we were able to review do include these costs. However, FEMA no longer does this. FEMA officials told us that they determined that there was no obvious benefit to distributing surge account costs to subsequent declarations, especially in potential hurricane events that might result in multiple declarations. We note that costs in the surge account have increased significantly in recent years. For fiscal years 2000 through 2003, annual obligations in the surge account were less than \$20 million each year; after 2004 they increased to over \$100 million each year, according to FEMA data as of June 30, 2007.<sup>25</sup> In fact by that date surge account costs for fiscal year 2007—three-quarters through the fiscal year—had already reached \$350 million. No longer distributing these costs to disasters poses an analytical challenge for FEMA's learning as costs for current and future disasters are not comparable to those that occurred in the past.

## Opportunities to Improve Management of Disaster-Related Resources

To improve data reliability, FEMA could also develop standard operating procedures and training for staff entering and maintaining disaster estimate data in the DFSR database. In a recent review of FEMA's day-to-day operations we found that it does not have a coordinated or strategic approach to training and development programs.<sup>26</sup> Further, FEMA officials described succession planning as nonexistent and several cited it as the agency's weakest link. We have previously reported that succession planning—a process by which organizations identify, develop, and select

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<sup>25</sup> According to FEMA officials, the increase in surge account costs after 2004 was due to four major hurricanes in 2004 and three major hurricanes in 2005. However, it is unclear what led to the increases in 2006 and 2007.

<sup>26</sup> [GAO-07-139](#).

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their people to ensure an ongoing supply of successors who are the right people, with the right skills, at the right time for leadership and other key positions—is especially important for organizations that are undergoing change.<sup>27</sup> Like the rest of the government, FEMA faces the possibility of losing a significant percentage of staff—especially at the managerial and leadership levels—to retirement. About a third of FEMA’s Senior Executive Service and GS-15 leaders were eligible to retire in fiscal year 2005, and Office of Personnel Management data project that this percentage will increase to over half by the end of fiscal year 2010. Since FEMA relies heavily on the experience of its staff, such a loss could significantly affect its operations. Furthermore, according to FEMA officials with whom we met, there are no standard operating procedures or training courses for staff who are involved in entering and maintaining disaster cost estimate data in the DFSSR database that would help mitigate this loss of knowledge and ensure consistency among staff in regional offices and in headquarters. Standard operating procedures also might reduce the coding errors described earlier.

FEMA may be able to improve its management of disaster-related resources by reviewing the reasons why “older” disaster declarations remain open and take action to close and reconcile them if possible. By finalizing decisions about how much funding is actually needed to complete work for these open declarations, FEMA will be better able to target its remaining resources. FEMA officials told us that it takes 4 to 5 years to obligate all funding related to an average disaster declaration but we found the average life cycle to be longer—a majority of the noncatastrophic natural disasters declared from 2000 through 2002 (5 to 7 years old) are still open (see table 2).

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<sup>27</sup> GAO, *Human Capital: Succession Planning and Management Is Critical Driver of Organizational Transformation*, [GAO-04-127T](#) (Washington, D.C.: Oct. 1, 2003).

**Table 2: Status of Noncatastrophic Natural Disaster Declarations by Calendar Year**

Year	Total	Open	Closed/reconciled
2000	44	18	26
2001	42	22	20
2002	49	32	17
2003	56	39	17
2004	62	59	3
2005	42	42	0
2006	52	52	0
<b>Total</b>	<b>347</b>	<b>264</b>	<b>83</b>

Source: GAO analysis of FEMA's Disaster Financial Status report data as of June 30, 2007.

We previously reported that in November 1997, FEMA's Director chartered three teams of Office of Financial Management staff—referred to as closeout teams—to assist FEMA regional staff and state emergency management personnel in closing out funding activities for all past disasters.<sup>28</sup> Their primary goal was to eliminate remaining costs for these disasters by obligating or recovering funds. We found that these teams were effective in doing so. According to FEMA officials, the closeout teams no longer formally exist because they had successfully closed out funding activities for past disasters. FEMA now relies on regional offices to perform this function, and several use teams similar to the closeout teams to undertake this work.

Given its mission, FEMA tends to focus much of its resources on disaster response and recovery. For example, as we previously reported, all FEMA employees are expected to be on call during disaster response and no FEMA personnel are exclusively assigned to its day-to-day operations.<sup>29</sup> Indeed, FEMA officials have said that what FEMA staff label “nondisaster” programs are maintained on an ad hoc basis when permanent staff are deployed, and the agency does not have provisions for continuing programs when program managers are called to response duties. Without an understanding of who holds a mission-critical position for day-to-day operations and what minimum level of staffing is necessary even during disaster response, business continuity and support for the disaster-relief

<sup>28</sup> GAO, *Disaster Relief Fund: FEMA's Estimates of Funding Requirements Can Be Improved*, [GAO/RCED-00-182](#) (Washington, D.C.: Aug. 29, 2000).

<sup>29</sup> [GAO-07-139](#).

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## Opportunities to Improve Budgeting for Disaster Relief

mission are put at increased risk. FEMA staff's strong sense of mission is no substitute for a plan and strategies of action. It is likely, therefore, that the tasks necessary to close disasters become subordinated to responding to new disasters. This contributes to a situation in which disaster declarations remain open for a number of years. However, closing and reconciling declarations is not merely a bookkeeping exercise. Given the multiple claims on federal resources, it is important to provide decision makers with the best information possible about current and pending claims on those resources.

FEMA's annual budget requests and appropriations for disaster relief are understated because they exclude certain costs. Currently, annual budget estimates are based on a 5-year historical average of obligations, excluding costs associated with catastrophic disaster declarations (i.e., those greater than \$500 million).<sup>30</sup> This average—which serves as a proxy for an estimate of resources that will be needed for the upcoming year—presumes to capture all projected costs expected not only from future disasters but also those previously declared. However, as demonstrated by FEMA's receipt of supplemental appropriations in years when no catastrophic disasters occurred, it does not do so. Excluding certain costs associated with previously declared catastrophic disasters results in an underestimation of annual disaster relief costs for two reasons. First, because FEMA finances disaster relief activities from only one account—regardless of the severity of the disaster—the 5-year average as currently calculated is not sufficient to cover known costs from past catastrophic disasters. Second, from fiscal years 2000 through 2006, catastrophic disasters occurred in 4 out of 7 years, raising questions about the relative infrequency of such events. Excluding costs from catastrophic disasters in annual funding estimates prevents decision makers from receiving a comprehensive view of overall funding claims and trade-offs. This is particularly important given the tight resource constraints facing our nation. Therefore, annual budget requests for disaster relief may be improved by including known costs from previous disasters and some costs associated with catastrophic disasters.

Funding for natural disasters is not the only area where a reexamination of the distribution between funding through regular appropriations and funding through supplemental appropriations might be in order. In our

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<sup>30</sup> Costs associated with catastrophic disaster declarations are excluded because they are considered relatively infrequent and not necessarily representative of future costs.

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work on funding the Global War on Terrorism (GWOT), we also noted that the line between what is funded through regular, annual appropriations and supplemental appropriations has become blurred.<sup>31</sup> The Department of Defense’s GWOT funding guidance has resulted in billions of dollars being added for what DOD calls the “longer war against terror,” making it difficult to distinguish between base costs and the incremental costs to support specific contingency operations.

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## Conclusions

Given FEMA’s mission to lead the nation in mitigating, responding to, and recovering from major domestic disasters, many individuals as well as state and local governments rely on the disaster assistance it provides. The cost estimates FEMA develops in response to a disaster have an effect not only on the assistance provided to those affected by the disaster but also on federal decision makers, as supplemental appropriations will likely be needed. As such, it is imperative for FEMA to develop accurate cost estimates in a timely manner to inform decision making, enhance trade-off decisions, and increase the transparency of these federal commitments.

We were able to identify ways in which FEMA has learned from past disasters; however a number of opportunities exist for FEMA to continue this learning and to improve its cost estimation process. For example, FEMA could better ensure that incident codes are useful and accurate. In addition, a number of factors can lead to revisions in its estimates but FEMA can mitigate these factors by conducting sensitivity analyses and reviewing its estimation processes to identify where improvements could be made. To further facilitate learning, FEMA needs to better ensure that it has timely and accurate data from past disasters and this report suggests several ways in which FEMA could do so. FEMA can also explore refining its learning, for example, by using geographically specific averages to complement the national averages it uses. In addition, to facilitate analysis by making current disaster cost data comparable to past disaster data, FEMA could resume distribution of surge account costs to disasters, as appropriate.

FEMA has also taken steps to improve its management of disaster-related resources, such as “leaning forward,” professionalizing and expanding the

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<sup>31</sup> GAO, *Global War on Terrorism: DOD Needs to Take Action to Encourage Fiscal Discipline and Optimize the Use of Tools Intended to Improve GWOT Cost Reporting*, [GAO-08-68](#) (Washington, D.C.: Nov. 6, 2007).

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responsibilities of its disaster comptroller cadre, and developing a model to predict costs for category 3 or higher hurricanes prior to and during landfall. However, additional steps would further improve how FEMA manages its resources. For example, to improve data reliability FEMA could develop standard operating procedures and training for staff entering and maintaining disaster estimate data in the DFSR database. Also, although FEMA officials told us that it takes 4 to 5 years to finish all work related to an average disaster, our analysis of FEMA's data shows that a majority of disasters declared from 2000 through 2002 were still open—that is they had work ongoing—during our review. In the past FEMA formed teams to review these “older” disasters, which resulted in the elimination of remaining costs for these disasters by obligating or recovering funds. A similar effort today could have the same effect. Also, FEMA relies on supplemental appropriations both to cover the costs of providing assistance for new disasters and known costs from past disasters. To promote transparency in the budget process and to better inform decision making, annual budget requests for disaster relief should cover these known costs, including some from catastrophic disasters.

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## Recommendations for Executive Action

To better mitigate the effect of factors both beyond and within FEMA's control to improve the information provided to decision makers; to better inform future estimates, including the ability to incorporate past experience in those estimates; and to improve the management of FEMA's disaster-related resources, the Secretary of Homeland Security should instruct FEMA's Administrator to take the following nine actions:

- Conduct sensitivity analyses to determine the marginal effects of key cost drivers to provide a range for the uncertainty created by factors beyond FEMA's control.
- Review the effect FEMA's own processes have on fluctuations in disaster cost estimates and take steps to limit the impact they have on estimates.
- Review the reasons why it takes 6 months or more for estimates to reasonably predict actual costs and focus on improving them to shorten the time frame.
- Undertake efforts—similar to those FEMA used to develop its model to predict hurricane costs—to better predict costs for other types of disasters, informed by historical costs and other data.
- Evaluate the benefits of using geographically specific averages in addition to national averages to better project Individual Assistance costs.
- Resume the distribution of surge account costs to individual disasters, as appropriate, to make cost data from past, current, and future disasters comparable.

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- Review and revise incident coding types to ensure that they are accurate and useful for learning from past experience. At a minimum, incident codes should match the descriptions and be consistently entered and reflect what occurred, which may require permitting multiple incident types for each declaration.
  - Develop training and standard operating procedures for all staff entering incident type and cost information into the DFSSR database.
  - Review reasons why “older” disasters remain open and take action to close/reconcile them if possible.

To promote a more informed debate about budget priorities and trade-offs, the Secretary of Homeland Security also should instruct FEMA’s Administrator to work with OMB and Congress to provide more complete information on known costs from prior disasters and costs associated with catastrophic disasters as part of the annual budget request.

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## Agency Comments

We requested comments on a draft of this report from the Secretary of Homeland Security. In its comments, DHS generally agreed with eight of our ten recommendations. It stated it would take our recommendation to conduct sensitivity analyses to determine the marginal effects of key cost drivers under advisement and did not comment on our recommendation that it work with OMB and Congress to provide more complete information as a part of its annual budget requests. FEMA also provided technical comments, which we have incorporated as appropriate.

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We are sending copies of this report to the Director of OMB, the Secretary of Homeland Security, the Administrator of FEMA, and interested congressional committees. We will also make copies available to others upon request. In addition, the report will be available at no charge on GAO’s Web site at <http://www.gao.gov>.

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If you or your staff have any questions about this report please contact me at (202) 512-9142 or [irvings@gao.gov](mailto:irvings@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who contributed to this report are acknowledged in appendix I.



Susan J. Irving  
Director for Federal Budget Analysis  
Strategic Issues

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# Appendix I: GAO Contact and Staff Acknowledgments

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## GAO Contact

Susan J. Irving, (202) 512-9142

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## Acknowledgments

In addition to the individual listed above, Carol Henn, Assistant Director; Benjamin T. Licht; and Kisha Clark made significant contributions to this report. Pedro Briones, John Brooks, Stanley Czerwinski, Peter Del Toro, Carlos Diz, Gabrielle Fagan, Chelsa Gurkin, Elizabeth Hosler, William Jenkins, Casey Keplinger, Tracey King, Latesha Love, James McTigue, Jr., Tiffany Mostert, John Vocino, Katherine Hudson Walker, Greg Wilmoth, and Robert Yetvin also made key contributions to this report.

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