



February 2021

DISASTER RESILIENCE

FEMA Should Take Additional Steps to Streamline Hazard Mitigation Grants and Assess Program Effects

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DISASTER RESILIENCE

FEMA Should Take Additional Steps to Streamline Hazard Mitigation Grants and Assess Program Effects

Why GAO Did This Study

The rising number of natural disasters and increasing reliance on federal assistance are key sources of federal fiscal exposure. FEMA has four grant programs to increase disaster resilience through hazard mitigation projects.

The Additional Supplemental Appropriations for Disaster Relief Act, 2019, included a provision for GAO to review the federal response to disasters in 2018. This report addresses 1) FEMA's use of grants to support hazard mitigation; 2) challenges reported by selected jurisdictions applying for grants; and 3) how FEMA has assessed the effects of its hazard mitigation projects and shared the results.

GAO analyzed FEMA's grant data for fiscal years 2010 through 2018 to capture the most complete recent data, conducted nongeneralizable site visits with 12 state and local jurisdictions selected to capture a range of grant funding levels and hazards, reviewed FEMA grant documents, and interviewed FEMA mitigation officials.

What GAO Recommends

GAO is making six recommendations, including that FEMA develop a plan to assess and streamline its hazard mitigation grant programs, create a centralized inventory of related resources, develop a plan to conduct more loss avoidance studies, and share state studies on hazard mitigation effectiveness. The Department of Homeland Security concurred with our recommendations.

View [GAO-21-140](#). For more information, contact Chris Currie at (404) 679-1875 or CurrieC@gao.gov

What GAO Found

From fiscal years 2010 through 2018, the Federal Emergency Management Agency (FEMA) obligated over \$11 billion through four grant programs that fund state and local hazard mitigation efforts. FEMA awarded about 88 percent of this amount through the two grant programs that fund hazard mitigation post-disaster.

State and local officials from selected jurisdictions reported challenges with FEMA's hazard mitigation grant programs. Specifically, officials GAO interviewed from 10 of the 12 jurisdictions said grant application processes were complex and lengthy. To address this, FEMA officials augmented guidance and began monitoring application review time frames for one program and said they intend to assess two other programs to identify opportunities to streamline. However, they did not have a documented plan for doing so. By developing and implementing a plan to identify ways to streamline applications and reviews for all four programs, FEMA could reduce barriers to investments in hazard mitigation. Officials from eight of the 12 jurisdictions also cited challenges with applicants' technical capacity to successfully apply for grants. To address this, FEMA developed training and guidance, but GAO found that these resources are listed on different parts of its website and can be difficult for state and local officials to locate. Creating a centralized inventory of resources could improve applicant capacity to successfully develop mitigation projects and apply for grants.

Examples of Hazard Mitigation Projects



Culvert with a protective headwall that prevents erosion and allows water to pass under a road



Watertight enclosure to prevent floodwater damage



Structure elevation to mitigate flood damage

Source: GAO. | [GAO-21-140](#)

FEMA has assessed some effects of grant-funded hazard mitigation projects, but could expand efforts and better share results. FEMA uses benefit-cost analysis, which estimates the benefits over the life of a project, and post-disaster loss avoidance studies, which estimate project benefits from actual hazard events, to assess project effects. However, the loss avoidance studies have been limited to hurricanes, floods, and tornados, and have not assessed wildfires, winter storms, or other disasters. FEMA officials stated that they would like to expand these studies but do not have specific plans to do so. In addition, FEMA requires some states to assess the effectiveness of their mitigation projects, but does not share these studies. Developing a plan to conduct loss avoidance studies for other hazards and sharing the state studies could help FEMA and stakeholders make better informed mitigation investment decisions.

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Figure 10: FEMA Hazard Mitigation Grant Funding By Grantee,
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Abbreviations

BRIC	Building Resilient Infrastructure and Communities
DHS	Department of Homeland Security
FEMA	Federal Emergency Management Agency
FMA	Flood Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
IAEM	International Association of Emergency Managers
NEMA	National Emergency Management Association
PA	Public Assistance
PDM	Pre-Disaster Mitigation

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February 2, 2021

Chair
Ranking Member
Subcommittee on Homeland Security
Committee on Appropriations
United States Senate

Chair
Ranking Member
Subcommittee on Homeland Security
Committee on Appropriations
House of Representatives

The rising number of natural disasters and increasing reliance on the federal government for assistance is a key source of federal fiscal exposure. Since 2005, federal funding for disaster assistance has totaled at least \$460 billion, which consists of obligations for disaster assistance from 2005 through 2014 totaling about \$278 billion¹ and selected appropriations for disaster assistance from 2015 through 2019 totaling \$183 billion.² These costs are projected to increase as certain extreme weather events become more frequent and intense due to climate change, according to the U.S. Global Change Research Program.³ As a result, we have included “Limiting the Federal Government’s Fiscal Exposure by Better Managing Climate Change Risks” on our list of high risk federal program areas since 2013.⁴

¹See GAO, *Federal Disaster Assistance: Federal Departments and Agencies Obligated at Least \$277.6 Billion during Fiscal Years 2005 through 2014*, [GAO-16-797](#) (Washington, D.C.: Sept. 22, 2016).

²This total also includes \$143 billion in supplemental appropriations to federal agencies for disaster assistance and approximately \$40 billion in annual appropriations to the Disaster Relief Fund for fiscal years 2015 through 2019. It does not include other annual appropriations to federal agencies for disaster assistance.

³The U.S. Global Change Research Program is a research coordinating body that spans 13 federal agencies. See U.S. Global Change Research Program, *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment*, vol. 2 (Washington, D.C.: 2018).

⁴See GAO, *High-Risk Series: Substantial Efforts Needed to Achieve Greater Progress on High-Risk Areas*, [GAO-19-157SP](#) (Washington D.C.: Mar. 6, 2019).

One way to save lives and reduce future risk to people and property from extreme weather events and other natural disasters is to enhance disaster resilience through investment in hazard mitigation projects. For example, we reported that elevating homes and strengthening building codes in Florida prevented greater damages during the 2017 hurricane season.⁵

The Federal Emergency Management Agency (FEMA), a component of the Department of Homeland Security, leads federal responses to natural and manmade disasters, and also serves as the primary source of federal grant funding for state, local, tribal, and territorial investments in hazard mitigation to prevent future damage. Starting in fiscal year 2019, FEMA has set targets to increase investment in mitigation, and set a target to invest \$2.4 billion dollars in hazard mitigation in fiscal year 2021.

In 2015, we reported that state and local officials from areas affected by Hurricane Sandy experienced challenges that hindered their ability to maximize federal funding for hazard mitigation.⁶ We recommended that FEMA assess these challenges and take corrective actions as needed and that a federal interagency group—the Mitigation Framework Leadership Group—establish an investment strategy to identify, prioritize, and guide federal investments in disaster resilience. To address these recommendations, FEMA adopted a new delivery model for one of its programs in December 2017 and the workgroup released the *National Mitigation Investment Strategy* in August 2019. Additionally, in 2019 we issued the *Disaster Resilience Framework*, which serves as a guide for federal action to promote resilience to natural disasters by working toward a common vision and ensuring focus on disaster risk reduction.⁷ The principles of the framework can help identify opportunities to enhance federal efforts in resilience and reduce risk to climate change through integrating strategic resilience goals across all relative national strategies.

⁵GAO, *2017 Hurricanes and Wildfires: Initial Observations on the Federal Response and Key Recovery Challenges*, [GAO-18-472](#) (Washington, D.C.: Sept. 4, 2018).

⁶GAO, *Hurricane Sandy: An Investment Strategy Could Help the Federal Government Enhance National Resilience for Future Disasters*, [GAO-15-515](#) (Washington D.C.: July 30, 2015).

⁷GAO, *Disaster Resilience Framework: Principles for Analyzing Federal Efforts to Facilitate and Promote Resilience to Natural Disasters*, [GAO-20-100SP](#) (Washington, D.C.: Oct. 2019).

The Additional Supplemental Appropriations for Disaster Relief Act, 2019 includes a provision for us to look at the federal response to disasters that occurred in 2018.⁸ This report addresses FEMA's use of hazard mitigation grants from fiscal years 2010 through 2018, including:

1. How FEMA used its grant programs to support investment in hazard mitigation;
2. Challenges selected jurisdictions reported experiencing when applying for FEMA hazard mitigation grants and the extent to which FEMA has addressed these challenges; and
3. How FEMA assessed the effects of its hazard mitigation projects and shared the results.

To address the first objective, we obtained FEMA grant data from fiscal years 2010 through 2018 for FEMA's Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA), Pre-Disaster Mitigation (PDM), and Public Assistance (PA) programs. We selected this time period to capture the most complete recent fiscal years of data within the last 10 years.⁹ We analyzed these data to identify the amount of hazard mitigation funding by grant program, year, and state, territory or federally-recognized tribe. We also analyzed the data by type of mitigation project funded. We assessed the reliability of FEMA's data by testing the data for potential reliability concerns, such as outliers or missing values. We also interviewed FEMA officials with knowledge of the data sets and methods used to produce these data. We determined that the data were sufficiently reliable for the purposes of describing trends in grant funding amounts and project types.

To address the second objective, we obtained perspectives from a nongeneralizable sample of state and local jurisdictions on their experiences using FEMA's HMGP, PDM, FMA, or PA funding to implement hazard mitigation projects. We conducted site visits to four states, Florida, Nebraska, Texas, and Washington, and eight local

⁸Pub. L. No. 116-20, 133 Stat. 871, 892-93.

⁹Because FEMA can continue to obligate and deobligate, meaning cancel or adjust downward an agency's previously incurred obligations, grants for past fiscal year's disasters or grant application cycles in subsequent years, the data represent a snapshot in time and the obligations amounts for these fiscal years may continue to change over time.

jurisdictions within these states.¹⁰ To capture varying perspectives, we selected these states to reflect a range of FEMA mitigation grant funding levels, hazards, and geographic regions. In addition, we included at least one state and local jurisdiction that was affected by a 2018 disaster, at least one state with an enhanced mitigation plan, and both urban and rural local jurisdictions. We also met with the National Emergency Management Association (NEMA) and the International Association of Emergency Managers (IAEM) to obtain additional perspectives on FEMA grants for hazard mitigation and any challenges their members have faced in using these programs. We also reviewed a report on stakeholder feedback on FEMA hazard mitigation grant programs (*Summary of Stakeholder Feedback*).¹¹

We collected and analyzed documentation and interviewed FEMA officials to identify steps FEMA has taken to address grantee challenges. We assessed FEMA's actions using its strategic plan, the federal government's *National Mitigation Investment Strategy*, standards for project management, GAO's *Disaster Resilience Framework*, and *Standards for Internal Control in the Federal Government*.¹² We determined that the control activities component of internal control was significant to this objective, along with the underlying principle that management should design control activities to achieve objectives and respond to risks. We assessed the grant application processes to determine whether they could achieve the programs' objectives. We also determined that the information and communication component of internal control was significant to this objective along with the underlying principle that management should communicate quality information externally to achieve objectives. We assessed FEMA's hazard mitigation guidance to determine whether it conformed to this principle.

To address the third objective, we analyzed FEMA's efforts to measure the effects of the hazard mitigation projects that it funds through HMGP,

¹⁰We did the first three site visit interviews in person and fourth, Nebraska, on the phone because of impacts to government operations related to Coronavirus Disease (COVID-19).

¹¹See FEMA, *Summary of Stakeholder Feedback: Building Resilient Infrastructure and Communities*, (Washington D.C.: Mar. 2020).

¹²See Mitigation Framework Leadership Group, *National Mitigation Investment Strategy*, (August 2019); Project Management Institute, *A Guide to the Project Management Body of Knowledge*, Sixth Edition (Newtown Square, PA: 2017); [GAO-20-100SP](#) (Washington, D.C.: Oct. 2019); and GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#), (Washington, D.C.: Sept. 10, 2014).

PDM, FMA, and PA over the last 10 fiscal years (fiscal years 2010-2019). We selected this period to capture the range of methods FEMA has used to measure effects, some of which are not undertaken every year. We collected and analyzed FEMA loss avoidance studies, mitigation assessment team reports, and relevant performance measures. We also interviewed FEMA officials involved in performance measurement, officials from the selected states and localities, and associations to obtain information on FEMA and others' efforts to assess effects and the value of such efforts. We assessed FEMA's efforts to measure the effects of hazard mitigation against standards for project management, the *National Mitigation Investment Strategy*, and *Standards for Internal Control in the Federal Government*.¹³ We determined that the control activities component of internal control was significant to this objective along with the underlying principle that management should design control activities to achieve objectives and respond to risks. We analyzed FEMA's assessment efforts to determine if they would allow FEMA to measure effects of grant-funded hazard mitigation projects. The information and communication component of internal control was also significant to this objective, along with the underlying principle that management should communicate quality information internally and externally to achieve objectives. We analyzed whether FEMA had communicated information about its assessments to internal and external stakeholders.

We conducted this performance audit from August 2019 to February 2021 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

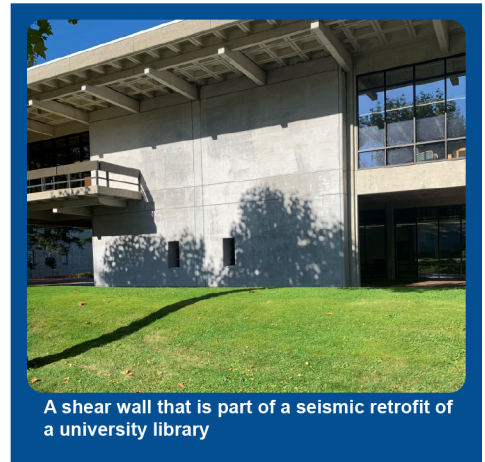
Hazard Mitigation Grant Programs

Hazard mitigation is any sustainable action that reduces or eliminates long-term risk to people and property from future disasters. Hazard mitigation can include acquiring and demolishing properties in floodplains,

¹³See Mitigation Framework Leadership Group, *National Mitigation Investment Strategy*, (August 2019); Project Management Institute, *A Guide to the Project Management Body of Knowledge*, Sixth Edition (Newtown Square, PA: 2017); and [GAO-14-704G](#).

seismic retrofits to reduce earthquake damage, and removing flammable vegetation around residential areas at risk of wildfires. See figure 1 for additional examples of hazard mitigation.

Figure 1: Examples of Hazard Mitigation Projects



Source: GAO. | GAO-21-140

Through fiscal year 2019, FEMA administered four grant programs to provide funding for state, territories, federally-recognized tribes, and local communities for hazard mitigation planning, projects, and management costs (administrative expenses incurred in administering the grant). The four programs were the Pre-Disaster Mitigation (PDM), Flood Mitigation Assistance (FMA), Hazard Mitigation Grant Program (HMGP), and Public

Assistance (PA).¹⁴ FEMA’s hazard mitigation grants generally provided funding for up to 75 percent of the cost for eligible activities, but this percentage could be more in certain circumstances (see Table 1, below).

Table 1: FEMA Hazard Mitigation Grant Programs in Fiscal Year 2019

Program	Pre- or post-disaster funding	Program Funding Source	Eligible Activities	Federal cost share
Pre-Disaster Mitigation (PDM) ^a	Pre-disaster	Annual appropriation	Mitigation projects, hazard mitigation planning, management costs	Funding amount up to 75 percent. Up to 90 percent if recipient is small impoverished community. ^b
Flood Mitigation Assistance	Pre-disaster	Annual appropriation	Flood mitigation projects and flood mitigation planning for buildings that are insured under the National Flood Insurance Program; technical assistance, management costs	Funding amount up to 75 percent. Up to 90 percent if repetitive loss properties. ^c Up to 100 percent if severe repetitive loss properties ^d
Hazard Mitigation Grant Program	Post-disaster	Disaster Relief Fund following a presidential major disaster declaration	Mitigation projects, hazard mitigation planning, management costs	Up to 75 percent.
Public Assistance	Post-disaster	Disaster Relief Fund following a presidential major disaster or emergency declaration	Hazard mitigation in conjunction with projects to restore disaster-damaged infrastructure or facilities	At least 75 percent. Up to 90 percent for extraordinary disasters ^e

Source: GAO analysis of Federal Emergency Management Agency (FEMA) information. | GAO-21-140

^aThe fiscal year 2019 PDM grant cycle was the program’s last. The Building Resilient Infrastructure and Communities program replaced PDM in fiscal year 2020.

^bFEMA defines a small and impoverished community as a rural community with a population of 3,000 or fewer, where the average per capita income does not exceed 80 percent of the national average and the local unemployment rate exceeds the most recently reported national yearly average by at least one percentage point. 44 C.F.R. § 201.2.

^cA repetitive loss property is any insurable building for which flood-related damage occurred on two occasions in which repair equaled or exceeded 25 percent of the value of the structure on average, and at the time of the second incident the contract for the National Flood Insurance Program contained Increased Cost of Compliance coverage. 42 U.S.C. § 4121(a)(7).

^dA severe repetitive loss property is any insurable building for which the National Flood Insurance Program paid (a) four or more claims of more than \$5,000 with a total claim of at least \$20,000 or (b) two or more claims where the total of the payments exceeds the current value of the property. 42 U.S.C. § 4104c(h)(3).

¹⁴In fiscal year 2020, PDM was replaced with a new pre-disaster mitigation grant program called Building Resilient Infrastructure and Communities (BRIC).

⁹The President can increase the cost share to 90 percent whenever a disaster is so extraordinary that actual federal obligations under the Stafford Act, excluding FEMA administrative cost, meet or exceed a certain per capita threshold. 44 C.F.R. § 206.47(b).

FEMA has two annual pre-disaster competitive grant programs:

- **Pre-Disaster Mitigation (PDM) and its replacement program Building Resilient Infrastructure and Communities (BRIC).** FEMA administered PDM through fiscal year 2019 and it was designed to assist states, territories, federally-recognized tribes, and local communities in implementing a sustained pre-disaster natural hazard mitigation program. This program was authorized by Section 203 of the Stafford Act.¹⁵ PDM grants were funded annually by Congressional appropriations and were awarded on a nationally competitive basis. Each state or territory was eligible to receive a minimum amount of either \$575,000 or 1 percent of total funds for the fiscal year, and a maximum of 15 percent of the appropriated funding.

In response to the Disaster Recovery Reform Act of 2018, FEMA replaced the PDM grant program with the BRIC program in fiscal year 2020.¹⁶ BRIC also funds pre-disaster mitigation grants; however, by statute, only states, territories, and federally recognized tribes that have had a major declaration in the last 7 years are eligible to apply. In fiscal year 2020, the first year of the program, all states, territories, and federally recognized tribes are eligible as a result of numerous major disaster declarations. The first application cycle will run from September 2020 through January 2021. We discuss other differences between PDM and BRIC later in this report.

- **Flood Mitigation Assistance (FMA).** According to FEMA, this program provides funding to states, territories, federally-recognized tribes, and local communities for projects and planning that reduces long-term risk of flood damage to structures insured under the National Flood Insurance Program.¹⁷ In particular, the FMA program

¹⁵42 U.S.C. § 5133.

¹⁶Disaster Recovery Reform Act of 2018, Pub. L. No. 115-254, § 1234, 132 Stat. 3438, 3461 (codified at 42 U.S.C. § 5133(i)).

¹⁷In 1968, the National Flood Insurance Act of 1968 established the National Flood Insurance Program. See Pub. L. No. 90-448, Tit. XIII, 82 Stat. 476, 572. According to FEMA, the National Flood Insurance Program was designed to address the policy objectives of identifying flood hazards, offering affordable insurance premiums to encourage program participation, and promoting community-based floodplain management.

focuses on insured properties that were damaged by floods on two or more occasions, referred to as repetitive loss and severe repetitive loss properties.¹⁸ This program is funded through revenue collected by the National Flood Insurance Program and Congress appropriates the amount available for FMA on an annual basis.¹⁹

In addition, two non-competitive FEMA grant programs fund hazard mitigation following a disaster:

- **Hazard Mitigation Grant Program (HMGP).** According to FEMA, HMGP is intended to help communities implement hazard mitigation measures following a Presidential major disaster declaration.²⁰ HMGP is authorized by Section 404 of the Stafford Act, with funding triggered by a major disaster declaration.²¹ FEMA awards funding using a formula based on the estimated total federal assistance amount.²² Typically, FEMA notifies the states of the funding amounts they are eligible to receive, and the states, working with FEMA, then decide

¹⁸A repetitive loss property is any insurable building for which flood-related damage occurred on two occasions in which repair equaled or exceeded 25 percent of the value of the structure on average, and at the time of the second incident the contract for the National Flood Insurance Program contained Increased Cost of Compliance coverage. 42 U.S.C. § 4121(a)(7). A severe repetitive loss property is any insurable building for which the National Flood Insurance Program paid (a) four or more claims of more than \$5,000 with a total claim of at least \$20,000 or (b) two or more claims where the total of the payments exceeds the current value of the property. 42 U.S.C. § 4104c(h)(3).

¹⁹42 U.S.C. § 4017(f).

²⁰Under the Stafford Act, the President may declare that a major disaster exists in response to a Governor's or tribal chief executive's request if the disaster is of such severity and magnitude that effective response is beyond the capabilities of the state, tribal, or territorial government and federal assistance is necessary. 42 U.S.C. § 5170. A presidential major disaster declaration triggers HMGP and other FEMA grant programs, such as PA and Individual Assistance, which provide assistance to state, local, tribal, and territorial governments, as well as certain non-profit entities, and to individuals and households, respectively.

²¹42 U.S.C. § 5170c.

²²Generally, HMGP funding is up to 15 percent of the first \$2 billion of the estimated aggregate amount of disaster assistance. If disaster assistance is above \$2 billion and not more than \$10 billion, then HMGP funding is up to 10 percent of that amount, and for disaster assistance amounts above \$10 billion and not more than \$35.333 billion, up to 7.5 percent. 42 U.S.C. § 5170c(a). HMGP funding equals up to 20 percent of disaster assistance (not to exceed \$35.333 billion) in states with a FEMA-approved Enhanced Hazard Mitigation Plan. To qualify, a state must demonstrate that it has developed a comprehensive mitigation program, effectively uses available mitigation funding, and is capable of managing increased funding to achieve its mitigation goals. 44 C.F.R. § 201.5(a). As of August 2020, 15 states had qualifying enhanced state mitigation plans.

how to award the funds to localities and other eligible applicants within the state. The entire state, not just locations directly affected by the disaster, may qualify for HMGP grant funding.

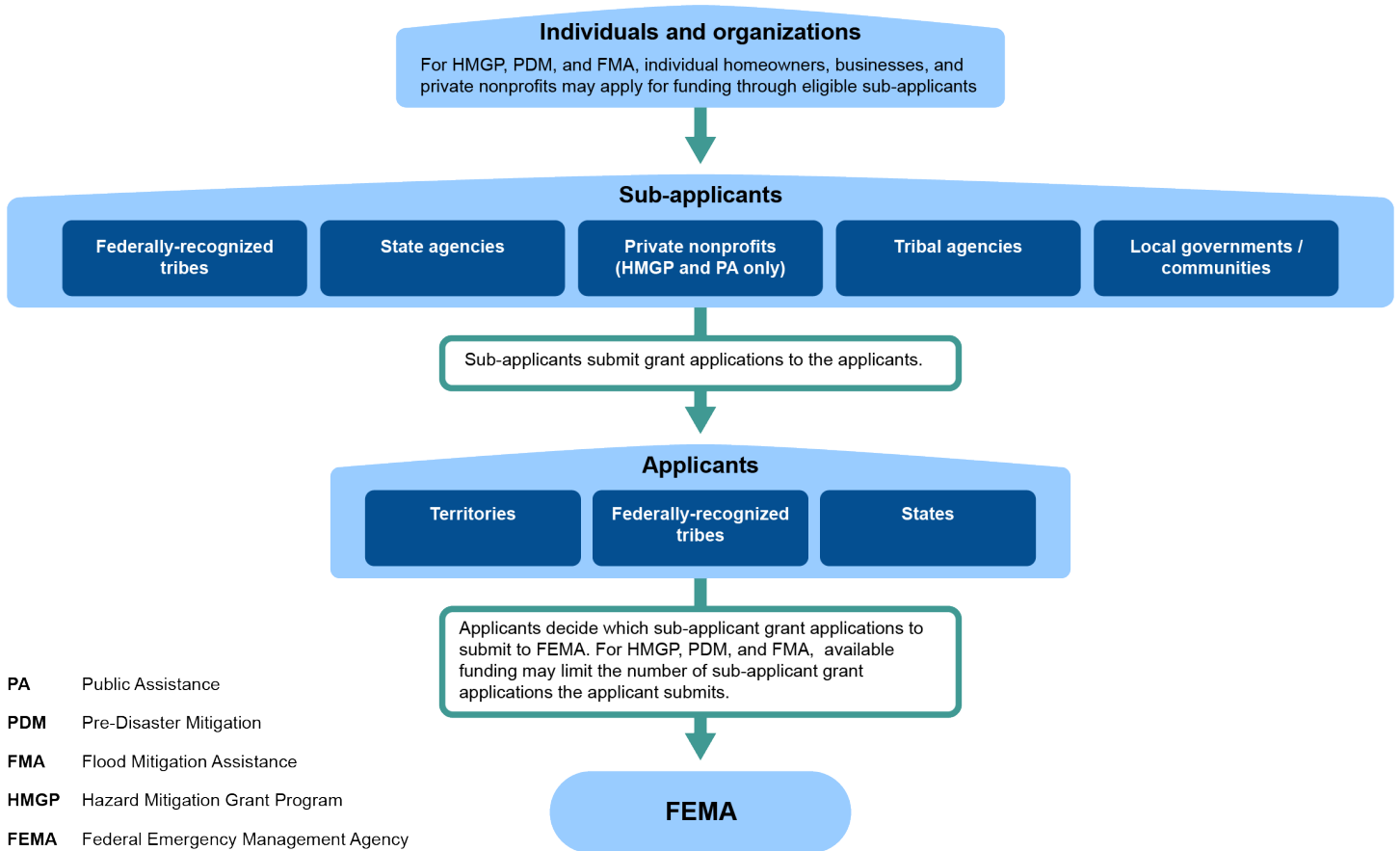
- **Public Assistance (PA).** The PA program provides grants to states, local governments, federally-recognized tribes, and certain private non-profit entities to assist them with disaster response and recovery. Specifically, the program provides assistance for emergency work to immediately protect public health and safety (e.g., debris removal) and permanent work to restore roads, bridges, water control facilities, buildings, equipment, utilities, parks and recreational facilities. Recipients can get funding to implement hazard mitigation measures in conjunction with permanent work projects to repair disaster-damaged facilities. PA mitigation measures are authorized under Section 406 of the Stafford Act, with funding triggered by a major disaster or emergency declaration.²³ There is no pre-set limit to the amount of PA funds a community may receive. Sometimes, a combination of PA and HMGP funding may be appropriate to bring an entire facility to a higher level of disaster resistance when only portions were damaged by the current disaster.

Grant Application Process

States, territories, federally-recognized tribes, local governments, and certain non-profits can apply for FEMA hazard mitigation grants. As shown in figure 2, individuals and local communities do not apply directly to FEMA for hazard mitigation grant funding and instead collaborate as sub-applicants with their state, territory, or tribal government and then receive funding through that entity. For HMGP, FMA, and PDM, applicants determine which sub-applications to submit to FEMA based on the amount of funding available and their priorities. The PA application structure is the same as the other three hazard mitigation programs, but the application process is different. For PA, FEMA may work with applicants to identify mitigation opportunities and assist with assessing damages, developing a hazard mitigation proposal, and evaluating the cost-effectiveness of the mitigation project before funding it.

²³42 U.S.C. § 5172. Under the Stafford Act, the President may declare that a major disaster or emergency exists in response to a Governor's or tribal chief executive's request if the disaster or situation is of such severity and magnitude that effective response is beyond the capabilities of the state, tribal, or territorial government and federal assistance is necessary. 42 U.S.C. §§ 5170, 5191.

Figure 2: FEMA Hazard Mitigation Grant Application Structure



- PA** Public Assistance
- PDM** Pre-Disaster Mitigation
- FMA** Flood Mitigation Assistance
- HMGP** Hazard Mitigation Grant Program
- FEMA** Federal Emergency Management Agency

Source: GAO analysis of FEMA information. | GAO-21-140

To be eligible to apply, states must have a FEMA-approved state hazard mitigation plan that demonstrates commitment to reduce risks from natural hazards and serves as a guide for decision makers for reducing the effects of natural hazards. States may also choose to develop an enhanced state mitigation plan. By meeting the requirements of an enhanced state plan, states demonstrate increased capabilities that build on and exceed the standard mitigation plan requirements. States with FEMA-approved enhanced mitigation plans are eligible to receive additional HMGP funding—up to 20 percent of the disaster assistance amount (not to exceed \$35.333 billion). Other grant requirements include providing sufficient supporting documentation to demonstrate that the proposed hazard mitigation activity is eligible, cost-effective, and complies with environmental and historical preservations statutes and regulations.

See appendix I for additional information on key hazard mitigation grant requirements.

FEMA Has Primarily Awarded Hazard Mitigation Grants After Disasters and Is Taking Steps to Increase Pre-Disaster Investment

Most FEMA Hazard Mitigation Grant Funding From 2010 through 2018 Was Awarded to States After Disasters

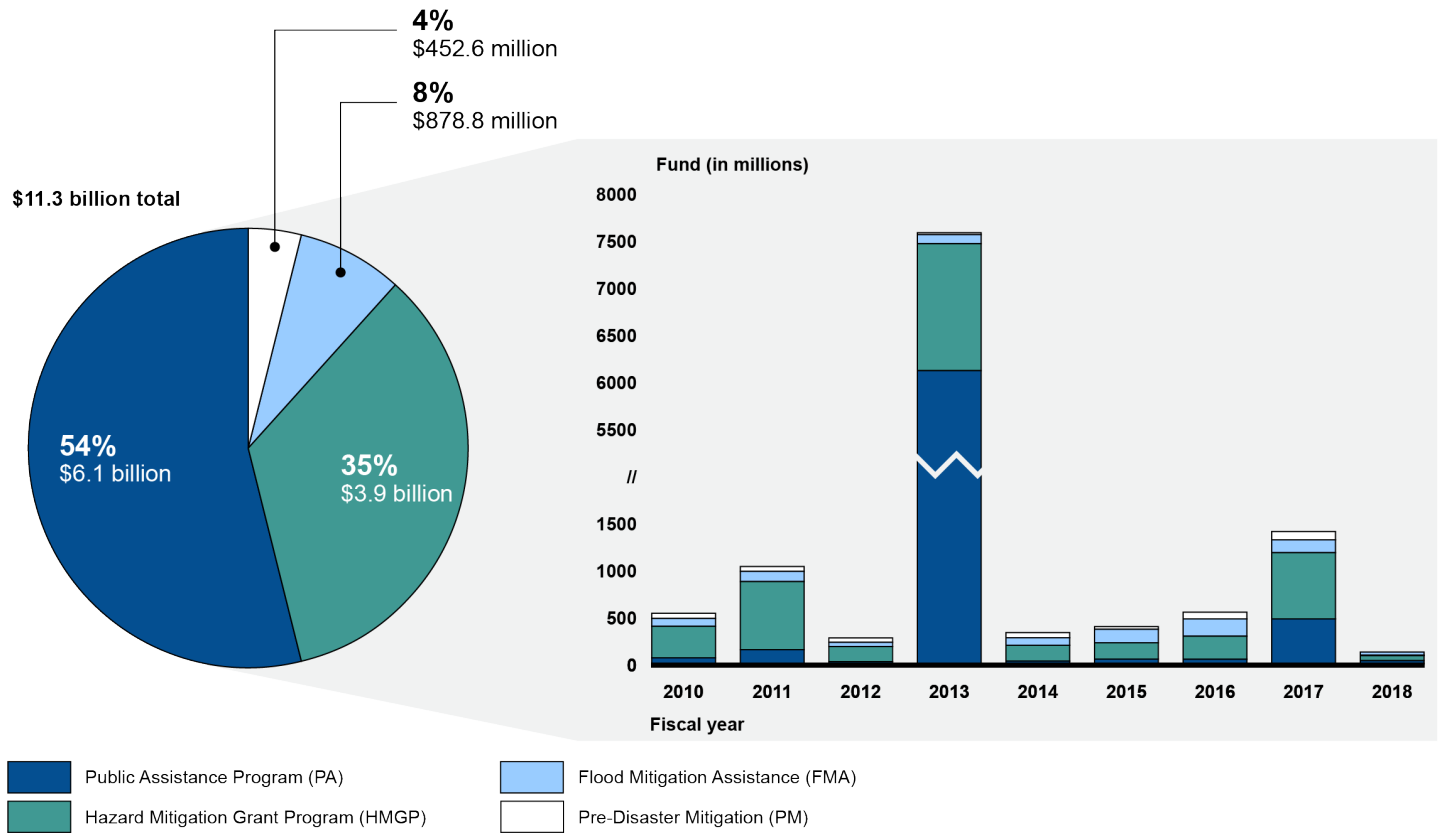
Most of the hazard mitigation grant funding FEMA obligated from fiscal years 2010 through 2018 was for post-disaster mitigation, meaning mitigation projects implemented after a major disaster in that state or locality. Specifically, of the approximately \$11.3 billion total obligated through hazard mitigation grant programs during this period, FEMA obligated about 88 percent (\$10 billion) for post-disaster grants through the HMGP and PA programs. FEMA's annual pre-disaster competitive grant programs, FMA and PDM, accounted for about 12 percent (\$1.3 billion) of the total.²⁴

Total FEMA obligations for hazard mitigation varied year to year during this period. As figure 3 shows, HMGP and PA mitigation obligations were higher in fiscal years 2013 and 2017 because the costly disasters that occurred those years—including hurricanes Sandy, Harvey, and Maria, and the California wildfires—led to increased hazard mitigation obligations through these programs. FMA and PDM obligations for hazard mitigation also varied in response to differences in the amount available through their annual appropriations. For example, the amount of funding obligated through PDM ranged from \$19.9 million in fiscal year 2013 to

²⁴We received the HMGP, FMA, and PDM data as of October 2019. We received the PA mitigation data as of April 2020. The fiscal year 2019 grants generally had not been obligated at the time of our analysis. The obligations for HMGP and PA mitigation are based on the fiscal year of the associated disaster declaration. The obligations for FMA and PDM are based on the fiscal year of the grant application. FEMA may still be awarding PA and HMGP grants for previous fiscal years' disasters and PDM and FMA grants for previous fiscal years' grant application cycles. Additionally, FEMA may deobligate funding for projects, meaning cancel or adjust downward an agency's previously incurred obligations, especially at the end of the process. As a result, obligated amounts for all hazard mitigation grant programs (HMGP, FMA, PDM, and PA) will change over time.

\$88.3 million in fiscal year 2017, reflecting the comparatively low amount appropriated in fiscal year 2013 (\$25 million) relative to the amount appropriated in fiscal year 2017 (\$100 million).²⁵ Similarly, the amount of funding obligated through FMA ranged from \$45.6 million in fiscal year 2012 to \$181.9 million in fiscal year 2016, reflecting the relatively low amount appropriated in fiscal year 2012 (\$60 million) compared to the amount appropriated in fiscal year 2016 (\$175 million).²⁶

Figure 3: FEMA Hazard Mitigation Grant Obligations, Fiscal Years 2010-2018



Source: GAO analysis of Federal Emergency Management Agency (FEMA) data. | GAO-21-140

²⁵According to FEMA officials there are a number of factors that impact the differences between the amount appropriated for mitigation grants versus the amount obligated for a given fiscal year. First, some mitigation projects were still in process and were not fully obligated. Second, in some cases applicants withdrew from the program or did not complete projects as originally anticipated.

²⁶For fiscal year 2016, about \$25 million in amounts collected in the National Flood Insurance Fund was available for Flood Mitigation Assistance.

Data table for Figure 3: FEMA Hazard Mitigation Grant Obligations, Fiscal Years 2010-2018

Grant type	Obligation amount	Percent of obligated funds
PDM	452,587,000	4%
FMA	878,778,000	8%
HMGP	3,911,950,000	35%
PA	6,073,481,154	54%

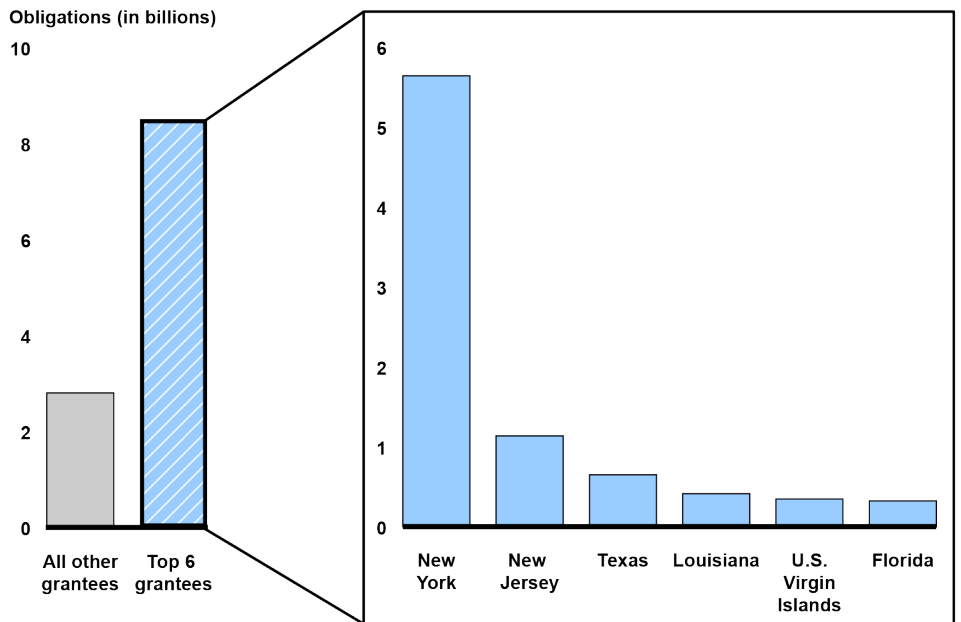
Year	Public Assistance	Hazard Mitigation Grant Program	Flood Mitigation	Pre Disaster
2010"	62.4798	335.892	81.9903	56.4883
2011"	148.763	723.743	108.898	52.0874
2012"	21.7969	160.351	45.5638	46.9653
2013"	6073.48	1347.75	97.191	19.8938
2014"	27.6754	169.019	79.3788	55.886
2015"	49.4285	173.126	143.654	27.465
2016"	48.5802	244.892	181.877	71.9607
2017"	476.078	703.5	135.88	88.2559
2018"	32.3285	53.6763	4.34473	33.5849

Note: This figure includes obligations from all hazard mitigation grant programs during fiscal years 2010-2018 (HMGP, FMA, PDM, and PA). The fiscal year 2019 grants generally had not been obligated at the time of our analysis. We received the HMGP, FMA, and PDM data as of October 2019. We received the PA mitigation data as of April 2020. The obligations for HMGP and PA mitigation are based on the fiscal year of the associated disaster declaration. The obligations for FMA and PDM are based on the fiscal year of the grant application. FEMA may still be awarding PA and HMGP grants for previous fiscal years' disasters and PDM and FMA grants for previous fiscal years' grant application cycles. Additionally, FEMA may deobligate funding for projects, meaning cancel or adjust downward an agency's previously incurred obligations, especially at the end of the process. As a result, obligated amounts for all hazard mitigation grant programs (HMGP, FMA, PDM, and PA) will change over time.

Three states—New Jersey, New York, and Texas—received the majority (66 percent) of all FEMA hazard mitigation obligations in this 9-year period. These three states received the most HMGP and PA mitigation obligations as a result of disasters in those states, including Hurricanes

Sandy and Harvey.²⁷ New York was the highest recipient, receiving \$5.6 billion over the period followed by New Jersey (\$1.1 billion), and Texas (\$649.9 million). Florida, Louisiana, and the U.S. Virgin Islands each received more than \$200 million in hazard mitigation obligations during this period (see figure 4). The median amount received by all the states, territories and tribes was \$46.9 million over the 9-year period.

Figure 4: FEMA Hazard Mitigation Grant Obligations for the Top Six Grantees Compared to All Other Grantees, Fiscal Years 2010-2018



Source: GAO analysis of Federal Emergency Management Agency (FEMA) data. | GAO-21-140

²⁷According to FEMA officials, Hurricane Sandy and Hurricane Harvey were the primary reasons for these states having higher levels of HMGP funding. FEMA officials also said that Gulf Coast states, including Texas, typically see greater levels of HMGP funding due to hurricane activity. New Jersey and New York also had major disaster declarations for Tropical Storm Lee and Hurricane Irene during this time period. Additionally, in our analysis, we found that 17 grantees did not receive any FMA funding in fiscal years 2010 through 2018. FEMA officials told us that this was because FMA prioritizes projects that address mitigation for National Flood Insurance Program and severe and repetitive loss properties. According to FEMA officials, states along the Gulf Coast and New Jersey have had greater participation in the National Flood Insurance Program and higher flood losses that make them more competitive for FMA funding.

Data table for Figure 4: FEMA Hazard Mitigation Grant Obligations for the Top Six Grantees Compared to All Other Grantees, Fiscal Years 2010-2018

	Obligations (amount in billions)
All other entries	2.80586
Top 6	8.51093

	Obligations (amount in billions)
New York	5.63941
New Jersey	1.13569
Texas	0.649869
Louisiana	0.413461
U.S. Virgin Islands	0.348329
Florida	0.324163

Note: The top six grantees (New York, New Jersey, Texas, Louisiana, U.S. Virgin Islands, and Florida) received the most hazard mitigation obligations from FEMA based on our analysis of obligations from all four hazard mitigation grant programs during fiscal years 2010-2018 (HMGP, FMA, PDM, and PA). The fiscal year 2019 grants generally had not been obligated at the time of our analysis. We received the HMGP, FMA, and PDM data as of October 2019. We received the PA mitigation data as of April 2020. FEMA may still be awarding PA and HMGP grants for previous fiscal years' disasters and PDM and FMA grants for previous fiscal years' grant application cycles. Additionally, FEMA may deobligate funding for projects, meaning cancel or adjust downward an agency's previously incurred obligations, especially at the end of the process. As a result, obligated amounts for all hazard mitigation grant programs (HMGP, FMA, PDM, and PA) will change over time.

Appendix II provides additional information on the types of hazard mitigation projects funded through FEMA grants and Appendix III provides additional information on FEMA hazard mitigation grant awards by state, territory, and tribal recipients for fiscal years 2010 through 2018.

FEMA Is Implementing a New Grant Program Designed to Increase Investment in Hazard Mitigation before Disasters Occur

We reported in 2015 that the federal government's approach to disaster resilience was largely reactive;²⁸ however, the new BRIC program—when implemented and funded—provides an opportunity for FEMA to more

²⁸GAO-15-515.

strategically invest in mitigation.²⁹ Specifically, we reported that disasters determine when and for what purpose the federal government invests in disaster resilience. Moreover, we observed that a reliance on post-disaster federal funds may not incentivize states to comprehensively mitigate future risks prior to a disaster occurring. The increase in available pre-disaster mitigation funding through BRIC could shift part of the federal government's focus to mitigating the impact of disasters before they happen instead of after; thus reducing the fiscal exposure from disasters.

BRIC will be funded annually through a 6 percent set aside from estimated disaster expenses for each major disaster.³⁰ Unlike PDM, which was funded through program specific appropriations, funding for BRIC depends on the estimated amount of disaster assistance for each major declared disaster and the number of declarations in any given year. FEMA officials told us that they expect this will increase pre-disaster grant funding. In fiscal year 2020, the first year of the BRIC program, FEMA announced that \$500 million in grant funding is available for BRIC pre-disaster mitigation grants. This is double the funding available for fiscal year 2019 PDM grants. Going forward, FEMA officials told us they anticipate making from \$300 to \$500 million available through BRIC per year. In comparison, PDM grant funding availability varied from \$23.7 million in fiscal year 2013 to \$232.5 million in fiscal year 2018, during the 9-year period we analyzed.

In addition to increasing funding for hazard mitigation projects, FEMA is implementing and planning other changes as part of the BRIC program that could affect both the type and impact of the mitigation projects funded. First, FEMA has set a higher per project cost limit for BRIC fiscal year 2020 grants compared to PDM. This could allow grantees to implement larger mitigation projects. According to FEMA's notice of funding opportunity, FEMA will award up to \$50 million per BRIC project in fiscal year 2020. In comparison, the PDM project limit was \$10 million in fiscal year 2019. Second, FEMA is incorporating a risk reduction and resiliency criterion into the qualitative evaluation scoring criteria they are

²⁹As previously mentioned, BRIC will be replacing FEMA's current pre-disaster mitigation grant program, PDM, by continuing to invest in a variety of mitigation activities with an added focus on infrastructure projects and Community Lifelines. Community lifelines enable the continuous operation of critical government and business functions and are essential to human health and safety or economic security. Examples of community lifelines include medical care and electricity, among other things.

³⁰42 U.S.C. § 5133(i)(1).

using to determine which mitigation projects to fund. This criterion assesses how the project will improve resilience, decrease risk, realize ancillary benefits, and leverage innovation. This criterion is worth the most points in the new points-based scoring system that FEMA is using for BRIC grant applications. Finally, FEMA has contracted with the Homeland Security Operational Analysis Center to research ways to incorporate risk into BRIC program decision making.³¹ As a first step, the Homeland Security Operational Analysis Center analyzed FEMA disaster relief spending and in July 2020, reported that hurricanes and storms that damage roads, bridges, public buildings, and public utilities in urban areas along the coast from Galveston, Texas to Miami, Florida were the most significant cost drivers.³² The study also recommended that FEMA develop a strategy for addressing known disaster cost drivers. FEMA officials stated that they are in the process of assessing the report's recommendations to determine whether and how to implement them.

Selected Jurisdictions Reported Challenges with Required Analyses, Application Complexity, and Timeliness of Awards that FEMA Has Not Fully Addressed

FEMA Simplified Analysis Required for Some Project Types but Not Others

FEMA-funded mitigation activities are required to be cost-effective, and FEMA generally requires applicants to conduct a benefit-cost analysis to demonstrate that the estimated benefits of a project exceed the costs.³³

³¹The Homeland Security Operational Analysis Center is a federally funded research and development center operated by the RAND Corporation.

³²Homeland Security Operational Analysis Center, *Developing Metrics and Procedures to Support Building Resilient Infrastructure and Community Grant Program Decisionmaking*, (July 1, 2020).

³³See 42 U.S.C. §§ 5104c(c)(2)(A), 5133(f)(1), 5170c(a); 44 C.F.R. § 206.226(e). FEMA generally requires HMGP, FMA, PDM, and BRIC applicants to demonstrate cost-effectiveness through a benefit-cost analysis. PA hazard mitigation applicants can use benefit-cost analysis to demonstrate cost-effectiveness. PA mitigation projects are also considered cost-effective if they cost 15 percent or less than the total eligible repair cost for the facility, or are on a list of mitigation measures FEMA has determined to be cost-effective under the PA program and the cost of the mitigation measure does not exceed 100 percent of the eligible repair cost of the facility.

Officials from all 12 state and local jurisdictions we met with said that the benefit-cost analysis for hazard mitigation grants was a challenge due, in part, to the amount of resources and data needed. For example, some of these officials said that project benefits, such as lost revenue avoided and environmental benefits, can be difficult to calculate and may require hundreds of pages of data or technical project information to support. In addition, some officials told us that they and other applicants hire a contractor to perform the benefit-cost analysis, which can cost tens of thousands of dollars. Representatives from the International Association of Emergency Managers (IAEM) and the National Emergency Management Association (NEMA), and officials we interviewed from all four FEMA regions also said that the benefit-cost analysis was a challenge for applicants. Further, FEMA solicited input from stakeholders as part of its effort to develop the BRIC program and reported that stakeholders were overwhelmingly dissatisfied with benefit-cost analysis requirements and said that they were a barrier to completing grant applications.³⁴

FEMA has taken steps to make it easier for state and local jurisdictions to complete benefit-cost analyses. Specifically, FEMA updated its benefit-cost analysis tool to reduce some data entry requirements in fiscal year 2019. For example, the new toolkit has optional default values, such as the value to replace a square foot of a building, that applicants can choose to use for the analysis for some project types; however, applicants are still required to provide data and other supporting analysis and documentation, such as information on historic damage costs. In addition, FEMA officials said that beginning in 2011, the agency introduced pre-calculated benefits. Pre-calculated benefits allow prospective applicants to forgo performing a detailed benefit-cost analysis for some project types— residential safe rooms, acquisitions of properties in flood zones, elevations of structures in flood zones, and residential and non-residential hurricane wind retrofits. For example, FEMA analyzed 11,000 structures to determine an average benefit amount for elevation and acquisition projects and identify the common characteristics of projects that were cost-effective. As a result, applicants who live within the 100-year flood zone do not have to conduct their own benefit-cost

³⁴FEMA received over 5,000 comments and 75 letters and summarized the contents of these in a report. See FEMA, *Summary of Stakeholder Feedback: Building Resilient Infrastructure and Communities*, (Washington D.C.: Mar. 2020), 15. According to FEMA officials, they took this feedback into account when developing the BRIC program, but they have not specifically addressed all comments.

analysis as long as their elevation or acquisition project cost is less than or equal to FEMA's pre-calculated benefit amounts.³⁵ Several stakeholders agreed that the pre-calculated benefits had helped or could help reduce challenges with the benefit-cost analysis.³⁶

Two objectives of FEMA's 2018-2022 Strategic Plan are incentivizing pre-disaster mitigation and reducing complexity by streamlining the grantee experience. Further, GAO's *Disaster Resilience Framework* states that the federal government can enhance resilience by reducing disincentives, such as unnecessary administrative burdens.³⁷

FEMA officials said that they would like to develop pre-calculated benefits for additional project types such as electrical infrastructure and telecommunications to help reduce the complexity of the application process. However, they stated that they did not have a plan to do so and did not know when they would be able to develop additional pre-calculated benefits because this effort would require research and analysis by outside experts.

Standards for project management call for a project management plan with time frames for completing the project.³⁸ We recognize that it may not be appropriate to develop pre-calculated benefits for all hazard mitigation project types.³⁹ However, by establishing a plan with time frames for developing additional pre-calculated benefits, where appropriate, FEMA would be better positioned to make progress towards simplifying the mitigation grant application process while ensuring mitigation investments

³⁵Pre-calculated benefit amounts can be adjusted to account for higher-cost areas using industry-accepted locality multipliers.

³⁶These stakeholders include officials from five of the selected state and local jurisdictions, NEMA, two FEMA regions, and FEMA's Summary of Stakeholder Feedback report.

³⁷[GAO-20-100SP](#).

³⁸Project Management Institute, *A Guide to the Project Management Body of Knowledge*, Sixth Edition (Newtown Square, PA: 2017).

³⁹Pre-calculated benefits should be generalizable to projects that meet eligibility requirements to ensure mitigation investments are cost effective without a benefit-cost analysis. As a result, pre-calculated benefits may not be appropriate for project types that are unique or have unique attributes, or when site and project characteristics are needed to accurately determine benefits. According to Office of Management and Budget circular A-4, benefits transfer methods are often associated with uncertainties and potential biases of unknown magnitude.

are cost-effective.⁴⁰ Additional pre-calculated benefits could reduce application barriers and potentially increase the pool of applicants for hazard mitigation grants.

State and Local Officials Described Grant Application Process As Complex and Lengthy; FEMA Could More Fully Assess Opportunities to Streamline

Officials from 10 of the 12 state and local jurisdictions we met with told us they experienced challenges with the complexity of FEMA's application processes for its hazard mitigation grant programs. For example, some officials stated that the applications were cumbersome, required excessive documentation, that different programs used different grants systems, and that the applications went through multiple rounds of review with different reviewers. Representatives from IAEM and NEMA, officials from three of the four FEMA regions we met with, as well as FEMA's *Summary of Stakeholder Feedback* report also stated that complexity of the grant application process was a challenge for applicants. While it is important to ensure that applications meet program requirements and comply with applicable laws, some state and local officials we met with, along with stakeholders who provided feedback to FEMA, have made recommendations to reduce the complexity of the grant programs without changing key requirements. For example, some stakeholders recommended:

- creating a universal grant application for all of FEMA's hazard mitigation programs,
- establishing one HMGP fund for each state instead of separate funds for each disaster,

⁴⁰In general, ensuring mitigation investments are cost-effective with the use of pre-calculated benefits requires assessing the appropriateness of pre-calculated benefits for a project type, using adequate data and defensible empirical methods to develop generalizable pre-calculated benefit amounts, and defining eligibility requirements that ensure funded projects generate benefits comparable to the pre-calculated benefit amounts. For example, to the extent possible, mitigation projects, the goods they protect (e.g. buildings), and changes to those goods (e.g. value of benefits from protection) should be similar between eligible project sites and those project sites studied to develop pre-calculated benefits. Other approaches to ensuring cost effectiveness could include steps for monitoring program implementation, such as collecting information about projects using pre-calculated benefits to validate project cost-effectiveness or update benefit amounts and eligibility requirements.

- eliminating the need to submit paper copies of HMGP applications, and
- reducing the redundancy of application and reviewer questions.

Differences between FEMA's various hazard mitigation grant programs also contribute to complexity and makes it harder for applicants to use more than one FEMA grant toward a single project.⁴¹ Officials from eight of the 12 state and local jurisdictions we met with stated that combining different sources of federal hazard mitigation funding, such as HMGP and PA, for a mitigation project was challenging.⁴² Officials from IAEM, NEMA, and two of the four FEMA regions we met with, as well as FEMA's *Summary of Stakeholder Feedback* report also agreed that this was a challenge. For example, officials from five jurisdictions, NEMA, and two of the FEMA regions said that differing time frames among federal programs make it difficult to plan and implement projects using more than one federal funding source. As shown in figure 5, the deadline for completing PA mitigation projects is 18 months from declaration date, while the deadline for submitting HMGP applications is 12 months from the declaration date.⁴³ Consequently, state and local jurisdictions may not be able to fully leverage available federal funding and may therefore complete fewer or smaller hazard mitigation projects than they otherwise would. While the time frames for HMGP and PA are set in federal regulations, FEMA could assess whether these time frames could be better-aligned or if there are other steps the agency could take to facilitate combining federal funding sources, when appropriate, to help state and local jurisdictions implement hazard mitigation projects in the wake of a disaster.

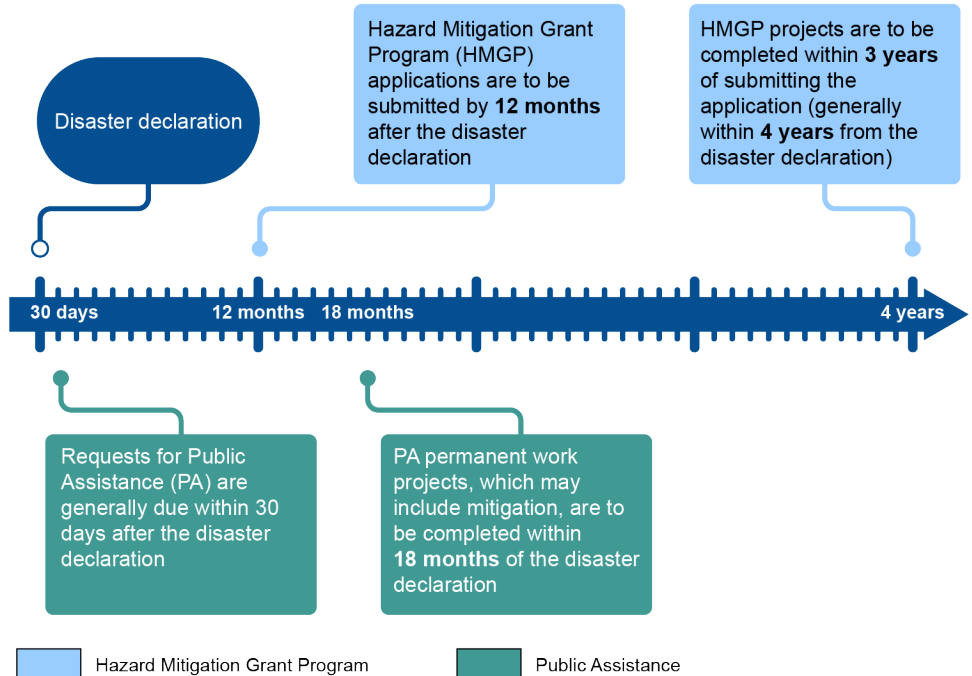
⁴¹While FEMA's hazard mitigation grant funds cannot be used for the same mitigation purpose or activity, a combination of PA and HMGP funding may be appropriate to bring an entire facility to a higher level of disaster resistance when only portions were damaged by the current disaster.

⁴²In March 2019 we also reported that communities faced challenges with coordinating the use of Department of Housing and Urban Development Community Development Block Grant Disaster Recovery grants with FEMA funds. We reported that Congress should consider legislation establishing permanent statutory authority for Department of Housing and Urban Development disaster assistance, among other options, which could help grantees better coordinate federal grant funds and access funds in a timelier manner. See GAO, *Disaster Recovery: Better Monitoring of Block Grant Funds Is Needed*, [GAO-19-232](#) (Washington, D.C.: Mar. 25, 2019).

⁴³See 44 C.F.R. §§ 206.204(c)(1), .436(d). FEMA may grant applicants extensions to these deadlines.

Figure 5: Public Assistance and Hazard Mitigation Grant Program Time Frames

Timeline for Public Assistance and Hazard Mitigation Grant Program



Source: GAO analysis of Federal Emergency Management Agency (FEMA) guidance. | GAO-21-140

Note: FEMA may grant applicants extensions to these deadlines.

In addition, officials from 10 of the 12 state and local jurisdictions we met with said they experienced challenges related to the timeliness of the grant application process. Officials from IAEM, NEMA, three of the four FEMA regions with whom we met and FEMA’s report on stakeholder feedback also raised concerns with the timeliness of the grant application process. FEMA PA data shows that the average time until award is 273 days, but could take longer.⁴⁴ For example, FEMA data shows that the environmental and historic preservation review averaged 30 days, but took as long as 693 days for PA mitigation projects associated with disasters in fiscal year 2018.⁴⁵ Some state and local officials told us the length of time between submission of the application and grant award for

⁴⁴This is the 12-month average review time for all PA projects—not just those with hazard mitigation measures—as of August 4, 2020.

⁴⁵This data is as of August 6, 2020.

HMGP, PDM, and FMA can be 18 months to two years.⁴⁶ FEMA officials noted that state capacity and the quality of grant applications also influenced grant time frames.

The grant time frames introduce a number of challenges. For example, some officials said that it can be difficult to plan and budget projects when they do not know when the grants will be awarded and that certain mitigation projects cannot wait this long to be implemented. In particular, officials from four jurisdictions noted that the lengthy grant process contributes to homeowners in flood zones dropping out of acquisition projects, leaving these homes at risk of future floods. Officials from one of the selected jurisdictions and NEMA also said that the additional review time can discourage localities from adding mitigation to PA projects.

FEMA officials have taken steps that could help them identify ways to reduce complexity and increase timeliness of awards through its PA mitigation grant program, but additional steps are needed. Starting in spring 2019, FEMA has monitored data on how long each phase of its application and review processes have taken and assessed its performance against timeliness goals. FEMA PA officials said that this data showed that the initial phases of the PA application, during which applicants need to collect information on damages, are driving longer application processing times. In response, FEMA provided applicants with better guidance on information requirements for PA hazard mitigation grant applications intended to help them collect information more efficiently. Steps such as this could help, but FEMA has not yet met its timeliness goals and FEMA officials acknowledge there are more opportunities to streamline the PA grant process. Further, these steps do not address challenges with the complexity of combining PA and HMGP funding.⁴⁷

FEMA mitigation officials told us that they intend to assess both the HMGP and BRIC programs to identify improvements but did not have documented plans or time frames for either effort. Further, FEMA

⁴⁶FEMA officials report that during the period of our review, FEMA grant systems did not allow them to provide accurate data on how long HMGP, PDM, and FMA grant application reviews took. However, FEMA officials stated that the new grant system called FEMA Grants Outcome that was implemented in September 2020 for FMA and BRIC should allow them to track review times.

⁴⁷We have a forthcoming report that is expected to be issued in February 2021 on FEMA's response to natural disasters in the Commonwealth of the Northern Mariana Islands, Guam, and Hawaii that includes a review of FEMA's efforts to address delays in the PA program for disaster recovery more broadly.

mitigation officials did not have a plan to conduct a comprehensive assessment of FMA. According to FEMA officials, resource constraints in past years limited their ability to comprehensively assess these programs.

In its strategic plan, FEMA recognized the importance of reducing complexity and made it a strategic objective to streamline the grantee experience. In addition, the federal government's *National Mitigation Investment Strategy* states that the federal government should simplify mitigation funding processes and streamline application processes and supporting paperwork into clear, simple steps, when possible.⁴⁸ It also calls for federal agencies to review and align their timing and sequence of funding sources. Further, GAO's *Disaster Resilience Framework* states that the federal government can enhance resilience by streamlining review processes, reducing disincentives, such as unnecessary administrative burdens, and helping decision makers identify and combine available funding sources.⁴⁹ Having a plan with defined time frames is a standard for project management and would better-position FEMA to assess PA, FMA, BRIC, and HMGP grant processes to identify and implement further ways to streamline the applications and reviews and facilitate the use of funding from more than one FEMA mitigation grant program on a project.⁵⁰ Streamlining grant processes could help lower barriers to applying for mitigation grants and delays in implementing mitigation projects.

State and Local Officials Cite Technical Capacity Challenges; FEMA Has Developed Hazard Mitigation Resources but Does Not Have a Centralized Inventory

Technical capacity—having access to the technical skills needed to successfully apply for hazard mitigation grants—was cited as a challenge by officials from eight of the 12 state and local jurisdictions, IAEM, NEMA, and the four FEMA regions with whom we met. Technical capacity is also cited as a challenge in FEMA's *Summary of Stakeholder Feedback* report. Some communities can hire contractors or leverage technical expertise of staff to develop and manage grant applications. However,

⁴⁸Mitigation Framework Leadership Group, *National Mitigation Investment Strategy*, (August 2019).

⁴⁹[GAO-20-100SP](#).

⁵⁰Project Management Institute, *A Guide to the Project Management Body of Knowledge*, Sixth Edition (Newtown Square, PA: 2017).

other communities do not have technical staff, such as engineers, and lack dedicated grant managers or funding to hire contractors to develop hazard mitigation projects and grant applications.

The federal government's *National Mitigation Investment Strategy* states that one way to help build community capacity is to make existing hazard mitigation resources easier to find and use by creating a centralized inventory.⁵¹ FEMA has hazard mitigation resources to help build community capacity but they can be difficult to locate. FEMA has several resources to improve interested communities' technical capacity such as FEMA-led trainings, direct FEMA technical assistance, and consultations with FEMA experts by phone and email. FEMA has also developed many written resources including guidance, Fact Sheets, project examples, studies, and technical publications. See appendix IV for additional information on FEMA's hazard mitigation resources. Some local officials stated that the resources were helpful, but others said they could be difficult to locate on FEMA's website. Officials from one jurisdiction said FEMA's website was disorganized and made it difficult to locate valuable information. As a result, they said they spend time trying to locate guidance, forms, and other resources and sometimes are not able to locate them. Officials from another jurisdiction said that they had to spend time searching for information on hazard mitigation while trying to manage the response and recovery to a major disaster. We found that the information about these resources is located in different pages on FEMA's website and there is not a centralized inventory of resources to help applicants locate the information.

FEMA hazard mitigation officials acknowledged that it can be difficult to find resources on their website and stated that they plan to develop new guidance that will consolidate and better link to information in Fact Sheets and other guidance documents. However, the officials did not plan to consolidate information on other hazard mitigation resources, such as training. In addition, in July 2020, FEMA redesigned its website with the goal of making it more user-friendly, but as of September 2020 FEMA's hazard mitigation resources were still linked on different pages and had not been consolidated in one place. Both the *National Mitigation Investment Strategy* and GAO's *Disaster Resilience Framework* emphasize the importance of facilitating access to authoritative

⁵¹Mitigation Framework Leadership Group, *National Mitigation Investment Strategy*, (August 2019).

information.⁵² A centralized inventory of hazard mitigation resources on FEMA's website could help FEMA build state and local capacity to successfully develop and apply for grants for mitigation projects that enhance resilience.

FEMA Has Assessed Some Effects of Its Hazard Mitigation Projects, but Could Expand Efforts and Better Share Results

FEMA uses several methods to assess some effects of its hazard mitigation projects, each with advantages and disadvantages. These methods include project benefit-cost analysis, loss avoidance studies, state-conducted records of effectiveness, and mitigation assessment team studies. None of these methods comprehensively assesses the effects of FEMA's hazard mitigation programs but, rather, each method provides information on different effects for specific groups of projects. Information on project effects can show where mitigation works and help inform and motivate state and local investment in mitigation. However, there are opportunities for FEMA to expand its existing efforts to better capture and share information on the effects of FEMA-funded hazard mitigation projects.

FEMA Uses Benefit-Cost Analysis and Post-Disaster Studies to Assess Mitigation Project Effectiveness

Benefit-Cost Analysis

FEMA uses benefit-cost analysis to assess some effects of its hazard mitigation projects. FEMA uses an overall benefit to cost ratio as the annual performance measure for its hazard mitigation programs. This ratio is the sum of all of the estimated net benefits of the approved mitigation projects, such as protecting lives and property and preventing other damages, divided by their total estimated costs. Specifically, FEMA uses the individual benefit-cost analyses from approved HMGP, FMA, and PDM program applications to calculate an annual aggregate benefit to cost ratio performance measure. In fiscal year 2019, FEMA reported a mitigation grant benefit to cost ratio of 1.7, which exceeded the 2019

⁵²See Mitigation Framework Leadership Group, *National Mitigation Investment Strategy*, (August 2019); and [GAO-20-100SP](#).

target of 1.6. A ratio of 1.7 means that for every \$1 in costs, applicant benefit-cost analyses estimate that mitigation projects will accrue \$1.70 in benefits over the life of a project. FEMA officials report using the benefit to cost ratio to demonstrate that mitigation projects are cost-effective, and as an important factor in the decision to spend money on mitigation.

There are limitations to the benefit to cost ratio measure, and FEMA is taking some steps intended to help address them. First, the measure does not comprehensively capture project benefits. FEMA officials told us that the benefit to cost ratio is primarily a project eligibility criterion. FEMA officials acknowledged that applicants may therefore stop inputting benefit data once they pass the 1.0 threshold that is needed to meet the criterion. As a result, the ratio may not capture all expected benefits. In addition, FEMA's current benefit to cost ratio may be undercounting benefits because it does not include indirect benefits, such as economic impacts on businesses that are not directly affected by a disaster but are impacted by supply chain disruptions. FEMA commissioned research to address this issue and is in the process of considering ways to include indirect benefits which could make the measure more comprehensive.⁵³ Second, the benefit to cost ratio does not reflect a precise estimate of benefits, but is rather a future projection. However, as we discuss later in this report, one step FEMA has taken is to conduct loss avoidance studies on some mitigation projects post-disaster to estimate the costs avoided from actual hazard events. Despite the limitations of the benefit to cost ratio, this measure is simple for FEMA to calculate on an ongoing basis and provides some information on the cost-effectiveness of FEMA-funded hazard mitigation projects.

FEMA has also estimated the benefits of some hazard mitigation projects through the agency's computation of pre-calculated benefits. These analyses result in a benefit amount for specific project types within specific areas that can be used by eligible applicants in place of individual project benefit-cost analysis. For example, FEMA determined that applicants in Kansas can use a benefit amount of approximately \$14,000 for a tornado safe room. Therefore, FEMA considers a safe room project to be cost-effective and eligible for FEMA grant funding if it costs less

⁵³FEMA contracted with the Homeland Security Operational Analysis Center, a federally funded research and development center operated by the RAND Corporation, to develop metrics for BRIC. The Center issued its study in July 2020 and recommended that FEMA consider two different models for incorporating indirect benefits into its benefit cost toolkit. BRIC program officials said they were assessing the recommendations in this report to determine if and how they could implement them.

than \$14,000, and meets other project criteria. While these analyses were developed to help streamline the application process, they also provide information on the benefits and cost-effectiveness of certain types of hazard mitigation projects in different parts of the country.

FEMA officials also cite the work of researchers from the National Institute of Building Sciences who have evaluated the benefits of federally funded mitigation projects, including FEMA-funded mitigation projects.⁵⁴ See appendix V for additional information on this study.

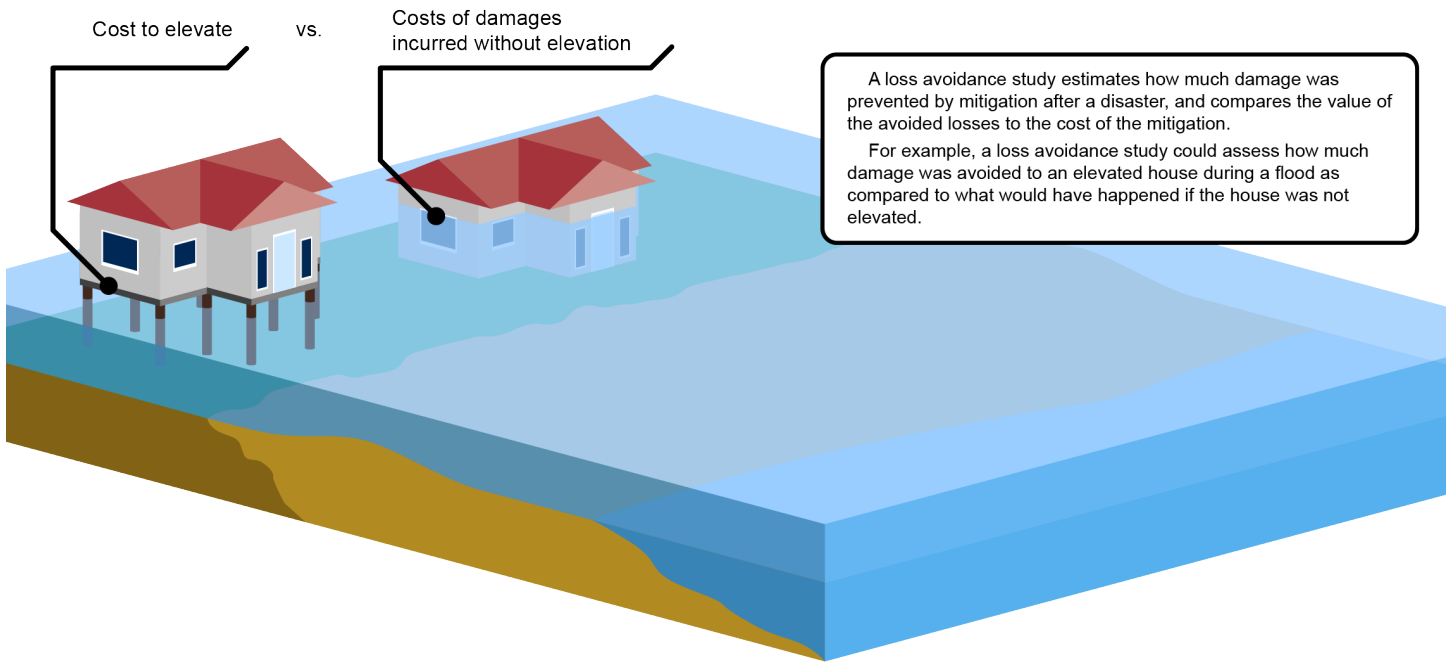
Loss Avoidance Studies

FEMA uses loss avoidance studies to assess the effectiveness of some hazard mitigation projects following an actual disaster. A loss avoidance study estimates how much damage was prevented by mitigation and compares the value of the avoided losses to the cost of the mitigation (see figure 6). According to FEMA officials, FEMA may conduct loss avoidance studies when data are available on both the disaster and affected mitigation projects. For example, following the flooding in coastal areas of Texas from Hurricane Harvey, FEMA conducted a loss avoidance study focused on FEMA-funded acquisitions and elevation projects in the area. Within the area inundated by floodwaters from Hurricane Harvey, FEMA reported that it had invested \$205 million to either acquire or elevate over 1,600 properties. FEMA found the avoided losses on those properties from the damage caused by Hurricane Harvey were more than \$330 million.⁵⁵

⁵⁴Multi-Hazard Mitigation Council, National Institute of Building Sciences, *Natural Hazard Mitigation Saves: 2019 Report*, (Washington, D.C.: Dec. 2019). This report examined a sample of hazard mitigation grants awarded by FEMA, the Economic Development Administration, and the Department of Housing and Urban Development from 1993 through 2016 to address various hazards.

⁵⁵According to the study, FEMA had invested approximately \$555 million dollars (Federal share only) in the State of Texas for acquisition and elevation of 4,386 properties through the hazard mitigation grant programs. FEMA's analysis considers damage to buildings, personal contents, and displacement costs and requires numerous modeling assumptions. For example, they assume each of the approximately 1,600 properties is a one-story house with a value of \$184,871.

Figure 6: Loss Avoidance Analysis Example



Source: GAO analysis of Federal Emergency Management Agency (FEMA) loss avoidance studies. | GAO-21-140

Loss avoidance studies are useful, but have some limitations. One limitation is that FEMA conducts loss avoidance studies on projects impacted by a disaster, so the study results are not generalizable to other mitigation investments that were not directly impacted by the disaster. FEMA officials acknowledge this limitation, but note that the loss avoidance studies provide useful examples of losses avoided when tested by a natural hazard. FEMA’s guidance states that a loss avoidance study provides a quantitative value that can be used to verify cases when a project becomes cost-effective as implemented. These studies can show examples where mitigation works and can motivate individuals and communities to undertake hazard mitigation in appropriate settings, according to FEMA officials.

State Records of Effectiveness

FEMA requires states with enhanced state mitigation plans to assess the effectiveness of mitigation projects.⁵⁶ FEMA regulations provide that states must have a system and strategy for how the state will complete an assessment, called a record of effectiveness, of completed mitigation projects and include the actual costs avoided post-disaster.⁵⁷

We found that some states met this requirement by conducting studies similar to loss avoidance studies, with the exact structure varying by state. For example, the Florida Division of Emergency Management conducted a loss avoidance study on areas impacted by Hurricane Matthew in 2016. The study looked at multiple mitigation project types, including elevations, acquisitions, drainage projects, and wind projects. The study found that 40 out of 136 hazard mitigation projects in the storm's area of impact prevented damage. These 40 projects cost \$19.2 million to implement and avoided an estimated \$81.1 million in damage. According to the study, across all 136 projects in the area, the average project return on investment was 97 percent based just on losses avoided during Hurricane Matthew. We found that states sometimes included summaries of these records of effectiveness in their state hazard mitigation plans, which are publicly available on their websites.

Mitigation Assessment Team Studies

FEMA conducts Mitigation Assessment Team studies after some disasters to study the performance of a variety of building types subject to the effects of a natural hazard event. These studies evaluate the key causes of building failures and successes and provide information and recommendations to improve the resilience of buildings and communities. These studies are not designed to specifically assess FEMA-funded mitigation projects, but can provide information on successful mitigation practices. For example, a mitigation assessment team study was conducted in some parts of Texas following Hurricane Harvey. The study found that when local floodplain regulations were adopted after buildings were constructed, those buildings had an average insurance claim of approximately \$175,000. However, when regulations were adopted

⁵⁶As of September 2020, there were 15 states with approved Enhanced State Hazard Mitigation Plans: California, Colorado, Florida, Georgia, Iowa, Kentucky, Missouri, Nevada, North Carolina, North Dakota, Ohio, Oregon, South Dakota, Washington, and Wisconsin.

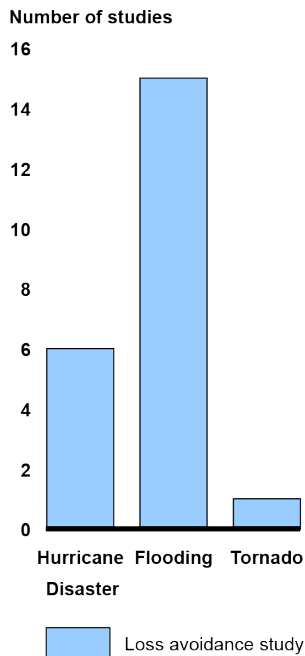
⁵⁷44 C.F.R. § 201.5(b)(2)(iv).

before buildings were constructed, those buildings had an average claim of approximately \$87,000. According to the report, this supports that mitigation can reduce damages from a natural hazard.

FEMA Uses Loss Avoidance Studies to Assess Project Effectiveness for Some Hazard Types, but Does Not Have a Plan to Conduct Studies for Other Hazard Types

FEMA has conducted loss avoidance studies for some hazard types, but not for various others. Over the past 20 years, FEMA has conducted 22 loss avoidance studies. Of those, 15 focused on flooding events, six focused on hurricanes, and one focused on a tornado disaster, as shown in figure 7. None of the loss avoidance studies have focused on wildfire events, earthquakes, or winter storms, among other disaster types.

Figure 7: FEMA Loss Avoidance Studies by Hazard Type, 2000 through 2020



Source: GAO analysis of Federal Emergency Management Agency (FEMA) loss avoidance studies. | GAO-21-140

Data table for Figure 7: FEMA Loss Avoidance Studies by Hazard Type, 2000 through 2020

	Loss Avoidance
Hurricane	6
Flooding	15
Tornado	1

Hurricanes, floods, and tornadoes have comprised about 80 percent of disaster declarations since 2000, but state and local officials told us it would be helpful to areas prone to other types of disasters to have information on the potential losses they might avoid through investment in hazard mitigation.⁵⁸ Notably, FEMA did not conduct loss avoidance studies for wildfires (which make up almost 8 percent of declared disasters since 2000), and winter storms (which make up almost 10 percent).⁵⁹ FEMA officials acknowledged that conducting loss avoidance studies on additional project types would be more valuable than conducting loss avoidance studies on project types that FEMA has previously assessed. Officials from seven of the 12 state and local jurisdictions we met with told us they value studies on losses avoided due to mitigation because the studies help them make the case for greater investment in mitigation, including the necessary matching funding for FEMA grants. In addition, FEMA’s Summary of Stakeholder Feedback, notes that stakeholders suggest more loss avoidance studies are needed or that the results of completed studies should be more accessible for stakeholder use.

Although FEMA mitigation officials said that they would like to conduct more loss avoidance studies, they do not have specific plans—such as specific plans for collecting the necessary data—that will enable them to do so. FEMA officials told us that one challenge they face when conducting loss avoidance studies is the availability of data, but planning ahead for data collection could address this issue. FEMA officials said that needed data are generally available for flooding disasters but harder to obtain for smaller scale and other types of disasters. While obtaining

⁵⁸The 80 percent figure includes severe storms, which can cause flooding among other damages, and makes up almost 40% of disaster declarations.

⁵⁹The term winter storms covers both severe ice storms and snow storms, which FEMA treats as separate hazard categories. The remaining approximately 2 percent of disaster declarations included hazards such as earthquakes, tsunamis, and mudslides, among others.

data for those disasters would require advanced planning to identify additional data sources or plan for additional data collection, it is possible. FEMA mitigation officials told us disaster data availability has been increasing, which would allow FEMA to conduct more loss avoidance studies. In addition, implementation of the new FEMA electronic grants management system called FEMA Grants Outcome could provide an opportunity for FEMA to collect additional mitigation project data that would be needed for a loss avoidance study.⁶⁰

FEMA's Loss Avoidance Study Handbook states that examining the effectiveness of mitigation based on actual disasters is a critical part of its ongoing effort to verify that mitigation projects can be cost-effective.⁶¹ In addition, GAO's *Disaster Resilience Framework* states that federal efforts can help decision makers identify the impact of risk reduction strategies by providing information that is authoritative and understandable.⁶² Further, standards for project management state that managing a project involves, among other things, a quality management plan that defines the level of resources, such as data, which will be required to achieve the goals of the project.⁶³ A plan for conducting additional types of loss avoidance studies could better position FEMA to provide state, and local governments with information on the effectiveness of more hazard mitigation project types to help inform mitigation investment decisions.

FEMA Is Considering New Methods to Measure Effects but Could Expand These Efforts

In developing metrics for its BRIC program, FEMA is considering new methods for assessing cost-effectiveness and community resilience that could be helpful in assessing the effects of FEMA hazard mitigation projects funded through its other programs. As part of its effort to establish the new BRIC program, FEMA contracted with the Homeland Security Operational Analysis Center, and in July 2020, the center issued

⁶⁰FEMA implemented the FEMA Grants Outcome system in September 2020 for BRIC and FMA mitigation grants.

⁶¹FEMA, *Loss Avoidance Study: A Handbook for Decision Makers*, (Washington, D.C.: December 2009).

⁶²[GAO-20-100SP](#).

⁶³Project Management Institute, *A Guide to the Project Management Body of Knowledge*, Sixth Edition (Newtown Square, PA: 2017).

a report with recommended metrics for FEMA to consider using to assess the effectiveness of the BRIC program.⁶⁴

These methods and metrics could provide new and helpful information on the effects of FEMA's hazard mitigation projects. For example, the report considers that another way to define "cost-effectiveness" of FEMA hazard mitigation grants could be to determine if the federal government saves more than a dollar in disaster relief spending for every dollar spent on hazard mitigation. This type of cost-savings measure could allow FEMA to demonstrate whether FEMA mitigation investments reduced federal fiscal exposure. In comparison, the current benefit to cost ratio performance measure is designed to show whether the benefits to society exceed the costs to society overall, without separately accounting for how the investment may affect future federal disaster spending. In addition, the report provides information and recommendations on methods for measuring the effect of hazard mitigation on overall community resilience. The report concluded that there are currently no existing metrics that could be readily implemented to measure the effect of hazard mitigation on community resilience. However, the researchers found that FEMA's Community Rating System for assessing flood vulnerabilities could be a useful model for developing resilience metrics for other types of hazards.⁶⁵

In August 2020, FEMA BRIC officials stated that they were considering if and how to implement the report's findings and recommendations; however, FEMA was only considering these new methods and metrics for BRIC and not for its other hazard mitigation programs. FEMA officials acknowledged that the report and recommendations could have applications across FEMA's hazard mitigation programs, but stated that they have decided to first consider them only in the context of BRIC because they wanted to pilot any new measures for that program first.

⁶⁴The scope of the report focuses on tools for assessing future projects based on information that can generally be gathered during the application process rather than by focusing on the analysis of historical data. See Homeland Security Operational Analysis Center, *Developing Metrics and Procedures to Support Building Resilient Infrastructure and Community Grant Program Decisionmaking*, (July 1, 2020).

⁶⁵The Community Rating System is an index that considers 19 areas for protecting against floods and assigns a community points within these areas for actions taken. The Community Rating System is used by FEMA's National Flood Insurance Program to offer discounted flood insurance premiums to communities that adopt enhanced techniques for floodplain management.

The federal government's *National Mitigation Investment Strategy* recommends the use of common measures to aid decision-making for mitigation investment. By only considering new methods and metrics for the BRIC program, FEMA is missing an opportunity to leverage its current investment in the Homeland Security Operational Analysis Center's work to obtain better information on the performance of all of their hazard mitigation programs. Further, if FEMA were to identify methods that work across programs, it could adopt common metrics to aid decision making across FEMA.

FEMA Has Shared Some Studies but Could Share More Studies that Assess Effects

FEMA publicly shared its benefit to cost ratio performance measure, loss avoidance studies, and mitigation assessment team studies by posting them to its website, but it has not shared other studies on hazard mitigation projects that could contribute to the body of knowledge on the effects of FEMA-funded hazard mitigation projects. Specifically, FEMA has not shared the studies with its results and underlying methodology for developing pre-calculated benefits for acquisitions, elevations, safe rooms, and wind retrofits or the states' records of effectiveness. According to FEMA officials, they have not publicly shared these studies because there is no requirement that they do so and it can be difficult to display some of the information in a manner that meets federal accessibility requirements.⁶⁶ However, FEMA could share the state records of effectiveness and officials agreed that they could publicly share the results and methodology for the pre-calculated benefits and noted that they have done so upon request.

These studies could help inform other state and local jurisdictions' decisions about their own mitigation investments. For example, FEMA's *Summary of Stakeholder Feedback* found that a common recommendation was to share lessons learned and best practices, including examples of benefit-cost analyses. This report also stated that one reason stakeholders requested pre-calculated benefits is that they lack an understanding about project types that are cost-effective solutions to certain hazards. Currently, FEMA does publish memoranda and job aids that describe eligibility criteria for pre-calculated benefits. However,

⁶⁶The Rehabilitation Act Amendments of 1998 require Federal agencies to make their electronic and information technology accessible to people with disabilities. See 29 U.S.C § 794d.

these documents do not include key technical information, such as the methodology or the specific types of project benefits that contributed to cost-effective investments. In addition, FEMA shares short one to two page documents, called “Mitigation Best Practices,” from any state, locality, tribe or territory that has completed a mitigation project. These documents are voluntarily submitted and are posted in FEMA’s Homeland Security Digital Library. However, they are generally anecdotal and do not include technical information that would be captured in the studies on pre-calculated benefits and state records of effectiveness. For example, in a one-page write-up about a creek expansion project in Victoria, Texas, the number of homes that avoided flooding was listed, but no other project information, such as cost, was included.

The *National Mitigation Investment Strategy* recommends that federal agencies emphasize the benefits of mitigation by using specific, personal examples of mitigation investment and including the economic, social, and environmental benefits that stem from those investments.⁶⁷

The state records of effectiveness and pre-calculated benefits studies have already been funded and conducted and, if made available to others, could help inform state and local investments in hazard mitigation. By not sharing the pre-calculated benefits studies and state records of effectiveness, FEMA is missing an opportunity to share information on the benefits and costs associated with different project types and methods to measure them.

Conclusions

The federal government has spent billions of dollars on federal disaster assistance and the number of natural disasters is expected to increase. Hazard mitigation can save lives and reduce the costs of disasters. However, selected state and local officials we interviewed experienced challenges with FEMA’s hazard mitigation grant programs, including challenges with the required benefit-cost analysis, the complexity of the application processes, the timeliness of grant awards, and the technical capacity required to successfully apply. FEMA officials have recognized the importance of addressing these challenges, and by developing and implementing plans to do so, FEMA could reduce barriers to applying for

⁶⁷Mitigation Framework Leadership Group, *National Mitigation Investment Strategy*, (Aug. 2019).

grants, expand the pool of applicants, and help ensure that hazard mitigation is being implemented where it is needed most.

Further, with a high need and finite funding for hazard mitigation, collecting and sharing information on project cost-effectiveness is crucial to help FEMA, state, and local governments make better-informed mitigation investment decisions. To this end, FEMA assesses the effectiveness of hazard mitigation through benefit-cost analysis and post-disaster studies. However, FEMA has conducted post-disaster loss avoidance studies on only some types of hazard mitigation projects. As a result, FEMA may be missing opportunities to learn and share information about the effectiveness of other types of hazard mitigation projects. FEMA has also invested in research on new methods and metrics that could provide further insights into the effectiveness of mitigation in reducing federal fiscal exposure and improving community resilience, but is only considering these for one program. FEMA could further leverage this investment in research by considering opportunities to develop common metrics across programs that would better inform decision makers. Further, FEMA has not shared some studies FEMA and states have conducted on mitigation projects. Sharing these could contribute to the body of knowledge on the benefits associated with different project types and methods to measure them.

Recommendations for Executive Action

We are making the following six recommendations to FEMA:

The Administrator of FEMA should establish a plan with time frames to develop pre-calculated benefits for additional project types, where appropriate. (Recommendation 1)

The Administrator of FEMA should establish a plan with time frames to assess PA, HMGP, FMA, and BRIC hazard mitigation grant processes to identify and implement steps to reduce the complexity of and time required for grant applications, including steps to facilitate the use of funding from more than one FEMA mitigation grant program on a project. (Recommendation 2)

The Administrator of FEMA should create a centralized inventory of hazard mitigation resources on the FEMA website. (Recommendation 3)

The Administrator of FEMA should develop a plan for conducting future loss avoidance studies to ensure they can include more hazard types. (Recommendation 4)

The Administrator of FEMA should ensure that as new methods and metrics to assess the effectiveness of hazard mitigation are developed, FEMA officials consider opportunities to adopt common methods and metrics across all of its hazard mitigation programs. (Recommendation 5)

The Administrator of FEMA should publicly share pre-calculated benefits studies and state developed records of effectiveness, such as by posting them to its website. (Recommendation 6)

Agency Comments and Our Evaluation

We provided a draft of our report to the Department of Homeland Security (DHS) for comment. In written comments, which are included in appendix VI, the agency concurred with our six recommendations and described steps they plan to take to address them. DHS also provided technical comments, which we have incorporated, as appropriate.

With regard to our first recommendation, that FEMA establish a plan with time frames to develop additional pre-calculated benefits, DHS responded that it will develop such a plan by the end of October 2021. If implemented effectively, this should address the intent of our recommendation.

With regard to our second recommendation, that FEMA establish a plan with time frames to assess HMGP, BRIC, FMA, and PA hazard mitigation grant processes to identify steps to reduce complexity, reduce the amount of time required, and facilitate the use of funding from more than one FEMA grant program, DHS stated it would identify steps to assess these programs as part of ongoing efforts to develop a multi-year hazard mitigation assistance strategy. DHS estimated the strategy would be completed by the end of June 2021. These actions, if implemented effectively, should address the intent of our recommendation.

With regard to our third recommendation, that FEMA create a centralized inventory of hazard mitigation resources, DHS stated that it would develop a strategy to better present information on FEMA's website by the end of June 2021. If this strategy results in a centralized inventory of

hazard mitigation resources on FEMA's website, it should address the intent of our recommendation.

With regard to our fourth recommendation, that FEMA develop a plan for conducting future loss avoidance studies to ensure they can include more hazard types, DHS stated that they would leverage ongoing initiatives to enhance hazard risk assessment tools and methodologies to develop such a plan by the end of January 2022. If implemented effectively, this should address the intent of our recommendation.

With regard to our fifth recommendation, that FEMA consider opportunities to adopt common methods and metrics across all its hazard mitigation programs, DHS stated that it would coordinate its ongoing efforts to develop metrics for BRIC across all hazard mitigation programs and evaluate the applicability of the metrics for all programs. These actions, if implemented effectively, should address the intent of our recommendation.

With regard to our sixth recommendation, that FEMA publicly share pre-calculated benefits studies and state developed records of effectiveness, DHS stated that FEMA plans to post studies to its website within two months of completion. These actions, if implemented effectively, should address the intent of our recommendation.

We are sending copies of this report to the appropriate congressional committees, the Secretary of Homeland Security, and other interested parties. In addition, the report is available at no charge on the GAO website at <https://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at (404) 679-1875 or curriec@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 made key contributions to this report are listed in appendix VII.



Letter

Chris P. Currie
Director
Homeland Security and Justice

Appendix I: Key Hazard Mitigation Grant Requirements

This appendix contains a table with information on key Federal Emergency Management Agency (FEMA) hazard mitigation grant requirements.

Table 2: Key Hazard Mitigation Grant Requirements

	Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM), and Flood Mitigation Assistance (FMA)	Public Assistance (PA) Hazard Mitigation
Hazard Mitigation Plan	Applicants must have a Federal Emergency Management Agency (FEMA)-approved State or Tribal Hazard Mitigation Plan at the time of the grant application or disaster declaration and grant obligation. Sub-applicants generally must have a FEMA-approved local or Tribal Mitigation Plan at the time of application and grant obligation, ^a unless the sub-applicant is applying to use the grant funding to develop a mitigation plan.	Applicants must have FEMA-approved Hazard Mitigation Plan before FEMA can provide PA funding for any permanent work projects, including those with hazard mitigation.
Eligible activities	Eligible activities include hazard mitigation planning, management costs associated with administering grants, and hazard mitigation projects. Mitigation projects must be technically feasible, provide a long-term solution, and conform to established codes and standards. Sub-applicants must include documentation to support the eligibility, scope of work, budget, and schedule; this may include documentation such as construction estimates, maps, property appraisals, photographs, and other technical evaluations.	Eligible activities include hazard mitigation measures that are done in conjunction with projects to repair public or critical /essential service facilities damaged by the disaster (e.g., education, utility, and medical facilities, among others). Mitigation projects must be technically feasible, effective, and conform to applicable codes and standards. Applicants must include documentation to support project eligibility; this may include documentation on the pre-disaster condition, design studies, deeds, cost estimates certified by a professional engineer, insurance documentation, and technical evaluations.
Cost-effectiveness	Cost-effectiveness is typically demonstrated by conducting a benefit-cost analysis. Projects where benefits exceed costs are generally considered cost-effective. Sub-applicants must provide documentation supporting costs and benefits. In addition, all costs must be necessary and reasonable.	<p>Hazard mitigation is considered cost-effective if it:</p> <ul style="list-style-type: none"> costs 15 percent or less than the total eligible repair cost for the facility, is on the list of mitigation measures FEMA has determined are cost-effective for PA and the cost of the mitigation does not exceed 100 percent of the eligible repair cost of the facility, or includes benefits exceeding costs as demonstrated using an acceptable benefit-cost analysis method, such as the method for HMGP, PDM, and FMA. <p>In addition, all costs must be necessary and reasonable.</p>

Appendix I: Key Hazard Mitigation Grant Requirements

	Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM), and Flood Mitigation Assistance (FMA)	Public Assistance (PA) Hazard Mitigation
Environmental and Historic Preservation	For all hazard mitigation grant programs, projects must comply with the National Environmental Policy Act, the National Historic Preservation Act, floodplain management and wetland protection regulations, and applicable state environmental laws, among others. Technical studies and permits may be required to demonstrate compliance.	

Source: GAO analysis of FEMA guidance. | GAO-21-140

^aRegional Administrators may grant an exception to the requirement for local mitigation plans, such as in a small and impoverished community when justification is provided. In these cases, FEMA requires a plan to be completed within 12 months of the award of the project grant. 44 C.F.R. § 201.6(a)(3).

Appendix II: FEMA-Funded Hazard Mitigation Projects

This appendix contains data and information on project categories funded through the Federal Emergency Management Agency's (FEMA) hazard mitigation grant programs, from fiscal years 2010 through 2018. FEMA tracks the categories of mitigation project applicants and sub-applicants implement differently for its Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM), and Flood Mitigation Assistance (FMA), programs compared to its Public Assistance (PA) program. Therefore, we created project categories for this analysis and describe the categories of projects funded through HMGP, PDM, and FMA separately from PA.

Hazard Mitigation Grant Program, Pre-Disaster Mitigation, and Flood Mitigation Assistance

Table 3 shows descriptions of the hazard mitigation project categories funded through HMGP, PDM, and FMA grants and figure 8 shows data on the percent of total obligations and number of projects, by project category for these programs.¹

Table 3: Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM), and Flood Mitigation Assistance (FMA) Project Categories

Project Category	Description
Hazard Mitigation Planning	Planning activities funded under HMGP, PDM, and FMA that are designed to develop State, Tribal, and local hazard mitigation plans that meet planning requirements.
Management Costs	Management costs are any indirect costs and administrative expenses that are reasonably incurred by a recipient or sub-recipient in administering an award or sub-award.

¹We created the project categories for the purposes of this analysis. We used the descriptions of eligible hazard mitigation projects in FEMA's guidance to consolidate similar or less frequently used project types into categories.

**Appendix II: FEMA-Funded Hazard Mitigation
Projects**

Project Category	Description
Technical Assistance, Public Awareness, and Advanced Assistance	<p>Eligible activities for public awareness and technical assistance may include:</p> <ul style="list-style-type: none"> • Promoting FMA to communities, • Visiting sites with communities/applicants, • Developing and reviewing project applications and mitigation plans, • Developing, Implementing, and enforcing codes and standards, • Participating in planning meetings, • Providing planning workshops or materials. <p>Advanced Assistance: Used to accelerate the use of HMGP grant funding. Applications and sub-applicants may use advanced assistance to develop mitigation strategies and obtain data to prioritize, select, and develop complete HMGP applications in a timely manner.</p>
Property Acquisitions	The voluntary acquisition of an existing flood-prone structure.
Elevation and Relocation of Properties	<p>Eligible activities include:</p> <ul style="list-style-type: none"> • Physically raising an existing structure. • Voluntarily relocating an existing structure to an area outside of a hazard-prone area and, typically, acquiring of the underlying land.
Flood Control and Stormwater Management	<p>Eligible activities include:</p> <ul style="list-style-type: none"> • Dry flood proofing: Techniques applied to keep structures dry by sealing the structure to keep floodwaters out. • Localized flood risk reduction projects: Projects to lessen the frequency or severity of flooding, and decrease predicted flood damage, within an isolated and confined area. These projects include but are not limited to installation or modification of culverts and other stormwater management facilities. • Non-localized flood risk reduction projects: Projects that lessen the frequency or severity of flooding, and decrease predicted flood damage. These projects are within an area that is hydraulically linked or connected to a drainage basin that is regional in scale.
Safe Rooms	Safe room construction projects are designed to provide immediate life-safety protection for people in public and private structures from tornado and severe wind events, including hurricanes.
Protective Measures and Reconstruction	Includes eligible activities such as the construction of an improved, elevated building on the same site where an existing building and/or foundation has been partially or completely demolished or destroyed.
Retrofitting	<p>Eligible activities include:</p> <ul style="list-style-type: none"> • Structural retrofitting: modifications to the structural elements of a building to reduce or eliminate the risk of future damage and to protect inhabitants. • Non-structural retrofitting: modifications to the non-structural elements to reduce or eliminate the risk of future damage and to protect inhabitants. Non-structural retrofits may include bracing of building contents to prevent earthquake damage or the elevation of utilities. • Infrastructure Retrofits include measures to reduce risk to existing utility systems, roads, and bridges.
Generators	Generators are emergency equipment that provide a secondary source of power. Generators and related equipment are eligible provided that they are cost effective, contribute to a long-term solution to the problem they are intended to address, and meet other program eligibility criteria.

Appendix II: FEMA-Funded Hazard Mitigation Projects

Project Category	Description
Soil Stabilization	Projects that reduce the risk to structures or infrastructure from erosion and landslides.
Miscellaneous	The Federal Emergency Management Agency (FEMA) encourages applicants and sub-applicants to pursue activities that best address mitigation planning and priorities in their community. FEMA encourages mitigation projects that fall into the miscellaneous category to address climate change adaptation and resiliency. For purposes of our analysis we included warning systems, vegetation management, post-wildfire reforestation, tsunami vertical evacuation shelter, major structural and non-construction project types, other equipment purchases and installation into the miscellaneous category.
Multiple Project Types	Individual projects that include activities associated with two or more of the previously described project category types.

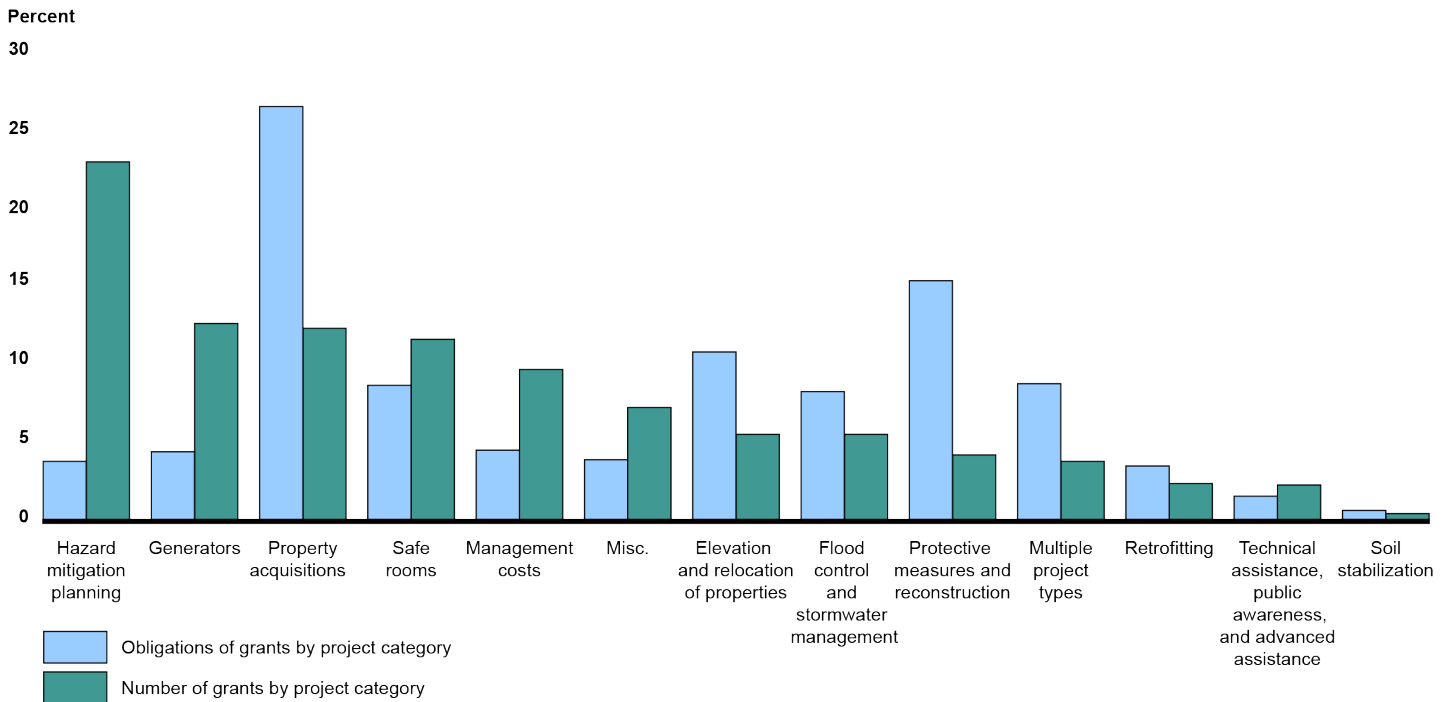
Source: GAO analysis of FEMA information. | GAO-21-140

Note: We created the project categories for the purposes of this analysis. We used the descriptions of eligible hazard mitigation projects in FEMA's guidance to consolidate similar or less frequently used project types into categories.

As shown in figure 8, the greatest proportion of the \$5.2 billion FEMA obligated for HMGP, PDM, and FMA grants during the period from fiscal years 2010 through 2018 have been for property acquisitions (26 percent) and protective measures and reconstruction projects (15 percent). In comparison, the highest number of HMGP, PDM, and FMA grants during the same period was for developing hazard mitigation plans (23 percent of 10,573 total grants). To receive hazard mitigation grant funding, FEMA requires states, territories, tribal governments, and local jurisdictions to have a FEMA-approved hazard mitigation plan. Therefore, hazard mitigation planning grants are very common. They are generally not as costly as property acquisitions and protective measures and reconstruction projects so they only account for 4 percent of grant obligations.

Appendix II: FEMA-Funded Hazard Mitigation Projects

Figure 8: Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA), and Pre-Disaster Mitigation (PDM) Project Categories by Percent of Total Obligations and Total Number of Grants, Fiscal Years 2010-2018



Source: GAO analysis of Federal Emergency Management Agency (FEMA) data. | GAO-21-140

Data table for Figure 8: Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA), and Pre-Disaster Mitigation (PDM) Project Categories by Percent of Total Obligations and Total Number of Grants, Fiscal Years 2010-2018

	Obligations of grants by project category	Number of grants by project category
Hazard mitigation planning	3.8	22.7
Generators	4.4	12.5
Property acquisitions	26.2	12.2
Safe rooms	8.6	11.5
Management costs	4.5	9.6
Miscellaneous	3.9	7.2
Elevation and relocation of properties	10.7	5.5
Flood control and stormwater management	8.2	5.5
Protective measures and reconstruction	15.2	4.2

Appendix II: FEMA-Funded Hazard Mitigation Projects

	Obligations of grants by project category	Number of grants by project category
Multiple project types	8.7	3.8
Retrofitting	3.5	2.4
Technical assistance, public awareness, and advanced assistance	1.6	2.3
Soil stabilization	0.7	0.5

Note: This figure includes HMGP, FMA, and PDM grants from fiscal years 2010-2018. We received the HMGP, FMA, and PDM data as of October 2019. The fiscal year 2019 grants generally had not been obligated at the time of our analysis. The obligations for HMGP are based on the fiscal year of the associated disaster declaration. The obligations for FMA and PDM are based on the fiscal year of the grant application. FEMA may still be awarding HMGP grants for previous fiscal years' disasters and PDM and FMA grants for previous fiscal years' grant application cycles. Additionally, FEMA may deobligate funding for projects, meaning cancel or adjust downward an agency's previously incurred obligations, especially at the end of the process. As a result, obligated amounts for all hazard mitigation grant programs (HMGP, FMA, PDM) will change over time. Additionally, we abbreviated the protective measures and mitigation reconstruction category to "protective measures and reconstruction" in the graphic due to space limitations.

Public Assistance

Table 4 shows the mitigation project categories funded through PA grants and figure 9 shows data on the number and total obligations by project category.

Table 4: Public Assistance (PA) Mitigation Project Categories

Category	Examples of Mitigation Projects
Roads and Bridges	<ul style="list-style-type: none"> Mitigation measures to reduce risk of future damage can be incorporated into road or bridge repair or new construction. Installing new drainage facilities (including culverts) along a damaged road.
Water Control Facilities	<ul style="list-style-type: none"> Constructing a flood wall around a damaged facility. Slope stabilization to protect facilities, including rip rap and retaining walls.
Public Buildings	<ul style="list-style-type: none"> Structural retrofitting: modifications to the structural elements of a building to reduce or eliminate the risk of future damage. Non-structural retrofitting: modifications to the non-structural elements to reduce or eliminate the risk of future damage. Non-structural retrofits may include bracing of building contents to prevent earthquake damage or the elevation of utilities.
Public Utilities	<ul style="list-style-type: none"> Dry flood proofing damaged and undamaged buildings that contain components of a system that are functionally interdependent (i.e.: cases where the entire system is jeopardized if any one component of the system fails). Use of disaster-resistant materials for power poles.
Recreational or Other	<ul style="list-style-type: none"> Chain link fence around the perimeter of a park. Replace signs with stronger supports and panels

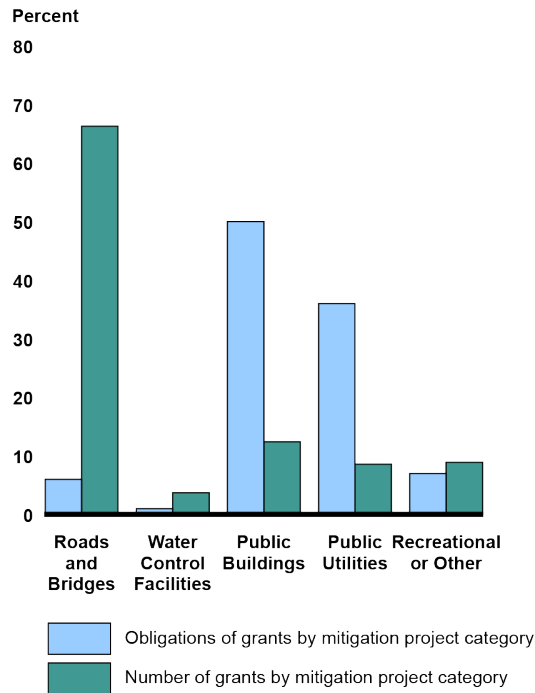
Source: GAO analysis of Federal Emergency Management Agency information. | GAO-21-140

Appendix II: FEMA-Funded Hazard Mitigation Projects

Note: The categories listed above are the categories FEMA uses to track all PA permanent work projects to restore facilities that were damaged during a disaster. The PA program can be used to build mitigation measures into permanent work projects; however, not all PA permanent work projects have a mitigation component to them.

As shown in figure 9, most of the \$6.1 billion PA grant funding from fiscal years 2010 through 2018 was used for incorporating mitigation measures into repairing public buildings (50 percent) and utilities (36 percent). The highest number of PA grants during the same period was for roads and bridges (66 percent of 24,851 total grants).

Figure 9: Public Assistance Mitigation Project Categories by Percent of Total Obligations and Total Number of Grants, Fiscal Years 2010-2018



Source: GAO analysis of Federal Emergency Management Agency (FEMA) data. | GAO-21-140

Data table for Figure 9: Public Assistance Mitigation Project Categories by Percent of Total Obligations and Total Number of Grants, Fiscal Years 2010-2018

	Obligations of grants	Number of grants
C - Roads and Bridges	6	66.3
D - Water Control Facilities	1	3.7
E - Public Buildings	50	12.4
F - Public Utilities	36	8.6
G - Recreational or Other	7	8.9

**Appendix II: FEMA-Funded Hazard Mitigation
Projects**

Note: This figure includes the Public Assistance (PA) grant program obligations from fiscal year 2010-2018. The fiscal year 2019 grants generally had not been obligated at the time of our analysis. We received the PA mitigation data as of April 2020. The obligations for PA are based on the fiscal year of the associated disaster declaration. FEMA may still be awarding PA grants for previous fiscal years' disasters. Additionally, FEMA may deobligate funding for projects, meaning cancel or adjust downward an agency's previously incurred obligations, especially at the end of the process. As a result, obligated amounts for PA hazard mitigation grants will change over time.

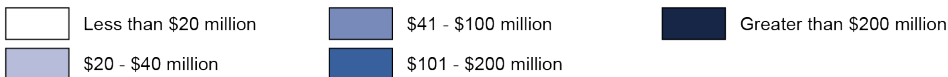
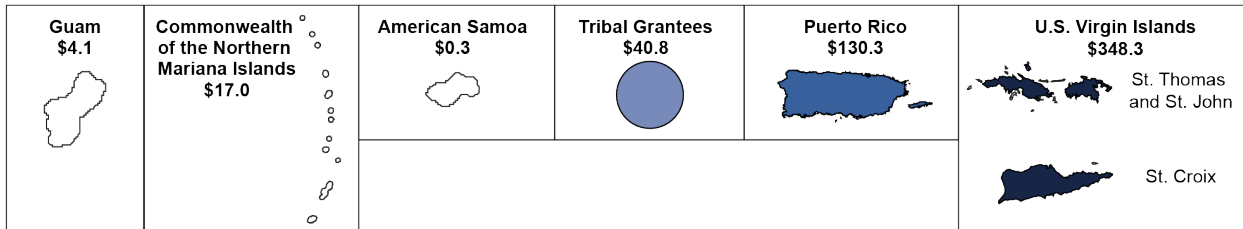
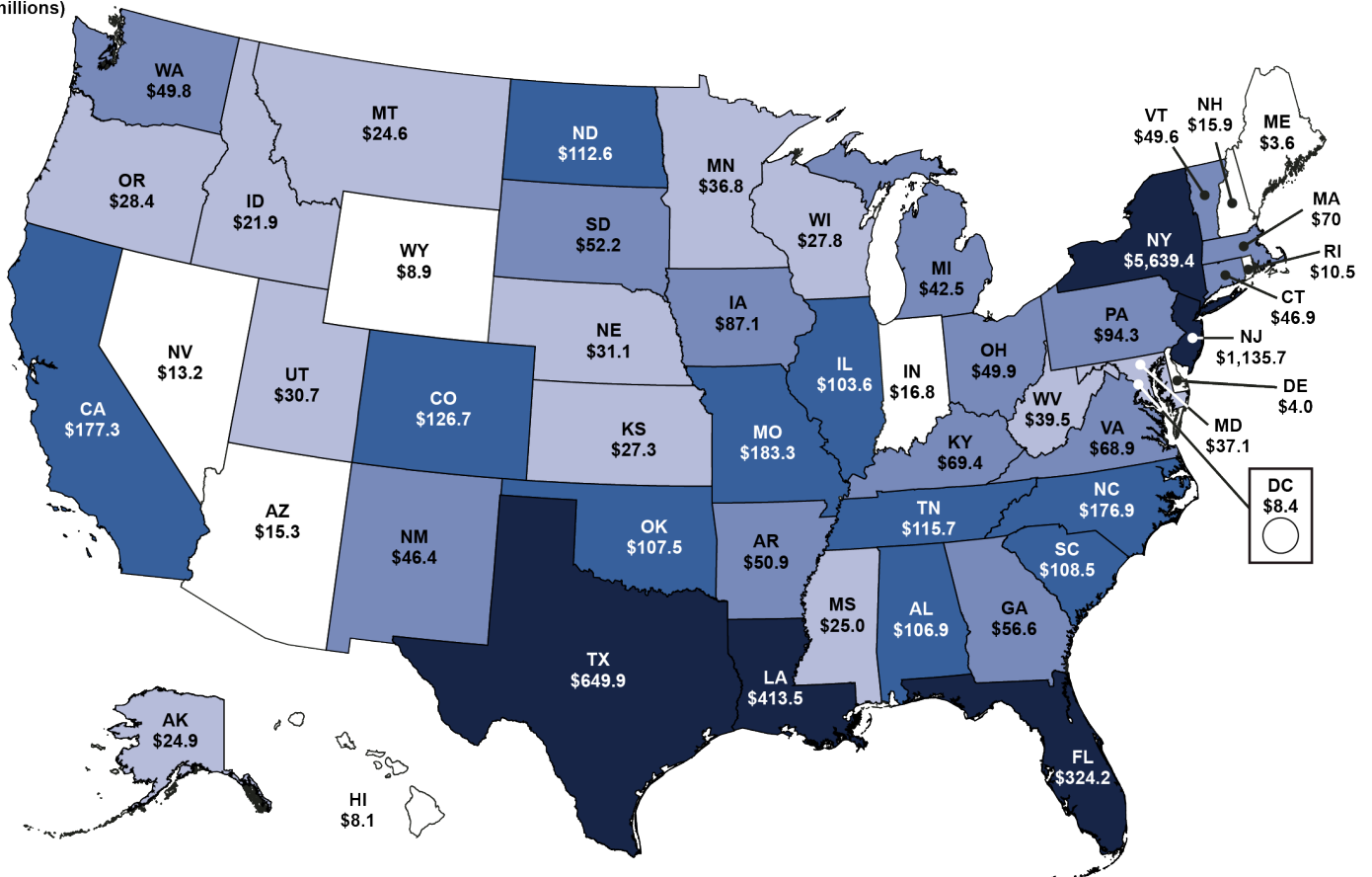
Appendix III: FEMA Hazard Mitigation Grant Funding By Grantee

This appendix contains a map showing total Federal Emergency Management Agency (FEMA) hazard mitigation funding for fiscal years 2010 through 2018, by grant recipient (states, territories, and tribal grantees). The totals include all hazard mitigation grants made through FEMA's four hazard mitigation grant programs—Hazard Mitigation Grant Program, Flood Mitigation Assistance, Pre-disaster Mitigation, and Public Assistance.

Appendix III: FEMA Hazard Mitigation Grant Funding By Grantee

Figure 10: FEMA Hazard Mitigation Grant Funding By Grantee, Fiscal Years 2010-2018

(in millions)



Source: GAO analysis of Federal Emergency Management Agency (FEMA) data. | GAO-21-140

Appendix III: FEMA Hazard Mitigation Grant
Funding By Grantee

Data table for Figure 10: FEMA Hazard Mitigation Grant Funding By Grantee, Fiscal Years 2010-2018

State	Funding (in millions)
Alabama	106,885,347
Alaska	24,904,692
American Samoa	303,308
Arizona	15,290,780
Arkansas	50,852,641
California	177,332,211
Colorado	126,675,319
Connecticut	46,908,918
Delaware	4,038,080
District of Columbia	8,409,603
Florida	324,163,319
Georgia	56,610,466
Guam	4,056,660
Hawaii	8,095,713
Idaho	21,898,724
Illinois	103,578,250
Indiana	16,796,189
Iowa	87,126,121
Kansas	27,289,509
Kentucky	69,363,463
Louisiana	413,461,209
Maine	3,581,516
Maryland	37,138,382
Massachusetts	70,037,327
Michigan	42,474,128
Minnesota	36,803,382
Mississippi	25,043,400
Missouri	183,346,747
Montana	24,582,373
Nebraska	31,056,306
Nevada	13,220,259
New Hampshire	15,894,451
New Jersey	1,135,692,011
New Mexico	46,414,170
New York	5,639,415,100

**Appendix III: FEMA Hazard Mitigation Grant
Funding By Grantee**

State	Funding (in millions)
North Carolina	176,902,965
North Dakota	112,609,614
Northern Mariana Islands	16,969,659
Ohio	49,879,200
Oklahoma	107,482,480
Oregon	28,415,872
Pennsylvania	94,331,442
Puerto Rico	130,295,413
Rhode Island	10,515,376
South Carolina	108,524,978
South Dakota	52,162,967
Tennessee	115,671,753
Texas	649,869,216
Tribal Grantee	40,808,218
Utah	30,723,528
Vermont	49,606,297
Virgin Islands of the U.S.	348,329,470
Virginia	68,925,152
Washington	49,842,760
West Virginia	39,508,836
Wisconsin	27,793,179
Wyoming	8,883,876

Note: This figure includes obligations from all hazard mitigation grant programs—Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA), Pre-Disaster Mitigation (PDM) and Public Assistance (PA)—from fiscal years 2010-2018. The fiscal year 2019 grants generally had not been obligated at the time of our analysis. We received the HMGP, FMA, and PDM data as of October 2019. We received the PA mitigation data as of April 2020. The obligations for HMGP and PA mitigation are based on the fiscal year of the associated disaster declaration. The obligations for FMA and PDM are based on the fiscal year of the grant application. FEMA may still be awarding PA and HMGP grants for previous fiscal years' disasters and PDM and FMA grants for previous fiscal years' grant application cycles. Additionally, FEMA may deobligate funding for projects, meaning cancel or adjust downward an agency's previously incurred obligations, especially at the end of the process. All tribal entities that applied as applicants or state sub-applicants are counted in the Tribal Grantee category, regardless of geographic location and are not included in any state totals.

Appendix IV: FEMA Hazard Mitigation Resources

This appendix contains information on the Federal Emergency Management Agency's (FEMA) hazard mitigation resources. FEMA has developed various hazard mitigation resources that could help build community capacity, including some new resources associated with the Building Resilient Infrastructure and Communities (BRIC) program. For example, as part of the BRIC program, FEMA is selecting up to 10 communities where FEMA will provide non-financial direct technical assistance to improve the community's capacity to identify projects that will enhance resilience and conduct mitigation activities. In addition, FEMA's Hazard Mitigation Grant Program (HMGP) and BRIC offer grants for capacity-building activities such as developing the scope of mitigation projects. Further, as part of the effort to develop the BRIC program, FEMA contracted with the Homeland Security Operational Analysis Center to conduct research on applicant capability.¹ In July 2020, the Homeland Security Operational Analysis Center issued a report with recommendations for how FEMA could assess applicant capability and develop strategies to support lower-capability applicants. BRIC officials stated they are assessing if and how they could implement this recommendation. See table 5 below for examples of FEMA hazard mitigation resources.

Table 5: Examples of FEMA Hazard Mitigation Resources

Resource	Description
Grants for capacity-building activities	The Federal Emergency Management Agency's (FEMA) Building Resilient Infrastructure and Communities (BRIC) and Hazard Mitigation Grant Program provide grants for capacity-building activities such as developing mitigation strategies, obtaining data, and developing hazard mitigation grant applications.
Direct technical assistance	As part of the BRIC program, FEMA is soliciting and selecting up to 10 communities to provide non-financial direct technical assistance to improve community's capacity to identify projects to enhance resilience and conduct mitigation activities.
Informal technical assistance	FEMA regional officials provide informal technical assistance to applicants through phone calls and emails.
Benefit-cost analysis training, phone, and email help lines	FEMA offers assistance on its benefit-cost analysis requirement through training and email and phone help lines.

¹The Homeland Security Operational Analysis Center is a federally funded research and development center operated by the RAND Corporation.

Appendix IV: FEMA Hazard Mitigation Resources

Resource	Description
Webinars on hazard mitigation grants	FEMA offers webinars on its hazard mitigation grants, including webinars on notice of funding opportunities and common application pitfalls.
Hazard mitigation workshop	FEMA hosts an annual workshop with presentations from FEMA and state and local practitioners on different kinds of hazard mitigation projects and best practices.
Training provided by the Emergency Management Institute	FEMA's Emergency Management Institute offers a number of courses on hazard mitigation, including courses on hazard mitigation planning, integrating mitigation into Public Assistance, as well as hazard-specific courses on flood, wildfire, hurricane, and earthquake mitigation.
Guidance	FEMA has official guidance on its hazard mitigation programs and its grant systems.
Fact sheets	FEMA has developed two to four-page "fact sheets" covering a number of hazard mitigation topics, including wildfire, tornado, tsunami, and lifeline mitigation, among others.
Examples of FEMA-funded hazard mitigation projects	FEMA developed a Mitigation Action Portfolio to provide practitioners with examples of innovative hazard mitigation projects that address different hazards and community lifelines. FEMA also has a library of best practice stories about successful mitigation efforts that have been implemented by communities. The stories are meant to demonstrate the benefits of hazard mitigation and inspire and educate the public on different types of mitigation.
Studies on hazard mitigation benefits and costs	FEMA has conducted loss avoidance studies on some hazard mitigation projects after they have experienced a natural hazard event to assess the effectiveness of mitigation projects. FEMA has also deployed and Mitigation Assessment Teams after some disasters which develop reports with observations, conclusions, and recommendations that can be used by governments and individuals to help implement mitigation and other measures to reduce future damage and protect lives in hazard-prone areas.
Technical publications on hazard mitigation measures and building codes	FEMA has published manuals for professionals who design and construct buildings with information on more technical aspects of implementing hazard mitigation and building codes.

Source: GAO analysis of FEMA information. | GAO-21-140

Appendix V: National Institute of Building Sciences Study

This appendix contains information on a hazard mitigation study by the National Institute of Building Sciences.¹ The National Institute of Building Sciences is a non-profit, nongovernmental organization that was established by the Housing and Community Development Act of 1974.² The National Institute of Building Sciences examined a sample of hazard mitigation grants awarded by the Federal Emergency Management Agency (FEMA), the Economic Development Administration, and the Department of Housing and Urban Development from 1993 through 2016 to address various hazards. According to their 2019 report, for every grant dollar the federal government spent on mitigation it could save from \$3 to \$7, depending on the circumstances and type of hazard mitigation.³

The findings from this study are not directly comparable to FEMA's benefit to cost ratio performance measure, as the study also includes other federal agency grants for hazard mitigation. Another difference is the discount rate each uses. A discount rate is used to calculate the value of future benefits over the life of the project in today's dollars. The higher the discount rate, the lower the present value of future benefits of a mitigation project. Federal agencies are required to use a seven percent discount rate, per Office of Management and Budget guidelines, which is higher than the discount rates used in the National Institute of Building

¹Multi-Hazard Mitigation Council, National Institute of Building Sciences, *Natural Hazard Mitigation Saves: 2019 Report*, (Washington, D.C.: Dec. 2019).

²12 U.S.C. § 1701j-2.

³We did not assess the reliability of these figures. Benefit estimates from federal grants convey the magnitude of potential long-term benefits to society, primarily homeowners and local residents, and are not precise estimates. For more information on these potential benefits, visit the following link: <https://www.nibs.org/page/mitigationsaves>. The report analyzes a small sample of grant projects for high-risk buildings selected using specific criteria. Extrapolation of this analysis to a broader set of grants needs to be interpreted in the context of the selected sample. Benefits in the report are estimated using many assumptions at all stages of the analysis and are subject to a high degree of model uncertainty and sensitivity. Benefits are calculated over a 75-year benefit period, using a 2.2 percent discount rate for non-health benefits and a 0 percent discount rate for health and life-protection benefits. The report does not apply the time value of money to discount human deaths and health (i.e., nonfatal injuries and post-traumatic stress).

Sciences study.⁴ The Congressional Budget Office has previously reported that, in general, the different discount rates account for most of the differences between FEMA applicants' benefit to cost ratios and those reported by the National Institute of Building Sciences.⁵

⁴Office of Management and Budget, *Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs*, Circular No. A-94.

⁵See Congressional Budget Office, *Potential Costs Savings from the Pre-Disaster Mitigation Program*, (Sept. 2007). This report reviewed an earlier study by the National Institute of Building Sciences which used similar methods. According to the Congressional Budget Office, one project type where the difference in ratios could not be explained by the different discount rates was earthquake mitigation. The Congressional Budget Office concluded that the "true" benefit cost ratio was likely in between the FEMA benefit to cost ratio and the National Institute of Building Science ratio.

Appendix VI: Comments from the Department of Homeland Security

U.S. Department of Homeland Security
Washington, DC 20528



January 15, 2021

Christopher P. Currie
Director, Homeland Security and Justice
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Re: Management Response to Draft Report GAO-21-140, "DISASTER
RESILIENCE: FEMA Should Take Additional Steps to Streamline Hazard
Mitigation Grants and Assess Program Effects"

Dear Mr. Currie:

Thank you for the opportunity to comment on this draft report. The U.S. Department of Homeland Security (DHS) appreciates the U.S. Government Accountability Office's (GAO) work in planning and conducting its review and issuing this report.

The Department is pleased to note GAO's recognition of the importance of the Federal Emergency Management Agency's (FEMA) four grant programs that fund state and local hazard mitigation efforts, which reduce risks and help to create more resilient communities. DHS remains committed to reducing the complexity of these programs to make the grant funding more accessible and timelier to all State, Local, Tribal, and Territorial (SLTT) partners, and doing so is a key part of the Federal Insurance and Mitigation Administration's strategic vision the next three years. For example, FEMA will develop and begin implementation of the Hazard Mitigation Grant Program (HMGP) Forward within fiscal year (FY) 2021, which is an effort to: 1) reduce complexity of the HMGP and reduce unobligated balances; 2) deliver year one of the Building Resilience Infrastructure and Communities (BRIC program); and 3) increase the amount of mitigation investment in the Public Assistance (PA) grant program.

However, it is important to note that the draft report understates the full impact of the statutory and regulatory framework for each of the individual grant programs on award timing, as well as other facets of program implementation, despite the GAO's acknowledgement that application timelines for HMGP and PA are set by regulation. Although FEMA will continue efforts to unify grant program

**Appendix VI: Comments from the Department
of Homeland Security**

procedures to reduce complexity and grant award timelines, the agency is limited in what it can do under the program authorities as currently written.

The draft report contained six recommendations with which the Department concurs. Attached find our detailed response to each recommendation. DHS previously submitted technical comments addressing several accuracy, contextual, and other issues under separate cover for GAO's consideration.

Again, thank you for the opportunity to review and comment on this draft report. Please feel free to contact me if you have any questions. We look forward to working with you again in the future.

Sincerely,

**JIM H
CRUMPACKER**

Digitally signed by JIM H
CRUMPACKER
Date: 2021.01.15 12:06:36
-05'00'

JIM H. CRUMPACKER, CIA, CFE
Director
Departmental GAO-OIG Liaison Office

Attachment

**Attachment: Management Response to Recommendations
Contained in GAO-21-140**

GAO recommended that the Administrator of FEMA:

Recommendation 1: Establish a plan with time frames to develop pre-calculated benefits for additional project types, where appropriate.

Response: Concur. The Federal Insurance and Mitigation Administration (FIMA) will complete and publish a new pre-calculated benefits study for an additional project type. FIMA will review and post studies on FEMA.gov within two months of completion. FIMA will also develop a plan for developing additional pre-calculated benefits studies by October 2021. Estimated Completion Date (ECD): October 29, 2021.

Recommendation 2: Establish a plan with time frames to assess PA, HMGP, FMA [Flood Mitigation Assistance], and BRIC hazard mitigation grant processes to identify and implement steps to reduce the complexity of and time required for grant applications, including steps to facilitate the use of funding from more than one FEMA mitigation grant program on a project.

Response: Concur. FEMA's Hazard Mitigation Assistance (HMA) Division is developing a multi-year strategy, informed by the 2018-2022 FEMA Strategic Plan and FIMA's Mitigation Directorate FY 2021-2023 Strategy, dated October 2020, which will emphasize increasing mitigation investments and reducing complexity. The HMA multi-year strategy is on track to be completed by the end of June 2021, and will, among other things: 1) include all HMA programs and 406 hazard mitigation under the PA program; and 2) identify the implementation strategies for accomplishing strategic goals. Within the plan, FEMA will also identify the steps it will take to assess all HMA programs and hazard mitigation under the PA program. The HMA Division will develop the plan in coordination with the Recovery Directorate and include implementation steps for using multiple grant programs for hazard mitigation projects. The development of the strategic plan is under way, and the recommendations in this draft report are strategic drivers for future transformation of the HMA programs and mitigation under the PA program. ECD: September 30, 2021.

Recommendation 3: Create a centralized inventory of hazard mitigation resources on the FEMA website.

Response: Concur. In concert with the HMA Division's efforts to develop a multi-year strategy, FEMA's HMA Division will evaluate how HMA program information is provided to SLTT stakeholders and develop a strategy to better present this information

**Appendix VI: Comments from the Department
of Homeland Security**

on FEMA's website in a way that reduces complexity and barriers to program participation. ECD: June 30, 2021.

Recommendation 4: Develop a plan for conducting future loss avoidance studies to ensure they can include more hazard types.

Response: Concur. FIMA's Mitigation Directorate, with support from the Risk Management Directorate, will develop a plan to integrate additional hazards into loss avoidance studies in the future. This plan will be informed by ongoing initiatives to enhance natural hazard risk assessment tools and methodologies. ECD: January 31, 2022.

Recommendation 5: Ensure that as new methods and metrics to assess the effectiveness of hazard mitigation are developed, FEMA officials consider opportunities to adopt common methods and metrics across all its hazard mitigation programs.

Response: Concur. As part of the HMA Division's efforts to develop a multi-year strategy, FEMA's HMA Division will also evaluate new methods and metrics to assess the effectiveness of hazard mitigation actions, and is currently working to develop metrics for the BRIC program. This effort will be coordinated across all HMA programs and with the PA program. As these metrics are developed, FEMA will evaluate the applicability of the metrics for all mitigation programs. Each program may develop additional metrics based on program specific objectives and requirements. Ultimately, the HMA multi-year strategy will describe the implementation steps for developing new program metrics. ECD: September 30, 2021.

Recommendation 6: Publicly share pre-calculated benefits studies and state developed records of effectiveness, such as by posting them to its website.

Response: Concur. Once studies are completed and reviewed by FIMA, they will be posted on FEMA.gov within two months completion. FIMA plans to complete a study in October 2021 and will post it publicly by the end of calendar year 2021. ECD: December 31, 2021.

Data table for Appendix VI: Comments from the Department of Homeland Security

Page 1

January 15, 2021

Christopher P. Currie

Director, Homeland Security and Justice

U.S. Government Accountability Office

441 G Street, NW

Washington, DC 20548

Re: Management Response to Draft Report GAO-21-140, "DISASTER RESILIENCE:
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Page 2

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JIM H. CRUMPACKER, CIA, CFE

Director

Departmental GAO-OIG Liaison Office

Attachment

Page 3

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Recommendation 3: Create a centralized inventory of hazard mitigation resources on the FEMA website.

Response: Concur. In concert with the HMA Division's efforts to develop a multi-year strategy, FEMA's HMA Division will evaluate how HMA program information is provided to SLTT stakeholders and develop a strategy to better present this information on FEMA's website in a way that reduces complexity and barriers to program participation. ECD: June 30, 2021.

Page 4

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Recommendation 6: Publicly share pre-calculated benefits studies and state developed records of effectiveness, such as by posting them to its website.

Response: Concur. Once studies are completed and reviewed by FIMA, they will be posted on FEMA.gov within two months completion FIMA plans to complete a study in October 2021 and will post it publicly by the end of calendar year 2021. ECD: December 31, 2021.

Appendix VII: GAO Contact and Staff Acknowledgments

GAO contact

Christopher P. Currie at (404) 679-1875, CurrieC@gao.gov.

Staff Acknowledgments

In addition to the contact named above, Claudia Becker (Assistant Director), Heather May (Analyst in Charge), Dominick Dale, Michele Fejfar, Sierra Hicks, Susan Irving, Tracey King, Joe Maher, Grant Mallie, Kristiana D. Moore, and Kelsey Wilson made key contributions to this report.

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