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September 2018

2017 HURRICANES AND WILDFIRES

Initial Observations on the Federal Response and Key Recovery Challenges

Accessible Version

GAO-18-472

GAO Highlights

Highlights of GAO-18-472, a report to congressional addressees

September 2018

2017 HURRICANES AND WILDFIRES

Initial Observations on the Federal Response and Key Recovery Challenges

Why GAO Did This Study

In 2017, four sequential disasters—hurricanes Harvey, Irma, Maria, and the California wildfires—created an unprecedented demand for federal disaster response and recovery resources. According to FEMA, 2017 included three of the top five costliest hurricanes on record.

The National Oceanic and Atmospheric Administration estimated that the cumulative damages from weather and climate related disasters in the United States were over $300 billion in 2017 alone. As of June 2018, Congress had appropriated over $120 billion in supplemental funding for response and recovery related to the 2017 hurricanes and wildfires. Further, in October 2017, close to 14,000 federal employees were deployed in response to the disasters.

Given the scale and cost of these disasters, Congress and others have raised questions about the federal response and various recovery challenges that have arisen since the disasters. This report provides GAO's observations on: (1) federal and state preparedness and response coordination for hurricanes Harvey and Irma in Texas and Florida, and the California wildfires; (2) federal preparedness for and response to hurricanes Irma and Maria in Puerto Rico and the U.S. Virgin Islands; and (3) existing and emerging disaster recovery challenges highlighted by these disasters.

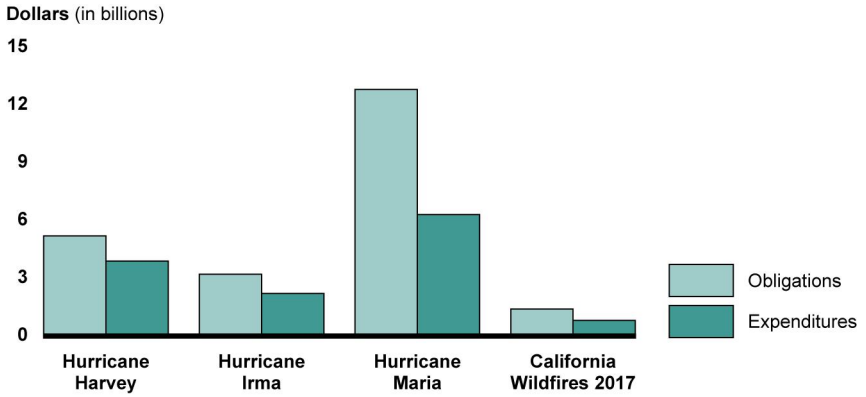
GAO analyzed FEMA policies, procedures, guidance, and data specific to disaster response and recovery programs. GAO focused on the busiest period of disaster response activity for the federal government—August 2017 through January 2018, with select updates on recovery efforts

What GAO Found

Federal and state preparedness and coordination efforts prior to and after the 2017 hurricane and wildfire disasters facilitated the response in Texas, Florida, and California. Specifically, the Federal Emergency Management Agency (FEMA) and state emergency management officials implemented various preparedness actions prior to landfall of the hurricanes and during the wildfires—such as predeploying federal personnel to support response efforts; colocating federal, state, and local emergency managers; and pre-staging and delivery of commodities like food and water. Further, according to FEMA and state officials, preexisting coordination mechanisms and relationships also facilitated response efforts in each state. For example, FEMA and each state had conducted numerous emergency exercises in the years prior to these disasters and had developed relationships during response to prior disasters that led to accelerated decision-making during the 2017 disasters. Federal and state officials emphasized that there were certainly unprecedented challenges during these disasters—such as deploying a sufficient and adequately-trained FEMA disaster workforce—and lessons learned, but prior response coordination efforts helped to quickly and effectively resolve many of these challenges.

The federal government provided significant support to Puerto Rico and the U.S. Virgin Islands in response to Hurricanes Irma and Maria, but faced numerous challenges that complicated response efforts. FEMA efforts in Puerto Rico alone were the largest and longest single response in the agency's history. As of April 2018, FEMA had obligated over $12 billion for response and recovery for Hurricane Maria (see figure below) reflecting the scale and complexity of efforts given the widespread damage. FEMA tasked federal agencies with over 1,000 response mission assignments for Hurricanes Maria and Irma in the territories at a cost of over $5 billion, compared to about 400 such assignments for Hurricanes Harvey and Irma and the California wildfires combined. For example, FEMA assigned the U.S. Army Corps of Engineers the mission to install over 1,700 emergency electricity generators in Puerto Rico, compared to the 310 for the response to Hurricane Katrina.

Federal Emergency Management Agency Disaster Relief Fund Obligations and Expenditures for Hurricanes Harvey, Irma, Maria, and California Wildfires through April 30, 2018



Source: GAO analysis of Federal Emergency Management Agency data. | GAO-18-472

and obtained updates through June 2018. In October and November 2017, GAO teams made site visits to hurricane damaged areas in Texas, Florida, Puerto Rico, and the U.S. Virgin Islands. At these locations, GAO visited FEMA joint field operation locations and interviewed FEMA, Department of Defense, and other federal officials about response and recovery operations, visited disaster recovery centers, and observed damage. GAO also interviewed FEMA officials responsible for wildfire response and recovery efforts in California.

Additionally, GAO interviewed state and territorial emergency management officials or their designee in Texas, Florida, California, Puerto Rico, and the U.S. Virgin Islands, as well as officials from eight cities and counties in Texas, Florida, and California (selected based on their proximity to the disaster impacted areas and their availability) to discuss their observations on the federal response in their respective jurisdictions. While the perspectives of these officials are not generalizable, they provided valuable insights into the federal response to the 2017 disasters.

This report includes 10 appendices that provide further details and data on federal response and recovery efforts. These areas cover key issues and challenges that GAO believes are critical for assessing the federal response and warrant continued Congressional and agency oversight during disaster recovery.

GAO is not making recommendations in this report, but has ongoing work that will address various response and recovery programs and challenges in more detail. GAO will make recommendations, as appropriate, once this work is completed.

In commenting on a draft of this report, DHS stated that the report highlighted the challenges of the complicated response and recovery efforts as well as provided insights into these efforts. DHS also noted that it is continuing to apply lessons learned from 2017 to improve its future program delivery and response efforts.

View GAO-18-472. For more information, contact Christopher Currie at (404) 679-1875 or curriec@gao.gov.

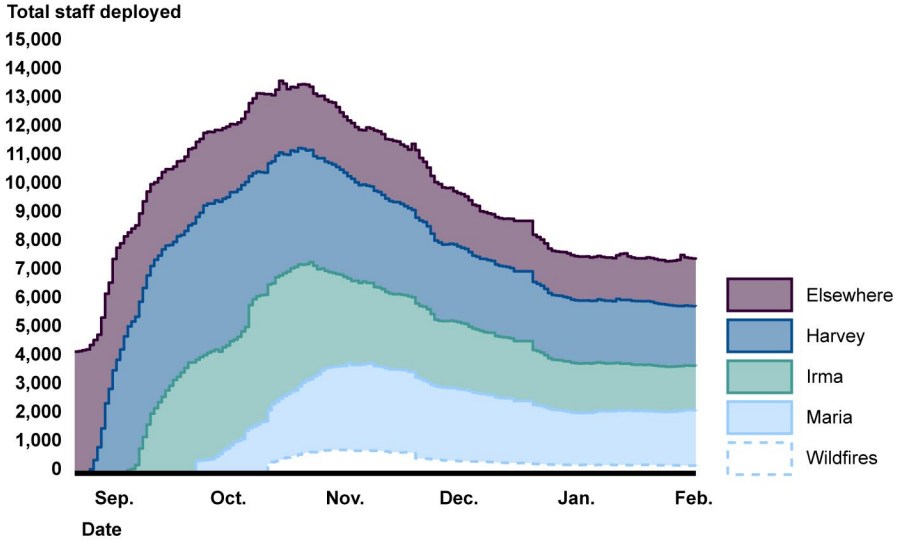
Note: An obligation is a definite commitment that creates a legal liability of the government for the payment of goods and services ordered or received. An expenditure is an amount paid by federal agencies by cash or cash equivalent, during the fiscal year to liquidate government obligations.

Nevertheless, GAO found that FEMA faced a number of challenges that slowed and complicated its response efforts to Hurricane Maria, particularly in Puerto Rico. Many of these challenges were also highlighted in FEMA's own 2017 hurricane after action report, including:

- the sequential and overlapping timing of the three hurricanes—with Maria being the last of the three—caused staffing shortages and required FEMA to shift staff to the territories that were already deployed to other disasters;
- logistical challenges complicated efforts to deploy federal resources and personnel quickly given the remote distance of both territories; and
- limited preparedness by the U.S. Virgin Islands and Puerto Rico for a Category 5 hurricane and incapacitation of local response functions due to widespread devastation and loss of power and communications led FEMA to assume response functions that territories would usually perform themselves.

The 2017 hurricanes and wildfires highlighted some longstanding issues and revealed other emerging response and recovery challenges. For example, the concurrent timing and scale of the disaster damages nationwide caused shortages in available debris removal contractors and delays in removing disaster debris—a key first step in recovery. In addition, FEMA's available workforce was overwhelmed by the response needs. For example, at the height of FEMA workforce deployments in October 2017, 54 percent of staff were serving in a capacity in which they did not hold the title of "Qualified"—according to FEMA's qualification system standards—a past challenge GAO has identified. FEMA officials noted that staff shortages, and lack of trained personnel with program expertise led to complications in its response efforts, particularly after Hurricane Maria.

Federal Disaster Workforce Deployed at the Height of 2017 Response Acivities



Source: GAO analysis of Department of Homeland Security data. | GAO-18-472

Further, federal, state, and local officials faced challenges finding temporary housing for disaster survivors given the extensive damage to available housing in each location. For example, given the widespread damage in Puerto Rico and lack of hotels and other temporary housing, FEMA transported survivors to the mainland United States to stay in hotels. FEMA also used new authorities and procedures to meet the need, such as providing Texas as much as $1 billion to manage its own housing program. However, this approach had not been used or tested in past disasters and state officials noted challenges in managing the program such as staffing shortfalls. State officials further noted challenges in coordinating with FEMA that led to delays in providing assistance to survivors. GAO will continue to monitor these programs.

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Abbreviations

DHS	Department of Homeland Security
DRF	Disaster Relief Fund
DOD	Department of Defense
EMAC	Emergency Management Assistance Compact
ESFs	emergency support functions
FCO	Federal Coordinating Officer
FEMA	Federal Emergency Management Agency
FQS	FEMA Qualification System
IA	Individual Assistance
IMAT	Incident Management Assistance Team
IT	information technology
JFO	joint field office
PA	Public Assistance

PREPA	Puerto Rico Electric Power Authority
PROMESA	Puerto Rico Oversight, Management, and Economic
SRIA	Sandy Recovery Improvement Act of 2013
USACE	U.S. Army Corps of Engineers

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U.S. GOVERNMENT ACCOUNTABILITY OFFICE
441 G St. N.W.
Washington, DC 20548

September 4, 2018

Congressional Addressees

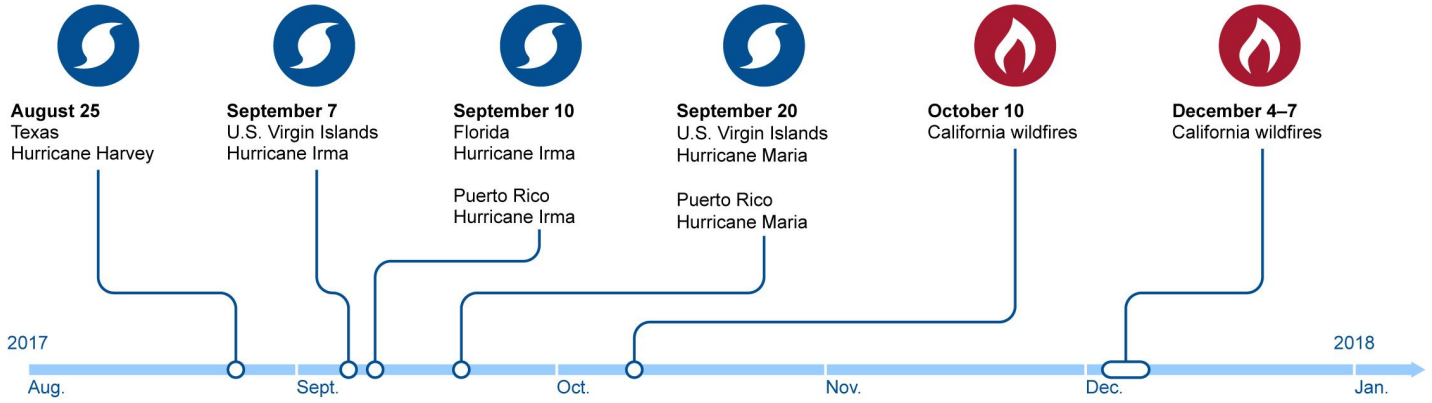
In 2017, four near-sequential disasters—Hurricane Harvey, Hurricane Irma, Hurricane Maria, and the California wildfires—created an unprecedented demand for federal disaster response and recovery resources.[1] According to the Federal Emergency Management Agency (FEMA), the 2017 hurricanes and wildfires collectively affected 47 million people—nearly 15 percent of the nation's population—with hurricanes Harvey, Irma, and Maria ranking among the top five costliest hurricanes on record.[2] See figure 1 for a timeline of these major disasters.[3]

[1]The focus of this report is on five geographic areas—Texas, Florida, Puerto Rico, the U.S. Virgin Islands, and California—affected by 4 out of the 137 presidentially disasters declared in 2017.

[2]According to FEMA, the five costliest hurricanes on record are Hurricane Katrina at $161 billion, Hurricane Harvey at $125 billion, Hurricane Maria at $90 billion, Hurricane Sandy at $71 billion, and Hurricane Irma at $50 billion.

[3]A major disaster is any natural catastrophe (including any hurricane, tornado, storm, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm, or drought), or, regardless of cause, any fire, flood, or explosion, in any part of the United States, which the president determines causes damage of sufficient severity and magnitude to warrant major disaster assistance to supplement the efforts and available resources of states, local governments, and disaster relief organizations in alleviating damage, loss, hardship, or suffering. See 42 U.S.C. § 5122(2).

Figure 1: Timeline of the 2017 Hurricanes and Wildfires



Source: Department of Homeland Security. | GAO-18-472

We have previously reported that the rising number and costs of disasters and the increasing reliance on the federal government for disaster assistance is a key source of federal fiscal exposure,[4] and that this cost will likely continue to rise as the climate changes.[5] In September 2016, we reported that from fiscal years 2005 through 2014, the federal government obligated over $277 billion for disaster assistance programs and activities. The National Oceanic and Atmospheric Administration estimated that the cumulative damages from weather- and climate-related disasters in 2017 alone cost the United States over $300 billion, making it the costliest year on record. As of June 2018, three supplemental appropriations bills have been enacted, providing over $120 billion in

[4]GAO, *Fiscal Exposures: Improving Cost Recognition in the Federal Budget*, GAO-14-28 (Washington, D.C.: Oct. 29, 2013).

[5]GAO, *Climate Change: Information on Potential Economic Effects Could Help Guide Federal Efforts to Reduce Fiscal Exposure*, GAO-17-720 (Washington, D.C.: Sept. 28, 2017). Managing fiscal exposure due to climate change has been on our high risk list since 2013, in part, because of concerns about the increasing costs of disaster response and recovery efforts. See GAO, *High-Risk Series: An Update*, GAO-15-290 (Washington, D.C.: Feb. 11, 2015); also http://www.gao.gov/highrisk/limiting_federal_government_fiscal_exposure/why_did_study.

supplemental federal funding for activities related to the 2017 hurricanes and wildfires.[6]

In 2005, Hurricane Katrina became the single largest, most destructive natural disaster in our nation's history causing over 1,800 deaths and an estimated $108 billion in damage. In the wake of Hurricane Katrina, we and others identified several issues of leadership and planning that plagued the response.[7] To address these critiques, Congress passed the Post-Katrina Emergency Management Reform Act of 2006 (Post-Katrina Act).[8] Among other things, the act clarified FEMA's roles and responsibilities as the primary federal agency responsible for disaster preparedness, response, and recovery, and provided additional authorities to federal agencies to address the shortcomings from Katrina.

Since the Post-Katrina Act was enacted in 2006, we have evaluated a range of emergency management issues including federal efforts to implement provisions of the act and improve national emergency preparedness, response, and recovery.[9] We have also evaluated the federal response to other major disasters since that time, most notably the response to and recovery from Hurricane Sandy in 2012. We have made numerous recommendations to FEMA and other federal agencies to strengthen their disaster response efforts, many of which have been

[6]This figure does not include transfers of unobligated balances from prior fiscal years or indefinite appropriations authorized to forgive any outstanding balance owed to the Department of Education under the Historically Black College and University Hurricane Supplemental Loan program. Also, the supplemental appropriations provided up to $78.5 million for oversight activities by nine Inspectors General and us related to the expenditure of these funds. Supplemental Appropriations for Disaster Relief Requirements Act, 2017, Pub. L. No. 115-56, div. B, 131 Stat. 1129, 1136 (2017); Additional Supplemental Appropriations for Disaster Relief Requirements Act, 2017 Pub. L. No. 115-72, div. A, 131 Stat. 1224, 1224 (2017); Supplemental Appropriations for Disaster Relief Requirements Act, 2018, Pub. L. No. 115-123, div. B, subdiv. 1, 132 Stat. 64, 65 (2018).

[7]See, for example GAO, *Hurricane Katrina: GAO's Preliminary Observations Regarding Preparedness, Response, and Recovery*, GAO-06-442T (Washington, DC: Mar. 8, 2006).

[8]Pub. L. No. 109-295, tit. VI, 120 Stat. 1355, 1394 (2006); see also 6 U.S.C. §§ 721, 722; 42 U.S.C. § 5144. The provisions of the Post-Katrina Act became effective upon enactment, October 4, 2006, with the exception of certain organizational changes related to FEMA, most of which took effect on March 31, 2007.

[9]Two reports focused specifically on the Post-Katrina Act; see GAO, *Actions Taken to Implement the Post-Katrina Emergency Management Reform Act of 2006*, GAO-09-59R, (Washington, D.C.: Nov. 21, 2008); and GAO, *National Preparedness: Actions Taken by FEMA to Implement Select Provisions of the Post-Katrina Emergency Management Reform Act of 2006,* GAO-14-99R (Washington, D.C.: Nov 26, 2013).

implemented or are in the process of being implemented. We discuss some of these recommendations in more detail throughout this report.

Given the scale and cost of the 2017 disasters, Congress and others have raised questions about the federal response to these disasters and various recovery challenges that have arisen since these disasters. Under the authority of the U.S. Comptroller General to undertake reviews that help inform Congressional oversight, we initiated a review of the federal government's handling of the 2017 hurricanes and wildfires. Specifically, this report addresses:

1. our observations of federal and state preparedness and the response coordination for hurricanes Harvey and Irma in Texas and Florida, as well as for the California wildfires;
2. our observations of the federal preparedness and response to hurricanes Irma and Maria in Puerto Rico and the U.S. Virgin Islands; and
3. existing and emerging disaster recovery challenges highlighted by the 2017 hurricanes and wildfires.

In addition, this report includes 10 appendices that provide further details and data related to the federal response to the 2017 disasters and various recovery challenges. These appendices cover key issues and challenges that we believe are critical to the federal response and that warrant continued congressional and agency oversight during recovery. This work will include assessments of federal preparedness, planning, response, and recovery efforts. The appendices are:

- Appendix II: Federal Appropriations and FEMA Obligations for the 2017 Hurricanes and California Wildfires
- Appendix III: Federal Response Coordination during the 2017 Hurricanes and California Wildfires
- Appendix IV: Federal Contracting for the 2017 Hurricanes
- Appendix V: FEMA Disaster Workforce Capacity
- Appendix VI: FEMA's Individual Assistance Program
- Appendix VII: Fraud Risk Management in FEMA's Disaster Assistance Programs
- Appendix VIII: Payment Integrity and Prior Identified Requirements for Disaster Relief Funding

- Appendix IX: FEMA's Public Assistance Program
- Appendix X: Disaster Resilience and Hazard Mitigation
- Appendix XI: Department of Defense's Support of Civil Authorities during the 2017 Hurricanes and California Wildfires

To address all three objectives, we analyzed federal laws and FEMA policies, procedures, and guidance specific to emergency management. Specifically, we reviewed select sections of the Post-Katrina Act, including those associated with the establishment of (1) the *National Response Framework*, (2) the Federal Coordinating Officer (FCO) position—the lead federal official in charge of response, (3) Incident Management Assistance Teams (IMAT)—FEMA staff who rapidly deploy to an incident to provide leadership in the identification and provision of federal assistance and federal response capabilities, (4) the surge capacity force; and (5) the Sandy Recovery Improvement Act, particularly those sections associated with FEMA's public assistance program and debris removal responsibilities.[10] Additionally we reviewed the *National Response Framework*, National Disaster Recovery Framework, 2017 National Preparedness Report, and FEMA's 2014-2018 Strategic Plans. We also reviewed relevant information from our prior reports on FEMA's work.[11] Further, we analyzed key data from FEMA's financial management, workforce, and emergency operations systems for the

[10]The *National Response Framework* is the part of the National Preparedness System established in Presidential Policy Directive 8 that is to be used to manage any type of disaster or emergency response, regardless of scale, scope, and complexity. Specifically, this framework covers actions to save lives, protect property and the environment, stabilize communities, and meet basic human needs following an incident. Response also includes the execution of emergency plans and actions to support short-term recovery. Department of Homeland Security, Federal Emergency Management Agency, *National Response Framework, Third Edition* (Washington, D.C.: June 2016). The surge capacity force is a cadre of non-FEMA federal employees who augment FEMA's disaster response and recovery efforts.

[11]GAO-14-28; GAO-17-720; GAO-15-290; GAO-06-442T; GAO-09-59R; GAO-14-99R; *2017 Disaster Contracting: Observations on Federal Contracting for Response and Recovery Efforts.* GAO-18-335. (Washington, D.C.: Feb. 28, 2018); GAO, *Disaster Recovery: FEMA's Public Assistance Grant Program Experienced Challenges with Gulf Coast Rebuilding,* GAO-09-129 (Washington, D.C.: Dec. 18, 2008); GAO, *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); GAO, *Federal Emergency management Agency: Workforce Planning and Training Count be Enhanced by Incorporating Strategic Management Principles*, GAO-12-487 (Washington, D.C.: Apr. 26, 2012); GAO, *Federal Emergency Management Agency: Additional Planning and Data Collection Could Help Improve Workforce Management Efforts*, GAO-15-437 (Washington, D.C.: July, 8, 2015).

period August 2017 through January 2018— the highest period of disaster response activity for the federal government—and obtained updates from FEMA through June 2018. We interviewed officials at FEMA headquarters about their data quality control procedures, reviewed existing information about data systems—particularly data definitions and data validation, conducted electronic testing and reviewed the data for obvious errors and omissions to ensure that all data were sufficiently reliable for the purposes of our reporting objectives, as described in appendix I.[12] See Related GAO Products for a full list of our products related to each appendix contained in this report.

Moreover, in October and November 2017, we conducted site visits to hurricane damaged areas in the greater Houston area, throughout southern Florida, in San Juan, Puerto Rico, and St. Croix, U.S. Virgin Islands, and visited FEMA's joint field offices (JFO) —multiagency coordination centers established near disaster sites for coordinating major disaster response and recovery efforts—for Hurricane Harvey, located in Austin Texas; Hurricane Irma, located in Orlando Florida; and hurricanes Irma and Maria, located in San Juan and St. Croix. At these locations, we interviewed FEMA's on-site leadership and conducted site visits to FEMA Disaster Response Centers. Further, we conducted interviews with FEMA's on-site leadership responsible for the response and recovery efforts in California. We also interviewed emergency management officials or their designees in each disaster-affected state and territory as well as local government officials from eight municipalities in Texas, Florida, and California to gain their insights and perspectives on the federal response to the hurricanes and wildfires in their respective states and territories. We selected the cities and counties whose officials we interviewed based on their geographic proximity to the disaster-affected sites we were already visiting, and their availability. The findings from these interviews cannot be generalized to all disaster-affected states, however, they provided valuable insights about their respective state's and the federal response to and recovery from the disasters. We also conducted interviews with Department of Defense officials who assisted FEMA in its response efforts. Further information on our scope and methodology can be found in appendix I.

[12]FEMA has 10 regional offices located across the continental United States See appendix XII for the location of each as well as the states each regional office is responsible for collaborating with to administer FEMA programs.

We are not making recommendations in this report, but it is part of a body of work on related issues across federal departments as those discussed in appendix II through XI of this report, and we will further assess these issues moving forward, making recommendations, as appropriate, once this work is completed.

We conducted this performance audit from September 2017 to September 2018 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

Disaster Response Roles and Responsibilities

Disaster response can involve many federal, state, territorial, tribal, private sector, and nongovernmental entities. The *National Response Framework* describes how the federal government, states and localities, and other public and private sector institutions should respond to disasters and emergencies. For example, state, local, tribal and territorial governments are to play the lead roles in disaster response and recovery. Local emergency agencies—police, firefighters, and medical teams—are to be the first responders in a disaster or emergency.

Emergency Support Functions

Emergency support functions (ESF) are the federal government's primary coordinating structure for building, sustaining, and delivering response capabilities. There are 14 ESFs, organized by specific functional areas for the most frequently needed capabilities during an emergency. ESFs are designed to coordinate the provision of related assets and services by federal departments and agencies. For each of the 14 ESFs, a federal department or agency serves as the designated ESF coordinator:

ESF #1: Transportation (Department of Transportation)

ESF #2: Communications (Department of Homeland Security National Communication System)

ESF #3:Public Works and Engineering (Department of Defense/U.S. Army Corps of Engineers)

ESF #4:Firefighting (US Forest Service)

ESF #5: Information and Planning (Federal Emergency Management Agency)

ESF #6: Mass Care, Emergency Assistance, Housing, and Human Services (Federal Emergency Management Agency)

ESF #7: Logistics Management (General Services Administration and Federal Emergency Management Agency)

ESF #8: Public Health and Medical Services (Department of Health and Human Services)

ESF #9: Search and Rescue (Federal Emergency Management Agency)

ESF #10: Oil and Hazardous Materials Response Environmental Protection Agency)

ESF #11: - Agriculture and Natural Resources (Department of Agriculture)

ESF #12: Energy (Department of Energy)

ESF #13: Public Safety and Security (Department of Justice)

ESF# 14—No longer used

ESF #15: External Affairs (Department of Homeland Security)

Source: GAO, Emergency Preparedness: Opportunities Exist to Strengthen Interagency Assessments and Accountability for Closing Capability Gaps, GAO-15-20 (Washington, D.C.: Dec. 4, 2014).I GAO-18-472

Federal agencies can become involved in responding to a disaster when effective response and recovery are beyond the capabilities of the state and affected local governments. In such cases, the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), permits the President to declare a major disaster in response to a request by the governor of a state or territory or by the chief executive of a tribal government.[13] Such a declaration is the mechanism by which the federal government gets involved in funding and coordinating response and recovery activities.[14] Under the *National Response Framework*, the Department of Homeland Security (DHS) is the federal department with primary responsibility for coordinating disaster response, and within DHS, FEMA has lead responsibility. The Administrator of FEMA serves as the principal adviser to the President and the Secretary of Homeland Security regarding emergency management.[15]

Once a major disaster is declared, states, territories, and tribes may obtain federal assistance through the Disaster Relief Fund (DRF).[16] In general, response and recovery activities that FEMA coordinates under the Stafford Act are funded from the DRF. See appendix II for more information on DRF spending in response to the 2017 disasters.

In addition to DHS, at least 29 other federal agencies carry out disaster assistance programs and activities. The *National Response Framework* identifies 14 emergency support functions (ESFs)—such as communication, transportation, and energy—and designates a federal department or agency as the coordinating agency for each function. For example, provision of assets and services related to public works and

[13]42 U.S.C. § 5170.

[14]*Presidential Policy Directive-8 National Preparedness* (PPD-8) establishes a national preparedness system made of an integrated set of guidance, programs, and processes designed to strengthen the security and resilience of the United States through systematic preparation for the natural and human-caused threats that pose the greatest risk. This system breaks preparedness activities into five different lines of effort—prevention, protection, mitigation, response, and recovery—each of which requires a separate planning framework.

[15]6 U.S.C. § 313(c)(4).

[16]The DRF is the primary source of federal disaster assistance for state and local governments when a disaster is declared. The DRF is appropriated no-year funding, which allows FEMA to fund, direct, coordinate, and manage response and recovery efforts—including certain efforts by other federal agencies and state and local governments, among others—associated with domestic disasters and emergencies.

engineering, such as temporary roofing or power, are coordinated by the U.S. Army Corps of Engineers (USACE), a component of the Department of Defense (DOD). See appendix III for more information on the 14 ESFs and their assigned coordinating agencies.

Finally, the federal government also works with private-sector businesses and nongovernmental organizations such as the Red Cross, Salvation Army, and other voluntary organizations to provide food, shelter, and essential needs to survivors.

FEMA's Disaster Response Mechanisms

FEMA has multiple mechanisms by which to help coordinate and deliver the federal government's response to disasters. Among those are:

- **direct provision of assistance.** When a state, tribe, or territory that has received a major disaster declaration requests federal assistance, FEMA can provide that assistance directly in various forms, such as meals, water, or tarps.
- **mission assignment to other agencies.** FEMA coordinates disaster response efforts through mission assignments—work orders it issues that direct another federal agency to utilize its authorities and the resources granted to it under federal law in support of direct assistance to state, local, tribal, and territorial governments.[17] For example, FEMA often requests medical teams from the Department of Health and Human Services and logistical support from DOD.[18]

[17]42 U.S.C. § 5192(a)(1). The Stafford Act authorizes the President to direct any federal agency, with or without reimbursement, to utilize its authorities and the resources granted to it under federal law in support of state and local response efforts for emergencies. This tasking authority, delegated to the FEMA Administrator, is carried out through a mission assignment.

[18]While DOD's primary mission is to defend the nation, the department is often asked to play a prominent role in supporting civil authorities and must be prepared to provide rapid response when called upon during disasters and declared emergencies (both natural and human-caused). DOD provides such support through its Defense Support of Civil Authorities mission.

- **distribution of donations.** FEMA can accept and distribute donations and gifts of services, money, or property to alleviate the suffering and damage caused by disasters.[19]
- **interagency agreements.** FEMA can also acquire supplies or services from other government agencies by executing an interagency agreement with those agencies.
- **procurement of supplies and services from contractors.** FEMA and other federal agencies support disaster response and recovery by procuring goods and services through contracts.

To provide disaster relief and recovery assistance, federal departments may have to solicit, award, and administer contracts. As of March 31, 2018, federal departments had obligated approximately $7.1 billion for contracts in support of hurricanes Harvey, Irma, and Maria.[20] The Post-Katrina Act, which addressed various shortcomings identified in the preparation for and response to Hurricane Katrina, included provisions to update FEMA's contracting practices.[21]

One of these provisions requires that FEMA identify and establish contracts prior to a disaster for goods and services that are typically needed during a disaster response—known as "advance" or "pre-

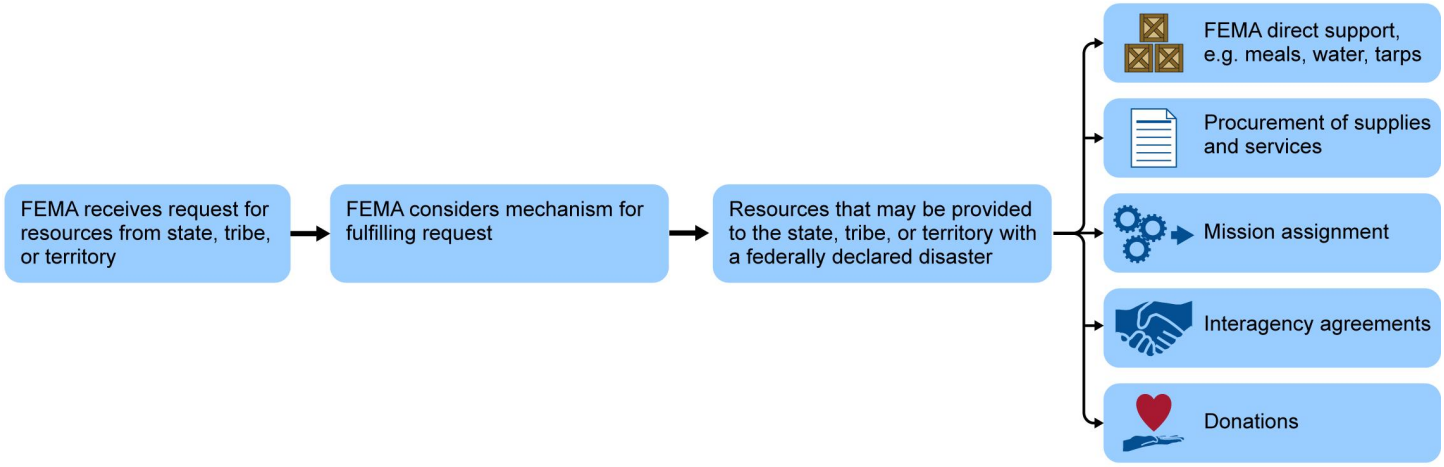
[19]See 42 U.S.C. § 5201(b). According to FEMA, acceptance of gifts is subject to ethical and operational constraints on a case-by-case basis. For example, FEMA Directive 112-13 establishes the process for accepting gifts from domestic sources and requires authorized agency officials to determine whether or not the gift reflects poorly on the agency, compromises the agency's integrity, attaches prohibited conditions on the gift or requires the agency to act outside its mission and duties, requires the expenditure of appropriated funds, provides the donor with some benefit, or creates a conflict of interest or the appearance of a conflict of interest.

[20]For the purposes of this report and appendix IV, contract obligations include obligations against what the Federal Procurement Data System-Next Generation (FPDS-NG) categorizes as definitive vehicles (definitive contracts and purchase orders that have a defined scope of work that do not allow for individual orders under them), and against what FPDS-NG categorizes as indefinite delivery vehicles (orders under the Federal Supply Schedule, orders/calls under blanket purchase agreements, orders under basic ordering agreements, orders under government-wide acquisition contracts, and orders under other indefinite delivery vehicles, such as indefinite delivery, indefinite quantity contracts).

[21]Pub. L. No. 109-295, §§ 601-699, 120 Stat. at 1394-1463. We have previously reported in 2015 that FEMA had not fully implemented the Post-Katrina Act's statutorily required contracting reforms following Hurricane Katrina; see GAO-15-783. We made eight recommendations to the FEMA Administrator and one recommendation to the Secretary of Homeland Security, three of which remain open.

positioned" contracts.[22] We are currently conducting more detailed reviews of federal contracting related to the 2017 disasters, including the wildfires. For more information on federal disaster contracting for the 2017 hurricanes, see appendix IV. Figure 2 shows the various mechanisms by which the federal government provides disaster response support.

Figure 2: Mechanisms Used by Federal Emergency Management Agency (FEMA) to Coordinate and Deliver Disaster Response



Source: Federal Emergency Management Agency. | GAO-18-472

Federal Disaster Workforce

The federal disaster workforce is designed to scale up or down depending on the timing and magnitude of disasters, and includes the following categories of employees:

- **Title 5 employees.**[23] These permanent and temporary employees make up FEMA's day-to-day workforce and are responsible for administering the agency's ongoing program activities. During

[22]In February 2018, we issued a report on our initial observations of federal contracting for response and recovery from the 2017 hurricanes. See GAO-18-335.

[23]Generally, Title 5 refers to the section of the United States Code that establishes the law for managing human resources in the federal government.

Incident Management Assistance Teams

The primary mission of an incident management assistance team (IMAT) is to rapidly deploy to a disaster area, provide leadership in identifying and providing federal assistance, and coordinate and integrate inter-jurisdictional response to support an affected state, tribe or territory.

IMATs are made up of Federal Emergency Management Agency (FEMA) staff in areas such as operations, logistics, planning, and finance and administration. FEMA has two types of IMAT teams—three national teams comprised of 32 personnel and 13 regional teams comprised of 12 personnel.

Source: GAO, Disaster Response: FEMA Has Made Progress Implementing Key Programs, but Opportunities for Improvement Exist, GAO-16-87 (Washington D.C. Feb 5, 2016). I GAO-18-472

- disasters, these employees can be deployed as needed. Examples of Title 5 employees include logistics specialists, contract officers, and budget analysts.
- **Stafford Act employees.**[24] Stafford Act employees provide support for disaster-related activities and augment FEMA's disaster workforce at facilities, regional offices, and headquarters. Stafford Act employees include a Cadre of On Call Response/Recovery Employees who are temporary employees with 2- to 4-year appointments and can be deployed to fulfill any role specifically related to the incident for which they are hired and qualified. IMAT staff are Cadre of On Call Response/Recovery Employees. They also include reservists, who work on an intermittent basis and are deployed as needed to fulfill incident management roles within their cadre function.[25]
- **Surge Capacity Force.** The Surge Capacity Force supplements FEMA's disaster workforce in a major disaster and consists of volunteers who are employees of DHS components, such as the Transportation Security Administration and U.S. Secret Service, as well as employees of other federal agencies, as authorized by the Post-Katrina Act.[26] Surge Capacity Force volunteers are deployed to disaster sites for a maximum of 3 months.
- **FEMA Corps.** FEMA Corps is a team-based national service program operated by AmeriCorps in partnership with FEMA. Members are not FEMA employees, but are deployed to augment FEMA's workforce for disaster readiness, preparedness, response, and recovery work under the supervision of FEMA staff. FEMA staff are responsible for developing projects for FEMA Corps members and providing technical supervision at project sites. FEMA Corps members are generally 18 to 24 years old and serve 10-month terms.

In addition to these four types of employees, FEMA hires locally and employs other personnel, such as contractors, to provide a variety of

[24]See 42 U.S.C. § 5149(b)(1).

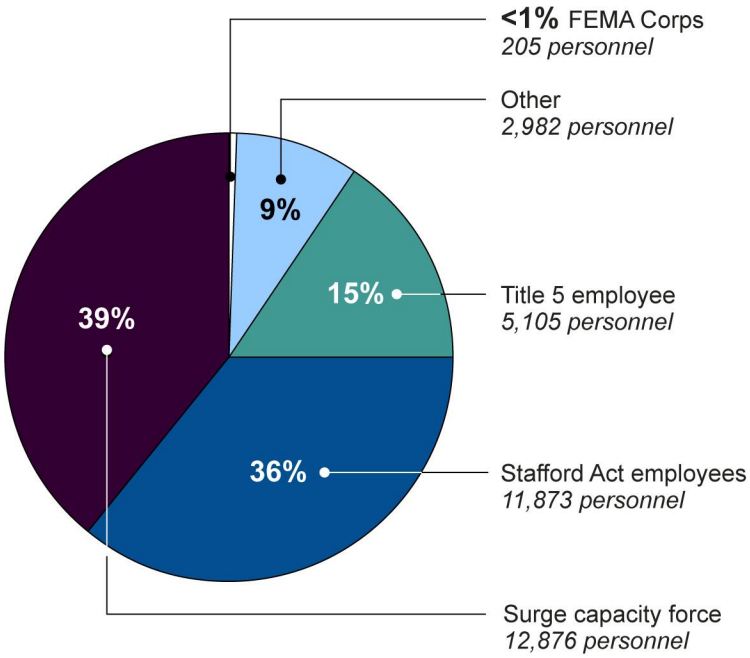
[25]Reservists' activities can include interviewing disaster survivors; conducting and verifying damage assessments; providing administrative, financial, and logistical support; and performing a wide variety of other tasks as identified by staffing needs and operational requirements.

[26]6 U.S.C. § 711(b).

forms of assistance and services to meet disaster preparedness, response, and recovery needs, such as debris removal. Prior to Hurricane Harvey in August 2017, the federal disaster workforce, including Surge Capacity Force and FEMA Corps, was 24,040. As of January 2018, the federal disaster workforce had grown to 33,041, as shown in figure 3.[27] For more information on FEMA's disaster workforce, see appendix V.

[27]FEMA's disaster workforce, which is a component of the overall federal disaster workforce, was 11,213 prior to Hurricane Harvey, and had grown to 11,980 as of January 2018. According to FEMA officials, not all FEMA personnel can be deployed to a disaster. Those who cannot be deployed provide support to FEMA headquarters or regional offices, and the National Response Coordination Center. These personnel are part of FEMA's force strength, but not part of the disaster workforce. Additionally, several factors can affect the availability of the federal disaster workforce, including whether employees are on leave. Also, FEMA does not have direct oversight regarding the availability of the Surge Capacity Force, contractors, other federal agencies, or FEMA Corps as they are not FEMA employees.

Figure 3: Federal Disaster Workforce As of January 31, 2018



Source: GAO analysis of Department of Homeland Security data. | GAO-18-472

Note: "Other" includes the following four workforce categories: permanent part-time, temporary part-time, temporary incident, and political appointees. Federal Emergency Management Agency (FEMA) Corps is a team-based national service program operated by AmeriCorps National Civilian Community Corps in partnership with FEMA. Members are not FEMA employees, but are deployed to augment FEMA's workforce for disaster readiness, preparedness, response, and recovery work under the supervision of FEMA staff. Title 5 employees are permanent and temporary employees who make up FEMA's day-to-day workforce and are responsible for administering the agency's ongoing program activities. Stafford Act employees include Cadre of On Call Response/Recovery Employees who are temporary employees with 2- to 4-year appointments who can be deployed to fulfill any role specifically related to the incident for which they are hired and qualified. The Surge Capacity Force supplements FEMA's disaster workforce in a major disaster and consists of volunteers who are employees of the Department of Homeland Security components and other federal agencies.

Overview of FEMA and Federal Disaster Recovery Programs

After a disaster strikes, the response phase typically lasts for days or weeks, depending on the impact and complexity of the disaster and eventually transitions into recovery operations. As with response, a number of federal departments and agencies may assist with various forms of disaster recovery assistance to individuals and state, local, tribal, and territorial governments. While this report focuses primarily on recovery programs that FEMA delivers, we are conducting work on other

federal programs and issues, including use of the Community Development Block Grant and the National Flood Insurance Program for recovery from the disasters, as part of our collective body of work on the 2017 disasters.

FEMA provides three principal forms of disaster recovery funding assistance—Individual Assistance (IA), Public Assistance (PA) and Hazard Mitigation.[28]

Individual Assistance: FEMA's IA program provides financial assistance directly to survivors for the necessary expenses and serious needs that cannot be met through insurance or low-interest loans, such as temporary housing assistance, counseling, unemployment compensation, or medical expenses (for more information on FEMA's IA Program see appendix VI). Part of its mission is to provide this assistance quickly. In response to our previously identified weaknesses, FEMA has taken steps to improve its ability to do so while protecting government resources. For example, in March 2018, FEMA reported that the agency had collaborated with the Social Security Administration to assess the feasibility of a direct data exchange with the Administration for the purpose of identifying recipients using Social Security numbers that were ineligible or likely belonged to deceased individuals. It also reported that it had taken steps to more reliably determine eligibility for its Individuals and Households Program based on compliance with flood-insurance requirements. The agency took these actions in an effort to address recommendations we made in 2015 to help prevent improper payments.[29] See appendix VII for information on FEMA's actions to manage fraud risk related to its disaster assistance programs. Further, given the significant costs of these four disasters to the federal government, it is important that federal agencies tasked with response and recovery programs pay particular attention to internal controls and payment integrity issues related to disaster relief. See

[28]In addition to the three forms of funding assistance, the DRF also provides funding for (1) Fire Management Assistance grants to state, loca,l and tribal governments for the mitigation, management, and control of fires; (2) Mission Assignment which allows FEMA to issue task orders directing other federal agencies to provide direct assistance to disaster affected states, tribes, and territories; and (3) Administration to cover FEMA's costs for supporting the delivery of disaster assistance.

[29]GAO-15-15.

appendix VIII for information on issues we identified in our prior work related to disaster relief payment integrity.[30]

Public Assistance: FEMA's PA program provides supplemental federal disaster grant assistance to state, local, tribal, and territorial governments, and certain types of private nonprofit organizations for debris removal, emergency protective measures, and the restoration of disaster-damaged, publicly-owned facilities and the facilities of certain private nonprofit organizations. The PA program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures. The program—which represents the largest share of federal aid from the Disaster Relief Fund—is administered through a partnership between FEMA and the state, tribal or territorial grantee, which provides funding to local or tribal entities who are the subrecipients of a PA grant award. Thus, it entails an extensive paperwork and review process between FEMA and grantee officials based on specific eligibility rules that outline the types of damage that can be reimbursed by the federal government and steps that federal, state, and local governments must take in order to document eligibility. We have identified a number of past challenges affecting various aspects of the PA program. To address these various challenges, we made a number of recommendations, and FEMA has taken or is taking various actions to address them. For example, as of January 2018, FEMA officials had begun incorporating experiences and lessons learned from the 2017 hurricane season and planned to reevaluate the appropriate number of staff needed in the PA workforce, and present recommendations to senior leadership. Officials also reported completing activities to develop

[30]Effective fraud risk management can help ensure that federal disaster assistance programs serve their intended purpose, taxpayer dollars are spent effectively, and government assets are safeguarded. Since 2014, when we last reported on FEMA's implementation of controls to help prevent potentially improper or fraudulent payments in the IA program, we issued *A Framework for Managing Fraud Risks in Federal Programs* (Fraud Risk Framework). The Fraud Risk Framework provides a comprehensive set of leading practices that serve as a guide for agency managers to use when developing efforts to combat fraud in a strategic, risk-based way. In addition, the Fraud Reduction and Data Analytics Act of 2015, enacted in June 2016, requires the Office of Management and Budget to establish guidelines for agencies for implementing control activities to prevent, detect, and respond to fraud, including improper payments, and to incorporate the Fraud Risk Framework's leading practices into the guidelines. See GAO, *A Framework for Managing Fraud Risks in Federal Programs*, GAO-15-593SP (Washington, D.C.: July 28, 2015). Additionally, in April, 2018 we started a review focused on select agencies' design and implementation of key internal control activities related to preventing and detecting improper payments of disaster relief and recovery funding in response to the 2017 hurricanes and wildfires.

disaster-specific mitigation performance measures that align with strategic goals, and analyzed available data to identify the drivers of mitigation in events of various sizes. The agency took these actions in response to recommendations we made in 2018 to complete a workforce staffing assessment that identifies the appropriate number of staff to implement a new PA delivery model nationwide, and to develop performance measures for the new delivery model that better align with the agency's strategic goal for hazard mitigation.[31]

The Sandy Recovery Improvement Act of 2013 (SRIA) authorized the use of alternative procedures in administering the PA program, thereby providing new flexibilities to FEMA, states, and local governments for debris removal, infrastructure repair, and rebuilding projects using funds from this program.[32] The stated goals of the alternative procedures are to reduce the costs to the federal government, increase flexibility in the administration of the PA program, expedite the provision of assistance under the program, and provide financial incentives for

[31]GAO-18-30.

[32]SRIA amended the Stafford Act by adding Section 428, which authorized FEMA to approve Public Assistance program projects under the alternative procedures provided by that section for any presidentially-declared major disaster or emergency. This section further authorized FEMA to carry out the alternative procedures as a pilot program until FEMA promulgates regulations to implement this section. Pub. L. No. 113-2, div. B, § 1102(2), 127 Stat. 39, amending Pub. L. No. 93-288, tit. IV, § 428 (codified at 42 U.S.C. § 5189f).

Applicable Authorities Granted by the Post Katrina Emergency Management Reform Act of 2006 to Enhance Disaster Response:

Improved ability to provide support to states and tribes ahead of a disaster: The Federal Emergency Management Agency (FEMA) gained statutory authority to provide accelerated federal assistance and federal support where necessary to save lives, prevent human suffering, or mitigate severe damage, which may be provided in the absence of a specific request.

Development of a National Disaster Recovery Framework (NDRF): The NDRF defines coordination structures, leadership roles and responsibilities, and guidance for federal agencies, state, local, tribal, and territorial, governments, and other partners involved in disaster planning and recovery.

Establishment of Incident Management Assistance Teams: Rapid response teams are able to deploy within 2 hours and arrive at an incident within 12 hours to support the local incident commander. The teams support the initial establishment of a unified command and provide situational awareness for federal and state decision makers crucial to determining the level and type of immediate federal support that may be required.

Enhanced partnerships with the private sector: As part of this effort, FEMA established the National Business Emergency Operations Center that serves as a clearinghouse for two-way information sharing between public and private sector stakeholders in preparing for, responding to, recovering from, and mitigating disasters

Source: FEMA. I GAO 18 472.

recipients of the program for the timely and cost-effective completion of projects.[33] Alternative procedures for permanent work are designed to give jurisdictions more flexibility in determining how, where, and what to rebuild, particularly after incurring significant damage. Applicants may choose to combine multiple critical facilities and rebuild them in a manner that makes them less likely to incur future disaster damages. In 2013 FEMA began a pilot program to utilize the alternative procedures for debris removal and permanent work projects in the recovery from Hurricane Sandy in New York and New Jersey, as of April 2018, FEMA reported that 29 percent of New York's permanent work projects are under the alternate procedures—approximately $8.6 billion. However, no state or territory has used alternative procedures for 100 percent of their permanent work projects. According to Puerto Rico's Draft Recovery Plan issued in July 2018, the Commonwealth estimated costs for permanent work projects ranges from $26.7 billion to $37.4 billion.[34]

In 2015, FEMA awarded a contract for program support to help implement a redesigned PA program. FEMA officials told us that the redesigning effort was primarily focused on specializing roles, segmenting the work, standardizing processes, and consolidating resources. It also included developing a new information system (PA Grants Manager and Grants Portal) to better maintain and share grant documentation. Taken together, according to officials, these efforts represent FEMA's "new delivery model" for the PA program, and, represents a significant process and

[33]See 42 U.S.C. § 5189f(c).

[34]DHS, Preliminary Draft*: "Transformation and Innovation in the Wake of Devastation: An Economic and Disaster Recovery Plan for Puerto Rico*." July 9, 2018.

cultural shift towards a streamlined and standardized way of delivering PA.[35]

Selected Examples of Response Resources and Support Provided to Texas, Florida and California

Total Number of Mission Assignments as of January 31, 2018

Hurricane Harvey: 164

Hurricane Irma: 212

Texas: In response to the historic flooding caused by Hurricane Harvey in Texas, multiple agencies—including U.S. Customs and Border Protection, U.S. Coast Guard, and the U.S. Forest Service, Department of Fish and Wildlife—executed mission assignments to provide boating equipment to move up to 20,000 survivors.

Florida: In response to Hurricane Irma in Florida, Housing and Urban Development executed a mission assignment to support multiple programs providing shelter to disaster survivors. For example, assessing and coordinating assistance to elderly populations in the Transitional Shelter Assistance Program, coordinating with Public Housing Authorities on timelines for repairs to damaged units; and efforts to ensure Fair Housing Act compliance.

California: In response to the California wildfires, DOD executed mission assignments to provide commodity support (e.g., 5 million AA batteries) and access to military bases to stage ambulances and their crews, as well as housing support for federal personnel in various agencies. .

Source: GAO analysis of FEMA's Web-based Emergency Operations Command data and Defense Logistics Agency data. I GAO 18 472.

In September 2017, FEMA decided to begin using the new delivery model nationwide for all subsequent declared disasters, including hurricanes Harvey and Irma in Texas and Florida and the wildfires in California. However, for hurricanes Irma and Maria in Puerto Rico and the U.S. Virgin Islands, FEMA is utilizing the PA alternative procedures model. According to FEMA officials, Puerto Rico was already in the process of implementing this model in response to prior disaster events. See appendix IX for more information on FEMA's PA Program.

Hazard Mitigation Grant Program: This program is designed to improve community resilience—the ability to prepare and plan for, absorb, recover from, and more successfully adapt to disasters—to future disasters during recovery. The program funds a wide range of projects, such as purchasing properties in flood-prone areas, adding shutters to windows to prevent future damage from hurricane winds and rains, and rebuilding culverts in drainage ditches to prevent future flooding damage. In light of our identification of the rise in the number—and the increase in severity—of disasters as a key source of federal fiscal exposure, we and others have advocated hazard mitigation and resiliency to help limit the nation's fiscal exposure.[36] In 2015, we identified challenges in effectively incorporating mitigation into PA projects and grant guidance during the

[35]According to FEMA officials, the new delivery model is a re-engineering of the previous process, given that the laws, regulations, and policies underlying the PA program were not changed. In addition to creating a new online information system—Grants Portal—for applicants to develop and submit their grant applications and associated documents, key changes brought about by the re-engineering effort included (1)identifying opportunities for hazard mitigation earlier in the process; creating consolidated resource centers to standardize and centralize PA staff responsible for managing grant applications; and creating new specialized positions, such as hazard mitigation liaisons, program delivery managers, and site inspectors, to ensure more consistent guidance to applicants. Other changes to the process included enhancing outreach to applicants during the "exploratory call"—the first contact between FEMA and local officials—and during the first in-person meeting, called the "recovery scoping meeting." FEMA also revised decision points during the process when program officials can request more information from applicants, and applicants can review and approve the completion of project development steps.

[36]GAO-15-515. Hazard mitigation is any sustained action taken to reduce or eliminate long-term risk to people and property from natural hazards and their effects. In addition to the Hazard Mitigation Grant Program, FEMA may also fund hazard mitigation projects related to the damaged facilities receiving PA funding pursuant to section 406 of the Stafford Act, as amended. 42 U.S.C. § 5172; 44 C.F.R. § 206.226.

recovery from Hurricane Sandy in the northeastern United States.[37] We recommended that FEMA assess the challenges and implement corrective actions as needed, and that the Mitigation Framework Leadership Group—created to help coordinate hazard mitigation efforts of relevant federal, state, local, territorial, and tribal organizations—establish an investment strategy to identify, prioritize, and implement federal investments in disaster resilience. FEMA concurred with our recommendations and is taking steps to implement them. In appendix X we identify several challenges the communities impacted by the 2017 disasters face and opportunities for resiliency. We have plans to examine these challenges and opportunities more broadly in an upcoming review.

Federal and State Coordination Efforts Facilitated Preparedness and Response to the 2017 Disasters in Texas, Florida, and California

FEMA coordinated closely with Texas, Florida, and California emergency management officials and other federal, local, and volunteer emergency partners to implement various emergency preparedness actions prior to the 2017 disasters, in each state, and to respond to these disasters. According to FEMA and state officials, these actions helped overcome a number of challenges they faced such as deploying a sufficient and adequately-trained disaster workforce and removing debris in a timely manner after the hurricanes and wildfires. These efforts also show progress made since the 2006 Post-Katrina Act, which reflected various themes we identified when reviewing the 2005 federal response to Hurricane Katrina, such as the importance of clear procedures for national response activities, advance planning, and robust training and exercise programs.[38]

Preparedness Activities in Texas, Florida, and California Helped Strengthen the Response

FEMA and state officials in Texas, Florida, and California took certain key actions in advance of the 2017 disasters that enabled them to more

[37]GAO-15-515.

[38]See Pub. L. No. 109-295, tit. VI, 120 Stat. 1355, 1394 (2006).

effectively provide assistance following each disaster. Specifically, according to FEMA's FCO for Hurricane Harvey, Texas had learned from its experience with prior disasters to ensure that personnel and resources were in place before the hurricane arrived. In accordance with the Post-Katrina Act, Texas requested that FEMA deploy IMAT staff prior to hurricane landfall. Subsequently, the IMAT set up centers to distribute meals and water and prepared federal agencies so that response teams and resources were ready to go upon landfall. Before landfall, there were four regional IMAT teams and a national IMAT team already in place. FEMA also dispensed mission assignments to DOD and the U.S. Coast Guard, among other agencies, with ESF responsibilities to carry out missions as needed.

Similarly, Florida's governor requested, and the President approved, a pre-landfall emergency declaration on September 5, 2017, for all 67 counties in Florida. The pre-declaration authorized FEMA to set up emergency berms, pre-position supplies, and take other key preparation steps such as sheltering and evacuation support, according to Florida emergency management officials. Florida, like Texas, also requested the pre-positioning of FEMA IMAT response teams. According to FEMA officials, Florida set up an incident operations center in Tallahassee and response personnel were located there before the hurricane made landfall.

In addition, prior to landfall, FEMA set up state-driven task forces in Texas for sheltering, family reunification, and feeding, among other things, to provide support at the local level. For example, the feeding task force coordinated with Feeding America and other nonprofits that provided food and nutrition while the reunification task force worked with the National Center for Missing and Exploited Children to reunite family members who were separated.

According to IMAT officials, they conducted regular emergency response exercises with the states leading up to the hurricanes which better trained and prepared them to coordinate during actual response efforts.

In California, FEMA and state Office of Emergency Services officials credited the ability to quickly and effectively coordinate with federal partners and respond to the wildfires to the state's past emergency preparedness experience and capacity.

Coordination Systems and Activities Helped Build Relationships That Facilitated Response in Texas, Florida, and California

FEMA and state officials in Texas, Florida, and California all described response coordination systems and activities that helped build relationships among federal, state, and local partners that are crucial to an effective response. The emergency management community has long recognized the importance of building relationships before a disaster. As a former FEMA Administrator stated, the worst time to exchange business cards is during a disaster. For example, in Texas and California, those relationships were primarily formed from regular meetings and the exercises that FEMA conducts with state emergency response partners. Specifically, FEMA officials at the Joint Field Office in Austin, Texas told us that all emergency response entities in Texas work together via an interagency coordination group, which they credited for enhancing the relationship between these entities.

Texas, Florida and California officials also described that having state agency staff embedded in FEMA's organization, and vice versa, was helpful. In each state, FEMA employees were embedded in state offices prior to the disasters, and in doing so had developed a close working relationship with state emergency management personnel. In Texas, embedded state emergency staff provided training, emergency exercises, and advice to local jurisdictions. Texas Division of Emergency Management staff told us that they are in daily contact with local officials year-round, which enhances coordination in times of disaster. According to the California Office of Emergency Services (OES) Director, the pre-existing relationship between California OES, the California governor's office, and FEMA's Region IX office—the FEMA regional office with oversight for the state of California—allowed California to approach the response to the wildfires as a team, with clear roles and responsibilities among the state, the FEMA region and other partners like the National Guard. According to FEMA officials, Region IX staff were members embedded with the state of California for almost 60 days following the start of the wildfires. By colocating from the start, FEMA and California's OES were able to work collaboratively in decision making and setting priorities, according to the California OES director. The California OES director agreed with FEMA officials at the Joint Field Office in Austin who said that co-location facilitated decision-making by reducing the

bureaucracy that would typically be involved in reaching out to partners spread out in different regions of the state and country.[39]

In addition to forming a close working relationship with FEMA, officials from all three states described close preexisting working relationships with volunteer organizations that play a significant role in disaster response in their states. For example, a FEMA official with responsibility for coordinating volunteer partnerships stated that in Texas, volunteer organizations are treated as full and equal partners, which facilitated volunteer partners' contribution to the response and recovery. Similarly, officials from California and FEMA officials in Florida told us that nonprofits have made significant contributions to response and recovery. Figure 4 shows an example of such contributions following Hurricane Irma.

[39]In April 2018, we initiated a separate review of the California wildfires that will more fully examine the federal response to the wildfires, including the role played by FEMA and other relevant federal agencies.

Figure 4: Nonprofit Volunteer Team Clearing Debris in Big Pine Key, Florida after Hurricane Irma

Source: GAO. | GAO-18-472

Although state and FEMA officials largely described a well-coordinated and successful response to the hurricanes and wildfires, all three states experienced a number of challenges—most notably with deployment of a sufficient and adequately-trained FEMA disaster workforce and delays with debris removal—which we describe later in this report.[40]

[40]We began a review in the spring of 2018 of temporary sheltering challenges experienced during the 2017 disasters that will more fully examine the role of voluntary organizations in disasters.

The Federal Government Provided Support for Puerto Rico and the U.S. Virgin Islands, but Faced Multiple Challenges in Its Response

The federal government provided logistical support and conducted various preparedness actions in Puerto Rico and the U.S. Virgin Islands in advance of the hurricanes, as well as provided a high volume of response support to both territories after the hurricanes hit. Hurricane Maria made landfall on Puerto Rico as a category 4 hurricane, causing widespread infrastructural damages that left 3.7 million of the island's residents without electricity and 95 percent of cell towers out of service, and forced every airport and seaport on the territory to be closed. FEMA's response to Puerto Rico and the U.S. Virgin Islands included resources from dozens of federal agencies bringing unique capabilities to the response effort through 1,093 mission assignments totaling more than $5.5 billion, as of January 29, 2018. Forty-one percent of the mission assignments in Puerto Rico and the U.S. Virgin Islands were executed by the Department of Defense, resulting in more than $2 billion in obligations. However, FEMA faced challenges specific to Puerto Rico and the U.S. Virgin Islands that complicated its response efforts. As a result, FEMA has taken some action to incorporate lessons learned in preparation for the next hurricane season.

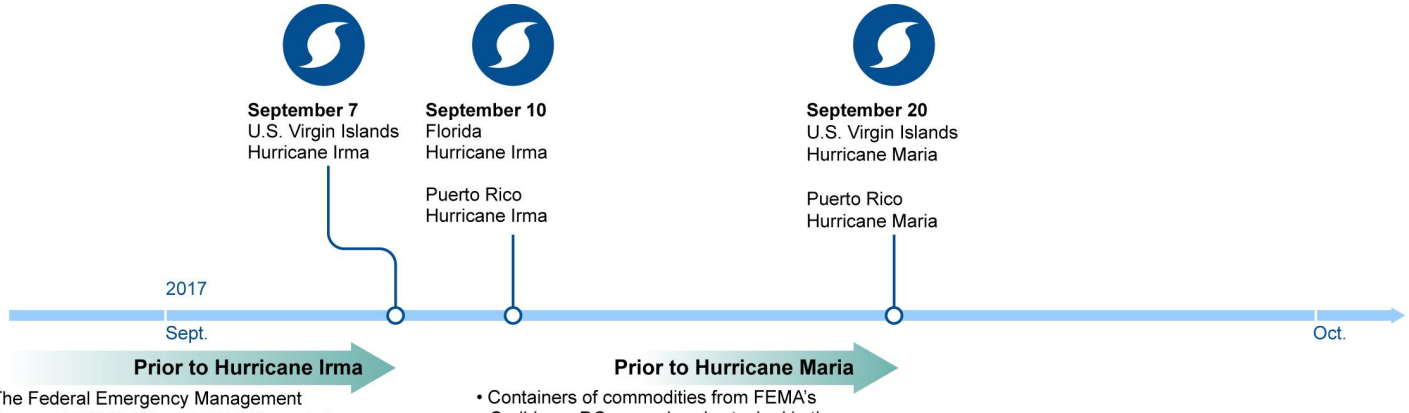
The Federal Government Provided Logistical Support and Conducted Various Preparedness Activities in Puerto Rico and the U.S. Virgin Islands in Advance of the Hurricanes

The federal government provided logistical support, deployed key incident management staff, and conducted numerous planning exercises prior to hurricanes Irma and Maria making landfall in Puerto Rico and the U.S. Virgin Islands in 2017. Specifically, FEMA shipped meals, delivered other commodities and activated contracts and mission assignments for additional federal support to the territories in advance of the hurricanes. Further, FEMA had conducted various planning and response exercises from 2009 to 2017. These efforts included nine exercises that FEMA Region II—the FEMA regional office with oversight for both territories—conducted in 2017 for incident types with catastrophic impacts, such as tropical cyclones and tsunamis, in Puerto Rico and the U.S. Virgin Islands prior to hurricanes Irma and Maria. The agency also conducted an exercise in 2016 which, according to FEMA officials, allowed the regional

and national IMATs the opportunity to integrate as one FEMA response team in preparation for a catastrophic disaster. According to FEMA officials, the exercise worked to enhance the capability and integration of the IMAT teams and the Regional Response Coordination Center—which coordinates federal response efforts during a disaster— to provide an effective response and resource support to Puerto Rico in the event of a catastrophic hurricane. DOD also conducted several events prior to the hurricanes that, according to FEMA officials, aided the response to hurricanes Irma and Maria, such as the DOD Annual Joint Interagency Hurricane Terrain Walk and Exercise conducted in February 2017 in Puerto Rico.[41]

[41]According to FEMA, this event which was attended by multiple local and federal agencies, was focused on a hypothetical hurricane impacting the U.S. Virgin Islands and included a site survey of the Port of Ponce and local airport in the event of a Defense Support of Civil Authorities response.

Figure 5: The Federal Government's Logistical Support to Puerto Rico and the U.S. Virgin Islands In Advance of Hurricane Irma and Hurricane Maria



- The Federal Emergency Management Agency (FEMA) shipped 250,000 meals to the U.S.Virgin Islands from the Distribution Center (DC) in Puerto Rico.
- FEMA activated contracts and mission assignments to provide another 2.8 million meals per day for the U.S.Virgin Islands and Puerto Rico for 30 days.
- FEMA activated contracts to provide 3.7 million liters of bottled water per day for the U.S.Virgin Islands and Puerto Rico for 30 days.
- FEMA had a pre-positioned communications caches staged in Puerto Rico at all times.
- FEMA deployed 1,430 Urban Search and Rescue Personnel; 2 regional Incident Management Assistance Teams; 2,257 federal workforce personnel; 1 disaster medical assistance team; 24 generators; 1 million meals, and 2 million liters of water.

- Containers of commodities from FEMA's Caribbean DC were already stocked in the Port in St. Thomas in response to Irma 14 days earlier.
- The *USS Wright* and the Crowley Barge *El Conquistador* were holding at sea south of Puerto Rico in a safe area as the storm transited.
- FEMA had pre-positioned communications caches staged in the U.S. Virgin Islands.
- FEMA deployed 276 Urban Search and Rescue Personnel; 1 national and 2 regional Incident Management Assistance Teams (IMAT); 2,763 federal workforce personnel; 4 generators; 1.6 million meals, and approximately 700,000 liters of water.

Source: Department of Homeland Security. | GAO-18-472

The Federal Government Provided a High Volume of Response Support to Puerto Rico and the U.S. Virgin Islands

According to FEMA's Office of Response and Recovery Assistant Administrator for Field Operations, FEMA's response to Puerto Rico was one of the largest recovery efforts in its history and included, among other things, bringing in food and supplies valued at approximately $1 billion; distributing food, commodities, and medicine via approximately 1,400 flights, which constituted the longest sustained air operations in U.S. disaster history; deploying 4,700 medical personnel; and utilizing USACE to install over 1,700 emergency electricity generators, as of May 2018, compared to 310 for the response to Hurricane Katrina. See figures 6 and 7 for examples of support DOD provided to Puerto Rico after Hurricane Maria. According to the National Disaster Recovery Framework, local governments have the primary role in preparing for and managing the response and recovery of their communities, including leading pre-disaster recovery and mitigation planning efforts.[42] However, according to FEMA officials, FEMA essentially served as the first responder in the early response efforts in Puerto Rico. FEMA officials said that many services they provided—such as power restoration, debris removal, and commodity distribution—are typically provided by territorial or local governments.[43]

[42]Department of Homeland Security, *National Disaster Recovery Framework*, Second Edition (June 2016).

[43]Debris removal services are generally provided by vendors that are contracted by local and territorial governments. While FEMA provides funding assistance for removal of debris from publicly and privately-owned lands and waters through the PA program, the respective state or local governmental entity generally has the responsibility to execute and manage debris removal operations.

Figure 6: DOD Assigned USNS Comfort for Puerto Rico Response in November 2017 after Hurricane Maria

Source: GAO. | GAO-18-472

Figure 7: Temporary Blue Roofs in Puerto Rico Installed by the U.S. Army Corps of Engineers after Hurricane Maria in February 2018

Source: Federal Emergency Management Agency. | GAO-18-472

Examples of Department of Defense's U.S. Army Corps of Engineers Post-Hurricane Maria Support

Puerto Rico

1,779 electricity generator installations

59,469 blue roof installations

4.12 million cubic yards of debris removed

The U.S. Virgin Islands

180 electricity generator installations

3,658 blue roof installations

More than 820,000 cubic yards of debris removed

Source: U.S. Army Corps of Engineers (May 2018) I GAO-18-472

In the U.S. Virgin Islands, recent disaster training and the pre-positioning of supplies due to the anticipated impact of Hurricane Irma facilitated the response efforts following Hurricane Maria, according to DOD officials. FEMA partnered well with local officials, according to the U.S. Virgin Islands Territorial Emergency Management Agency Director. According to FEMA's FCO for the U.S. Virgin Islands, the federal government deployed assets, including IMATs, urban search and rescue teams, and medical assistance teams. FEMA and USACE colocated with the U.S. Virgin Islands Territorial Emergency Management Agency in downtown St. Croix from the onset. In addition, due to the sequence of Hurricane Irma hitting the U.S. Virgin Islands immediately before Hurricane Maria, DOD already had personnel and resources (i.e., ships) deployed to the area, according to DOD officials, which enabled DOD to respond to Hurricane Maria faster than it otherwise would have.

In both Puerto Rico and the U.S. Virgin Islands, DOD was also asked by FEMA to provide support that the department has not typically provided for prior hurricanes (e.g. air operations, mortuary affairs, and power grid restoration). According to DOD officials, active duty military personnel and

reservists also provided life-sustaining commodities such as food and water. Additionally, USACE members provided services such as installing generators and tarp roofs. See appendix XI for a summary of DOD's role in the response effort and appendix III for more information on the full scale of federal support provided to Puerto Rico and the U. S. Virgin Islands, as well as the states affected by the 2017 hurricanes and wildfires.

FEMA Response Efforts Were Complicated By Factors Specific to Puerto Rico and the U.S. Virgin Islands

FEMA's response efforts in Puerto Rico and the U.S. Virgin Islands were complicated by a number of factors including (1) the remote distance of the territories, (2) limited local preparedness for a major hurricane, (3) outdated local infrastructure, (4) workforce capacity constraints, and (5) additional challenges in Puerto Rico.

These challenges were compounded by FEMA's previous deployment of personnel and assets to support the response for Hurricane Harvey in Texas and Hurricane Irma in Florida due to the unprecedented near-

Major Factors that Affected Response to Hurricanes Irma and Maria

100 percent of Puerto Rico Electric Power Agency (PREPA) clients without electric power service

80 percent of all PREPA Infrastructure was destroyed

80 percent of Puerto Rico Aqueduct and Sewer Authority clients without water service

80 to 85 percent of communication towers not operational

Large numbers of roads with landslides and several dozen bridges collapsed

Maritime ports and airports closed for at least 5 days after Maria hit Puerto Rico

Satellite phones not working

Emergency Operations Plan not built for catastrophic levels nor 100 percent loss of communication

Ample fuel but not enough personnel and fuel tankers for transportation throughout the island

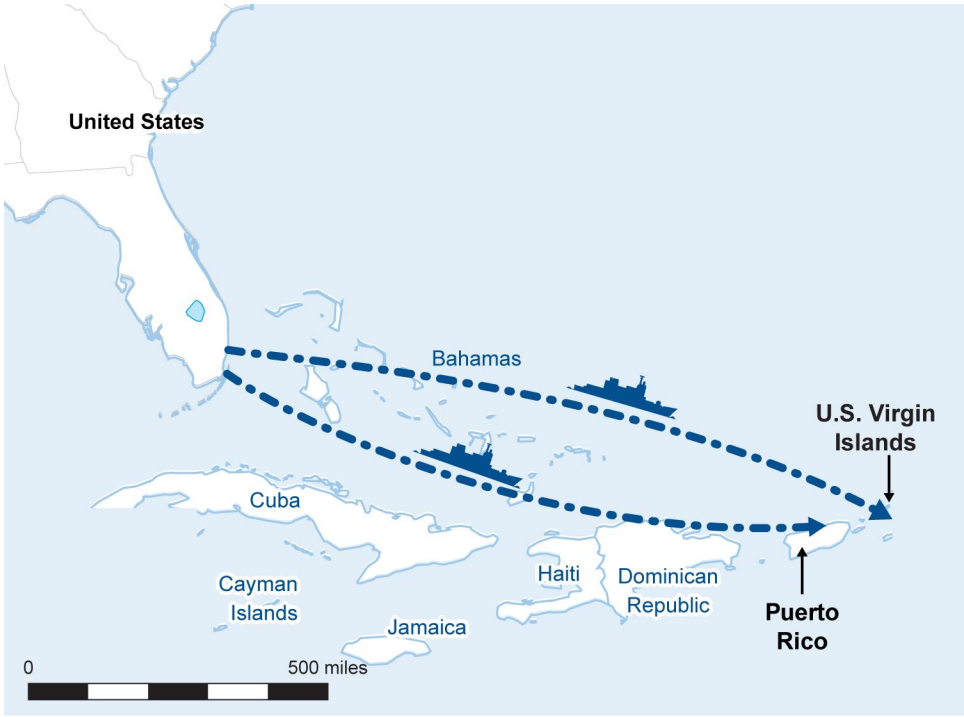
Source: Federal Emergency Management Agency. I

GAO-18-472.

sequential disasters of 2017. As a result of lessons learned from these challenges, FEMA has taken a number of steps to plan for the next hurricane season.

Remote Distance of Territories. Given Puerto Rico's and the U.S. Virgin Islands' remote distance from the U.S. mainland, FEMA faced challenges in getting key personnel and resources to the territories before and after the hurricanes made landfall, and with distributing those resources to survivors. Both Puerto Rico and the U.S. Virgin Islands are located approximately 1,000 nautical miles from the U.S. mainland where personnel, equipment, and other key resources had to be moved from, as depicted in figure 8.

Figure 8: Distance from U.S. Mainland to Puerto Rico and the U.S. Virgin Islands



Source: Map Resources. | GAO-18-472

Under typical disaster operations, responders are moved to the disaster response area via commercial travel options—or as in Texas and Florida, on roadways from nearby states, according to FEMA officials. However, limitations on air travel due to capacity constraints and power outages meant that FEMA had to coordinate and mobilize agency partners to

provide chartered air transportation until commercial travel options resumed. Further, the destruction of major transportation routes made the deployment of these personnel and distribution of the commodities even more challenging according to FEMA officials. For example, in Puerto Rico, FEMA officials said food, commodities, and medicine had to be distributed by helicopter drop for several weeks because of landslides or destroyed bridges.

Limited Local Preparedness. Puerto Rico and the U.S. Virgin Islands had engaged in disaster preparedness exercises prior to Hurricane Maria; however, neither had recently experienced nor stockpiled the resources necessary for a hurricane of that magnitude. For example, Puerto Rico officials said their emergency plans allowed the local government to respond effectively to Hurricane Irma (e.g., evacuating residents, purchasing food, and securing their homes). However, their plans were insufficient for the magnitude of Hurricane Maria which made landfall 2 weeks later. Specifically, Puerto Rico officials had not considered that a hurricane would cause a loss of power for as long as Hurricane Maria did.

Hurricane Maria was the strongest hurricane to make landfall in Puerto Rico since a Category 5 hurricane in 1928, according to the National Oceanic and Atmospheric Administration.[44] Puerto Rico officials explained that local preparation for a Category 5 hurricane is limited by physical space and financial resources needed to stockpile necessary supplies to respond to a hurricane of that magnitude and also because such hurricanes occur infrequently. According to FEMA officials, FEMA took on a more active role in the response to Hurricane Maria due to preparedness challenges in Puerto Rico.

In the U.S. Virgin Islands, the local government had conducted preparedness exercises and local officials had a grasp of the emergency management process, according to DOD officials.[45] According to FEMA

[44]National Oceanic and Atmospheric Administration (NOAA) measures hurricanes on a scale from 1 to 5 with a Category 1 being the least intense and a Category 5 being the most intense. NOAA defines a Category 4 hurricane as one with winds 130-156 miles per hour and Category 5 with winds above 157 miles per hour. Hurricane Maria made landfall on the U.S. Virgin Islands as a Category 5 hurricane and Puerto Rico as a high end Category 4 hurricane.

[45]Exercises are a useful tool for jurisdictions to identify emergency preparedness capability strengths and shortfalls which can be used to inform future preparedness efforts and response operations.

officials, these preparedness exercises were for tropical cyclones and other incident types such as an earthquake and a tsunami which have catastrophic impacts similar to hurricanes Irma and Maria. However, according to FEMA's *2017 Hurricane Season FEMA After-Action Report*, FEMA could have better leveraged information from these and other prior exercises in the Caribbean, including a 2011 exercise after-action report for Puerto Rico which indicated that the territory would require extensive federal support in moving commodities, including from the mainland to the territory, and to distribution points throughout the territory. In contrast, FEMA's leverage of information from prior exercises in Florida proved to be critical in that state's ability to efficiently execute mutual aid agreements in response to Hurricane Irma.

FEMA officials said they have encouraged both Puerto Rico and the U.S. Virgin Islands to develop planning timelines and formal Emergency Management Assistance Compacts (EMAC)—mutual aid agreements that allow states to support one another during a disaster response—which play a critical role in managing risk to communities and infrastructure. Although an EMAC supported requests for assistance to Puerto Rico, getting interstate mutual aid and assistance through the EMAC process was more difficult because there are no other states or territories adjacent to Puerto Rico and the U.S. Virgin Islands, according to DOD officials.[46]

Outdated Local Infrastructure. Hurricane Maria devastated the already fragile and outdated infrastructure in Puerto Rico and the U.S. Virgin Islands, which complicated response efforts according to the FEMA Administrator and Puerto Rico officials. Specifically, Hurricane Maria crippled the power grid, communication systems, and transportation infrastructure throughout both territories, hindering communication and delaying emergency response activities. See figures 9 and 10 for photographs of damage sustained in the U.S. Virgin Islands and Puerto Rico.

[46]We are currently conducting a separate review on Puerto Rico and the U.S. Virgin Islands' disaster recovery plans, which we plan on issuing in spring 2019.

Figure 9: Damaged Power Pole in the U.S. Virgin Islands after Hurricane Maria in November 2017

Source: GAO. | GAO-18-472

The damage was more extensive in Puerto Rico. Three months after Hurricane Maria hit, Puerto Rico had 65 percent of its power restored while the U.S. Virgin Islands had closer to 90 percent, according to FEMA officials. The U.S. Virgin Islands was quicker to restore power in part due to previous infrastructure investments and mitigation efforts implemented by the government, according to FEMA officials.

Figure 10: Damaged Power Lines and Satellite Dish in Puerto Rico after Hurricane Maria in November 2017

Source: Federal Emergency Management Agency. | GAO-18-472

According to Puerto Rico officials, much of the territory's infrastructure (e.g., roads, sewage systems, and bridges) is more than 50 years old. As a result, some replacement parts were no longer available and had to be specially manufactured, delaying power restoration. Moreover, many of the power lines connecting the large power stations in southern Puerto Rico through the mountains to the north—where the majority of the island's residents reside—were destroyed by the storm according to officials from the Puerto Rico Electric Power Authority (PREPA).

According to FEMA and Puerto Rico Aqueduct and Sewer Authority officials, Puerto Rico had limited access to federal funds to renew and

replace infrastructure prior to hurricanes Irma and Maria due to its outstanding public debt.[47] Specifically, PREPA officials told us that their ability to prepare for the hurricane season was impacted by Puerto Rico's financial situation due to vendor concerns with reimbursement for services and goods.[48] Moreover, previous hazard mitigation efforts to strengthen the island's infrastructure were not enough to withstand the force of Hurricane Maria, according to FEMA officials. For example, Puerto Rico's construction codes called for buildings to withstand winds of 145 miles per hour, but Hurricane Maria's winds exceeded 175 miles per hour causing massive wind and flood damage to housing and office space, including the Puerto Rico Emergency Management Agency office, further delaying hurricane response efforts. We also provide more details about both territories' challenges as well as goals for incorporating resilience after the 2017 disasters in appendix X.[49]

Workforce Capacity Constraints. Given that FEMA was confronted with concurrently responding to four large and complex disasters, this exacerbated FEMA workforce capacity constraints and training deficits for deployed workers according to FEMA officials. This was especially true for Hurricane Maria, which was the last of the three major hurricanes in

[47]Puerto Rico has roughly $70 billion in outstanding debt and $50 billion in unfunded pension liabilities, and since August 2015 has defaulted on over $1.5 billion in debt. The effects of hurricanes Irma and Maria will further affect Puerto Rico's ability to repay its debt, as well as its overall economic condition. For more on Puerto Rico's public debt see GAO, *Puerto Rico: Factors Contributing to the Debt Crisis and Potential Federal Actions to Address Them,* GAO-18-387 (Washington, D.C.: May 9, 2018).

[48]Congress passed the Puerto Rico Oversight, Management, and Economic Stability Act (PROMESA) in June 2016. See Pub. L. No. 114-187, 130 Stat. 549 (2016). PROMESA temporarily prevented creditors from suing Puerto Rico over missed debt payments. PROMESA established a Financial Management and Oversight Board with broad powers of budgetary and financial control over Puerto Rico. In addition, it created procedures for adjusting debts accumulated by the Puerto Rico government and its component units. On May 3, 2017, after the termination of the original stay preventing creditors from suing the territory, the board filed a petition under Title III of PROMESA beginning a broad-based debt restructuring process.

[49]We are also currently conducting a more detailed review of the power grid restoration and resilience efforts in Puerto Rico and the U.S. Virgin Islands, as well as USACE power restoration capacity and efforts in Puerto Rico, which we plan to issue in spring 2019.

2017.[50] FEMA leadership and the FCO in the U.S. Virgin Islands said that some of FEMA's disaster staff deployed to Puerto Rico and the U.S. Virgin Islands were not physically able to handle the extreme or austere environment of the territories, which detracted from mission needs. According to FEMA officials, the physical fitness of staff could be assessed prior to deploying staff.

Similar to Texas and Florida, federal and local response agencies were colocated at the JFO in Puerto Rico and the U.S. Virgin Islands to facilitate coordination and response. However, according to the IMAT leader in the U.S. Virgin Islands, the U.S. Virgin Islands IMAT team needs more exercises alongside the national IMAT teams in order to build response skills and strong relationships.

In addition, with much of the housing destroyed in both Puerto Rico and the U.S. Virgin Islands, locating accommodations for the nearly 15,000 federal government employees—including military personnel—deployed to assist in response activities became a major challenge, according to FEMA officials. We discuss more of the workforce challenges FEMA faced in the wake of the 2017 disasters later in this report. See appendix V for a summary of FEMA's workforce capacity and related challenges during the 2017 disaster response.[51]

Other Challenges in Puerto Rico. Prior to Hurricane Maria's landfall, FEMA identified some factors unique to Puerto Rico that could affect response efforts. Specifically, FEMA's Region II Hurricane Annex for Puerto Rico and the U.S. Virgin Islands, dated June 2014, outlines the territories' emergency response policies, procedures, and responsibilities, including communication, transportation, and mass evacuation in the

[50]According to FEMA officials, FEMA employed use of a force package for the first time to Hurricane Harvey. A force package is a set of force modules with time-phased deployment dates and each force module within a package provides a capability for disaster response. The force package provides the personnel to support an event based on the incident size and scope. Field leadership is provided with an initial deployment of time-phased personnel (supervisors and management personnel arriving first) allowing them to better manage further deployments and staffing requests on the margins or as the operation changes over time.

[51]We are currently conducting a separate review focused on FEMA's workforce management challenges.

event of a disaster.[52] According to FEMA's Region II Hurricane Annex, information in Puerto Rico must be conveyed in Spanish—which is the main spoken and written language. However, in the aftermath of Hurricane Maria, FEMA did not have enough bilingual employees to communicate with local residents or translate documents. According to FEMA officials, this resulted in further delays while staff were reshuffled from other disasters to Puerto Rico. In addition, unlike in the continental United States where individuals mostly apply for IA at disaster recovery centers or online, in Puerto Rico, officials needed to conduct more door-to-door visits to reach disaster survivors and conduct assessments, according to FEMA officials. Locating addresses and individuals was challenging, according to FEMA officials, because many affected areas did not have posted addresses, many individuals use nicknames instead of their given names, and often several families were located on a single property. Additionally, we are conducting work on how states and territories account for disaster-related deaths and injuries, and the impact on disaster assistance.

FEMA Has Taken Some Action to Incorporate Lessons Learned in Preparation for the Next Hurricane Season

Following the 2017 hurricane season, FEMA has taken a number of steps to help prepare for the 2018 season. For example, in July 2018, FEMA issued an after-action review of the agency's preparations for, immediate response to, and initial recovery operations for hurricanes Harvey, Irma, and Maria. The after-action report identifies 18 key findings across five focus areas and offers targeted, agency-wide recommendations for improvements as well as broader lessons for the emergency management community.[53] FEMA officials reported that they have already taken several actions in preparation for the 2018 hurricane season. These include:

[52]According to FEMA, the purpose of FEMA's Region II Hurricane Annex for Puerto Rico and the U.S. Virgin Islands is to support the expedited jurisdictional response to tropical and subtropical systems, including catastrophic hurricanes, as well as tropical depressions, tropical storms, and hurricanes, and their secondary and cascading impacts on locations in Puerto Rico and the U.S. Virgin Islands. FEMA Region II Hurricane Annex for Puerto Rico & the U.S. Virgin Islands. June 1, 2014.

[53]The five focus areas of the 2017 Hurricane Season FEMA After-Action Report include: (1) scaling a response for concurrent complex incidents; (2) staffing for concurrent complex incidents; (3) sustaining whole community logistics operations; (4) responding during long-term Infrastructure outages; and (5) mass care to initial housing operations.

- updating hurricane plans, annexes, and procedures for all U.S. states and territories;
- improving staff skills and readiness including by creating a Standard Operating Procedure for a central location for equipping and training staff prior to disaster deployments;
- improving logistics operations such as by increasing disaster supplies for all U.S. territories for items including meals, water, tarps; and generators, specifically for Puerto Rico and the U.S. Virgin Islands. FEMA is also adding 360 new emergency generators to its inventory and has pre-positioned 630 generators in the Caribbean for the 2018 hurricane season; and
- updating communications systems from land-based radios to satellite-based technology; refining tactical and long-haul communications, from land mobile radios to satellite communications.

In addition to these efforts, FEMA conducted a National Level Exercise to assess and enhance its response and initial recovery capability during the first 2 weeks of May 2018, which focused on issues identified in its 2017 hurricane season after-action review.[54] The findings and recommendations of the after-action report influenced the development of FEMA's 2018-2022 Strategic Plan, released in March 2018, according to FEMA officials.

While FEMA described actions it has taken in response to the 2017 disasters, it was too soon to assess the adequacy of these actions as part of this review and whether the actions will have the intended impact.[55]

[54]According to FEMA, the National Level Exercise as a whole is a large exercise series running from January through the summer of 2018, which includes seminars, workshops, and tabletop exercises, as well as a functional exercise in May focused on thematic areas identified from ongoing real-world continuous improvement efforts. The 2018 National Level Exercise examined the ability of all levels of government, private industry, and nongovernmental organizations to protect against, respond to, and recover from a major Mid-Atlantic hurricane, and allowed the whole community to examine lessons observed following the storms of the 2017 Atlantic hurricane season.

[55]We are conducting a comprehensive review of the federal government's national preparedness capabilities, training, and funding to assist communities in responding to and recovering from major disasters, which we plan to issue in the summer of 2019.

The 2017 Hurricanes and Wildfires Highlighted Challenges FEMA Faces in Meeting Its Response and Recovery Missions

The 2017 hurricanes and wildfires reaffirmed the existence of some long-standing response and recovery challenges, but also highlighted several new challenges related to (1) the near-sequential timing of the disasters, (2) housing assistance, (3) workforce management, and (4) public assistance.

The Timing of the Four Near-Sequential Major Disasters and Unique Circumstances in Each Location Presented Challenges for Debris Removal in 2017

Debris removal is an important first step in the disaster recovery process, allowing communities to expedite the recovery process by restoring accessibility to public services and space, while ensuring public health and safety in the aftermath of a disaster. The PA Program provides funding assistance for the removal of debris and wreckage from publicly and privately-owned lands and waters resulting from a major disaster, when such removal is in the public interest.[56] For example, debris removal is in the public interest if it would eliminate an immediate threat to lives, public health and safety, or property. In addition to funding, FEMA can provide a range of assistance and guidance to help PA applicants mitigate associated difficulties with debris removal. For example, FEMA can provide Direct Federal Assistance for debris removal if the event exceeds state and local capability and if the recipient requests such support. When local jurisdictions do not have the capacity for debris removal, FEMA can assign the USACE or other federal agencies to conduct the removal, or other agencies may support these efforts through various authorities. However, the respective state or local governmental entity has the responsibility to execute and manage debris removal operations.

Officials in Texas, Florida, Puerto Rico, and California reported challenges with debris removal operations following each disaster in 2017, for example, clearing trees and other vegetative debris, as well as residential, commercial, and construction goods, including hazardous

[56]See 42 U.S.C. § 5173; 44 C.F.R. 206.224.

materials. The officials said these challenges arose from a shortage of debris removal contractors, inadequate debris contract provisions, and disputes over responsibility for marine debris removal.

Shortage of debris removal contractors. Some Texas and Florida jurisdictions experienced challenges with the availability of debris removal contractors, given the large demand throughout the regions, and in some cases, even when contracts were in place, contractors did not honor them. For example, according to the FEMA FCO in Florida, contractors are primarily located in the Gulf Coast area and serve a national market. Because many debris contractors were already engaged in Texas, the contractors were not available to provide services in Florida even if they had prior contracts in place. Additionally, some officials from local jurisdictions reported that they had existing contracts for debris removal that had been in place up to 5 years ago. However, because newer contracts were offering more money per cubic yard, some vendors, despite being under contract in a given jurisdiction, prioritized work in another jurisdiction that offered higher rates, according to local officials. Florida officials said that in such cases there was not much they could do except to urge fulfillment of the contract terms.

According to local officials in one Texas jurisdiction, their debris removal contracts are awarded based on price, with preference given to the lowest bids, which can make it difficult for them to get debris removal services in a timely manner in times of high demand as happened in 2017, because contractors inevitably prioritize jurisdictions that pay more. In this case, the officials asked FEMA to issue one regional contract at a higher bid price to ensure all jurisdictions had the opportunity to access debris removal services. According to FEMA's Policy Branch Chief, the magnitude of debris across very large geographic areas, the lack of proximity of debris removal contractors to certain areas, and the limited number of debris removal contractors providing such services resulted in much of the difficulty related to debris removal experienced after the 2017 hurricanes. It also resulted in the inability of multiple states and municipalities to quickly procure a debris removal contactor at a reasonable rate. See figure 11 for an example of a debris pile awaiting pick up in a Texas residential neighborhood following Hurricane Harvey.

Figure 11: Residential Debris Awaiting Pick Up in Texas Following Historic Flooding Caused by Hurricane Harvey in 2017

Source: GAO. | GAO-18-472

In addition to the funding assistance that FEMA can provide for debris removal operations, FEMA officials said that the agency also has an online debris contractor registry to assist PA applicants in identifying and contacting contractor resources. Additionally, through its regional counsel at Joint Field Offices and through its Procurement Disaster Assistance Team, FEMA proactively engages with communities to provide technical assistance and guidance to PA applicants for debris removal contracting. However, FEMA officials stated that greater readiness and preparedness at the state level may be able to address some of the issues states and municipalities experienced with debris removal in 2017. FEMA PA officials told us that they are exploring potential opportunities to provide additional guidance to applicants on federal procurement rules to assist preparedness efforts. FEMA is also considering the potential utility of new debris removal estimating methodologies and technologies to serve as a basis for providing debris removal funding based on estimates as opposed to actual costs under the PA alternative procedures.

Inadequate debris contract provisions. In California, the state's primary debris contractor did not have the capacity to handle all of the debris removal after the 2017 wildfires. Therefore, California OES coordinated with FEMA, which directed USACE to provide debris removal services. According to the California OES director, the state experienced challenges with meeting the requirements for a federal contract and the lack of flexibility resulted in delays with the debris removal process. Moreover, according to FEMA Region IX officials in California, because wildfires create ash debris, asbestos, and other toxic chemicals, debris removal contracts must have specific provisions to address fire debris. However, the region's advance contracts with USACE for debris removal did not have a task order for fire debris because this was the first time FEMA requested USACE support for fire debris removal. This caused issues in the debris removal process.

Disputes over responsibility for marine debris removal. In the Florida Keys, determining responsibility for marine debris removal from the canals was a challenge after Hurricane Irma, according to the Monroe County emergency management director. County officials estimated that there were between 1,300 and 1,800 sunken or derelict boats for which neither the private owners who use the water canals nor the Coast Guard nor the county would claim responsibility for debris removal.[57] In the absence of available contractors, some jurisdictions opted to use their own staff and equipment to remove debris. However, these jurisdictions faced fiscal challenges because of FEMA delays processing reimbursements.

Responsibility for marine debris removal has been a longstanding issue with parties reaching different solutions at different times, according to Monroe County officials in Florida. See figure 12 for an example of marine

[57]We reported in 2017 that abandoned and derelict vessels can block navigable U.S. waterways and pose threats to the environment, public health and safety, as fuel and hazardous material can leak into the water as the vessels deteriorate. See GAO, *Maritime Environment: Federal and State Actions, Expenditures and Challenges to Addressing Abandoned and Derelict Vessels,* GAO-17-202 (Washington, D.C.: Mar. 28, 2017). Federal agencies respond to abandoned and derelict vessels in accordance with federal law, interagency agreements, and funding availability. Federal laws and the National Contingency Plan—the government's blueprint for responding to oil and hazardous substance releases—establish federal agency roles for leading a response to an abandoned and derelict vessels-related incident based on various factors, such as the type of abandoned and derelict vessels threat posed and its location. Interagency agreements have also helped to guide federal abandoned and derelict vessels response efforts.

debris in the Florida Keys, responsibility for the removal of which was in dispute at the time of our November 2017 visit there.

Figure 12: Marine Debris in Florida Keys Canal Following Hurricane Irma in 2017

Source: GAO. | GAO-18-472

According to FEMA officials, the agency offers PA applicants financial incentives through its PA Alternative Procedures Debris Removal Pilot Program to establish Debris Management Plans, written procedures, and guidance for managing debris removal in an expeditious, efficient, and environmentally sound manner. FEMA also provides PA applicants with a job aid to assist applicants in developing the Debris Management Plans, according to FEMA's Policy Branch Chief. Applicants that develop and have the plan in place prior to a declaration and meet other program requirements can take advantage of a one-time 2 percent federal cost share increase on debris removal operations for 90-days following the 1st day of the incident period. Additionally, FEMA reviews the plan and informs applicants of deficiencies and how such deficiencies could be

remedied, which could result in faster processing of their project and therefore reimbursement, if action is taken to address the deficiencies.[58]

FEMA, States, and Territories Are Using a Variety of Existing and New Short-Term Housing Options for Disaster Survivors, but Challenges Persist

According to DHS's 2017 National Preparedness Report, providing effective and affordable short-term housing for disaster survivors has been a longstanding and continuing challenge.[59] For example, according to the report, many states and territories expect the federal government to take on the responsibility of addressing housing gaps, as states often face shortages in effective housing options following a large-scale disaster. Moreover, short-term housing options that might work in one location may not be suitable for another for various reasons, according to the report, hence the need for FEMA to be flexible in its implementation of potential housing solutions. The FEMA Administrator has also highlighted these challenges, noting that state and local officials, not FEMA, are in the best position to determine the necessary housing options for their citizens, with support from the federal government. The Administrator cited the various federal housing models states used after the 2017 hurricanes and wildfires. These models included Direct Lease, Multifamily Lease and Repair, Manufactured Housing Units and Recreational Vehicles, Permanent Housing Construction Repair Program, Sheltering and Temporary Essential Power, and Transitional Sheltering Assistance. According to FEMA officials, these alternative housing models were identified as a result of lessons learned from recent major disasters such as the 2016 flooding in Louisiana and Hurricane Matthew as well as insights leveraged from a housing summit the agency held in February 2017—FEMA's Housing Assistance Initiative.[60]

[58]We have initiated two reviews examining advance and post-disaster contracting, which will include contracts that were used for debris removal, and the DHS Office of Inspector General plans to conduct future reviews of disaster debris removal contracts.

[59]Department of Homeland Security, *National Preparedness Report* (Washington, D.C.: Aug. 28, 2017).

[60]FEMA's Housing Assistance Initiative integrated the efforts of 13 working groups and ongoing housing initiatives to develop an implementation plan that outlines short-term and long-term changes to how FEMA provides disaster housing and that outlines a new strategic vision that engages states, other federal agencies, and industry to grow national disaster housing capabilities.

- **Direct Lease.** FEMA provides temporary housing units directly to survivors when rental resources are unavailable. FEMA and the state of Florida are prioritizing use of this approach for housing recovery in the state, according to FEMA officials.
- **Multifamily Lease and Repair.** According to FEMA, FEMA repairs existing multi-family housing units, such as apartments, to use as temporary housing for eligible applicants who are unable to use Rental Assistance—a grant in the form of a check to enable survivors, both homeowners and renters, to rent temporary replacement housing—due to a lack of available resources.
- **Manufactured Housing Units and Recreational Vehicles.** These are manufactured homes or other readily fabricated dwellings owned by FEMA and provided to eligible applicants for use as temporary housing for a limited time. Recreational vehicles have been approved for use in response to hurricanes Harvey and Irma. This form of assistance is being implemented in Texas and Florida.
- **Permanent Housing Construction.** FEMA may provide financial assistance or direct assistance to individuals and households in insular areas outside the continental United States, or in other locations where no alternative housing resources are available and where temporary housing assistance is unavailable, infeasible, or not cost-effective. Assistance may be authorized for direct repairs or new home construction; however, FEMA has only authorized Permanent Housing Construction. This is one element of the new approach to housing recovery utilized in Texas, Puerto Rico, and the U.S. Virgin Islands, according to FEMA officials.
- **Sheltering and Temporary Essential Power.** FEMA uses Sheltering and Temporary Essential Power to assist state, territorial and tribal governments in performing work and services essential to saving lives, protecting public health and safety, and protecting property to enable survivors to shelter at home, according to FEMA officials.
- **Transitional Sheltering Assistance.** FEMA may provide Transitional Sheltering Assistance services to applicants who are unable to return to their pre-disaster primary residence because their home is either uninhabitable or inaccessible. The goal of this program is to reduce the number of disaster survivors in congregate shelters by transitioning survivors into short-term accommodations through direct payments to lodging providers, such as hotels. Puerto Rico used this approach despite initial

concerns that this would have a negative effect on migration away from the island territory, according to FEMA officials.

See table 1 for the number of eligible and approved applicants for each of these housing and sheltering assistance options for each disaster location, and appendix VI for more information on how and where these sheltering and housing approaches were implemented in response to the 2017 disasters.

Table 1: Number of Registrations and Approved Applicants for Each Type of Housing and Sheltering Assistance Provided by Disaster Location, as of June 22, 2018

Disaster	Total Registrations	Multifamily Lease Repair	Manufactured Housing Units and Recreational Vehicles	Permanent Housing Construction Repair Program	Direct Lease	Sheltering and Temporary Essential Power Program	Transitional Sheltering Assistance
Hurricane Harvey in Texas	**895,528**	0	2,848	247	131	15,578	53,894
Hurricane Irma in Florida	**2,644,403**	0	257	0	63	129	26,633
Hurricane Irma and Hurricane Maria in Puerto Rico	**1,138,444**	16	0	33	237	33,016	6,907
Hurricane Irma and Hurricane Maria in U.S. Virgin Islands	**39,415**	0	0	0	61	1,920	0
California wildfires	**25,425**	0	154	0	94	0	618
Total	**4,743,215**	**16**	**3,259**	**280**	**586**	**50,643**	**88,052**

Source: Federal Emergency Management Agency I GAO-18-472

Note: Total registrations represent the total number of survivors considered for disaster assistance at each of the disaster locations specified. However, the number of registrations for the Sheltering and Temporary Essential Power Program may be different because the Sheltering and Temporary Essential Power Program is separate from FEMA's Individuals and Households Program and is not included in the registration process. Disaster survivors interested in the Sheltering and Temporary Essential Power Program must first apply for FEMA's Individuals and Households Program assistance and then apply directly to the State, Territorial, or Tribal entity administering the Sheltering and Temporary Essential Power Program.

These alternative approaches for housing recovery—primarily funded through FEMA's IA program—reflect the agency's efforts to support recovery efforts that are responsive to local needs and available

resources, and that address previously identified challenges facing their programs. However, despite successes, in each of the disaster-affected areas, officials noted complex and ongoing housing concerns, as discussed below.

Texas: In September 2017, FEMA entered into an agreement with the Texas General Land Office to provide for housing recovery, marking the first time the agency has coordinated with a nonfederal agency to provide this housing service, according to FEMA officials. FEMA estimates these costs will reach approximately $1 billion. State officials in Texas plan to implement the new housing model to manage the delivery of direct housing to more than 6,600 applicants.[61] However, the officials cited staffing shortfalls at the state level, and information sharing challenges among FEMA, state, and local officials, which may result in delays in granting housing relief to applicants.

Florida: Housing shortages already existed in Florida prior to Hurricane Irma, and locating adequate housing subsequent to the disasters has been a major challenge, according to state and local officials. In Florida, officials told us that that zoning laws restrict the number of housing units based on the capacity for evacuation from the area. As a result, state officials said they preferred to utilize the direct lease option for the first time to leverage the high volume of vacation rentals, particularly in Lee, Collier, and Monroe Counties. However, local officials said in December 2017 that housing shortages existed in areas of the Florida Keys, and that there were concerns about the timeliness of providing housing units to disaster survivors.

U.S. Virgin Islands: Significant wind damage from Hurricane Irma followed by significant water damage from Hurricane Maria severely depleted the housing available for disaster survivors. Local officials stated that they are addressing the shortage and challenges through a combination of direct temporary housing—direct lease and multifamily

[61]Under the new model developed immediately after Hurricane Harvey, the General Land Office—a Texas state agency—acts as the program administrator, while local government officials each individually run the program, which provides a range of housing options to applicants, including permanent housing construction and direct lease. According to FEMA officials, after-action reviews which highlighted challenges experienced in the Baton Rouge flooding of 2017 drove this model of contracting with the state to provide housing assistance. As part of that review, FEMA captured lessons learned from the flooding event that recommended, among other changes, giving grant authority to enable states to develop capability in advance of a disaster.

lease and repair, and potentially permanent housing construction repairs. However, FEMA officials noted challenges in providing housing to disaster survivors and local officials due to staff shortages for inspections and inexperienced FEMA staff who are not prepared to support the housing mission. According to FEMA's Housing Inspection Services officials, to expedite availability of trained inspectors, FEMA pursued and received a waiver of the standard background check process for inspectors during recruitment efforts following Hurricane Harvey and throughout the 2017 hurricane season. The process, which normally takes about 2 weeks, was abbreviated to approximately 2 to 3 days. It also initiated innovations for the inspection process that included streamlining the scope of field inspection to more readily allow third party representatives to meet with the inspector and a self-declaration process as a last resort to verify either occupancy or ownership.

Puerto Rico: FEMA and territorial officials are offering multiple programs to address the unique challenges to long-term housing for survivors on the island. For example, the governor considered the shortage of hotel space available on the island and ultimately decided to request Transitional Sheltering Assistance, despite concerns that it would encourage middle class, professional residents to leave the island, according to FEMA officials.[62] The governor also requested transportation assistance for the first time to assist people who wish to relocate, including those in nursing homes and hospitals, FEMA officials added.[63]

California: Even before the 2017 disasters, critical housing shortages existed in California. According to FEMA officials, Sonoma County, California had 144 available housing units prior to the wildfires, which burned 5,098 homes in Sonoma and another 5,031 homes in Mendocino County, creating a large housing deficit. Locating adequate housing

[62]See 42 U.S.C. § 5189c (authorizing the provisions of transportation assistance to relocate individuals displaced from their predisaster primary residences as a result of a declared major disaster or to return an individual or household to their pre-disaster primary residence or alternative location). According to FEMA, the 2017 disaster season was the largest implementation of Transitional Sheltering Assistance in the agency's history. In addition to Puerto Rico, this type of assistance was applied in Texas, Florida, and California in response to the 2017 hurricanes and wildfires.

[63]According to FEMA, a mission assignment was approved for National Disaster Medical System to provide a medical evacuation of dialysis patients from both the US Virgin Islands and Puerto Rico to the Continental United States. Officials said that transportation assistance was not approved or used to assist Puerto Rico survivors in leaving the island. Transportation assistance was approved on May 3, 2018, however, to assist survivors that were checked into Transitional Sheltering Assistance (TSA) hotels within the Continental United States in returning to Puerto Rico. This assistance was provided from May 3, 2018 through August 30, 2018.

subsequent to the disasters has been a major challenge, according to California state officials. These officials reported that local ordinances have compounded the complexity of finding housing solutions, and local officials navigate alterations to rules for temporary situations (e.g. prohibiting mobile homes in certain areas).

Federal, state, and local officials formed housing task forces to inform the state and FEMA of local challenges as well as opportunities to provide shelter. According to state officials, the pre-existing relationship with FEMA along with California's more centralized emergency management decision-making structure has facilitated this joint decision-making approach. While this approach has enabled the state to meet its most pressing short-term housing needs, according to FEMA officials, the state faces other challenges in the long term. For example, FEMA officials estimated that Direct Temporary Housing, which should be occupied by disaster survivors no more than 18 months, will be needed for a period of at least 36 months by survivors of the wildfires since that is how long it is estimated that survivors will take to rebuild.[64]

Although FEMA and state officials acknowledge the potential of the alternative approaches to meet local needs, early implementation challenges raise concerns about the effectiveness and management of these approaches for long-term recovery. We describe these challenges and approaches for each location further in appendix VI.[65]

[64]According to FEMA's Individuals and Households Program Unified Guidance, FEMA may extend Direct Temporary Housing Assistance beyond the 18-month period of assistance when the affected state, territorial, or tribal government requests an extension in writing. See also 42 U.S.C. § 5174(c)(1)(B)(iii).

[65]We are initiating a comprehensive review of FEMA's Individual Assistance Program—including FEMA housing assistance—that will examine challenges and lessons learned from the 2017 disasters, which we plan to issue in 2019.

FEMA Faced Workforce Challenges With Deploying Enough Personnel, Providing Training, and Retaining Staff

FEMA's workforce allocations and plans were overwhelmed by the 2017 disaster response needs and long-standing workforce challenges we have identified in prior work were exacerbated by the need to provide a concurrent response to the disasters. Based on its internal workforce analyses, FEMA faced a staff shortage of more than 30 percent as of September 1, 2017.[66] Among other things, the Post-Katrina Act required FEMA to develop a strategic human capital plan that includes an assessment of the critical skills and competencies of FEMA's workforce and provide an action plan that includes workforce planning strategies and program objectives to train employees.[67] We have previously found that FEMA has faced challenges developing workforce strategies and ensuring adequate training that affects FEMA's ability to ensure workforce capacity to respond to and recover from large-scale disasters.[68] In our prior reports, we have recommended, among other things, that FEMA incorporate certain principles, including goals and performance measures, into its workforce planning and training efforts. FEMA concurred, and has taken steps to address some of our recommendations. However, FEMA officials said that the agency does not expect to address all of our recommendations until 2020.

Deploying Personnel

Prior to the 2017 disasters, one of FEMA's strategic goals was to maintain a FEMA disaster workforce that is capable of responding to two concurrent large-scale disasters. Following the 2017 disasters, FEMA officials told us that their experience responding to four near-simultaneous disasters made them realize that they will need to continue to improve their workforce planning to be prepared to simultaneously support multiple disasters. FEMA relies on both permanent and disaster-related temporary employees to respond to presidentially-declared

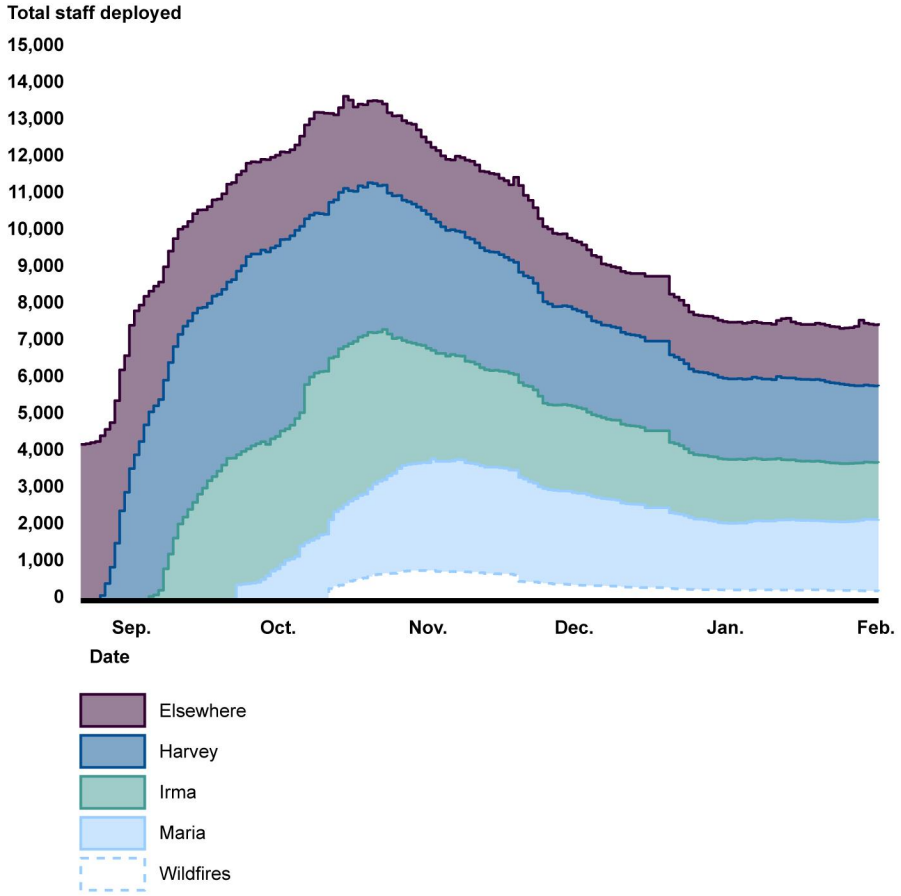
[66]FEMA's workforce analysis only represented FEMA employees and did not include local hires, FEMA Corps, Surge Capacity Force, contractors or employees from other federal agencies.

[67]See 5 U.S.C. § 10102.

[68]GAO-12-487.

disasters. See figure 13 for the total federal disaster workforce, including the FEMA disaster workforce, deployed to the various disasters in 2017.

Figure 13: Federal Disaster Workforce Deployed in Response to the 2017 Disasters in September 2017 through February 2018



Source: GAO analysis of Department of Homeland Security data. | GAO-18-472

Note: Data include Federal Emergency Management Agency (FEMA) workforce and non-FEMA employees that FEMA can deploy during a disaster response such as the Surge Capacity Force, FEMA Corps and contractors. Data do not represent local hires or employee types such as permanent part-time, temporary part-time, and temporary incident employees.

According to FEMA officials, the near-sequential disasters in 2017 required FEMA management to redeploy response personnel from one disaster to the next. For example, FEMA initially deployed a national IMAT team of 32 personnel to Texas following Hurricane Harvey, after hurricanes Irma and Maria hit, FEMA replaced this team with a regional IMAT team of 12 personnel, according to Harris County officials in Texas. Also, according to the FEMA deputy FCO in California, FEMA had

already deployed the majority of its workforce to support the hurricanes when the wildfires began and so there was some delay in initially deploying an adequate number of staff to support the wildfires response. According to FEMA Region IX officials responsible for responding to the California wildfires, FEMA classified the hurricanes as the most complex level of disaster, while FEMA initially classified the wildfires at a lower level of complexity.[69] The officials added that as a result, it was difficult for the region to get skilled staff into positions that were crucial for the response, so the region accepted employees who could only deploy for a week or two when FEMA would normally deploy them for 30 days. According to the officials, the region had retained some staff in California and was able to use contractors to backfill positions in cases where FEMA redeployed staff to support the hurricane response. Region IX officials added that as the region requested more staff, it sometimes received staff who had not been in the field for a while and lacked up-to-date knowledge to handle the mission needs, or staff who were coming off of long-term deployments from the hurricanes and were exhausted.

FEMA took several actions to address this shortfall in personnel by calling upon non-FEMA employees to deploy to the 2017 disaster areas. Specifically FEMA deployed more staff from other federal agencies through the use of the Surge Capacity Force, moved available staff between disaster zones as needed, hired locally, and used contractor personnel. For example, FEMA expanded the Surge Capacity Force for the first time in its history. Leveraging the Surge Capacity Force, the agency rapidly mobilized, trained, and equipped personnel from 34 non-DHS federal agencies to perform a variety of missions in support of the 2017 disasters, according to FEMA officials. FEMA officials in Florida said that the Surge Capacity Force was invaluable. One of our prior workforce recommendations was for FEMA to develop recruitment plans to address staff shortages in two new workforce elements, including the Surge Capacity Force.[70] FEMA concurred with this recommendation and has fully implemented it. However, FEMA officials said that they observed challenges with shifting personnel as conditions changed and said that the Surge Capacity Force still did not provide enough people, primarily

[69]FEMA defines disasters by incident types. A Type 1 event is the most complex, requiring national resources to safely and effectively manage and operate. Other levels of disaster do not call for the same level of national resources.

[70]GAO-15-437. FEMA has implemented activities to address all recommendations in this report, including those related to the Surge Capacity Force.

due to the unanticipated staff demand created by the concurrent response to four major disasters.

Providing Training

FEMA recruited a large number of employees to meet the unprecedented demand for staffing resources in response to the 2017 disasters. According to FEMA officials, the large influx of new employees added to challenges conducting timely, program-specific training. More than half of FEMA personnel were serving in a capacity in which they did not hold the title of “Qualified”—during the peak of deployments to the 2017 disasters, according to our analysis of data from FEMA’s Deployment Tracking System.[71] According to FEMA officials, an individual’s qualification in the tracking system does not necessarily correlate to incomplete tasks and training. Officials added that there is no feasible way to provide the training required to fulfill all requirements for qualification because although some courses could be offered in the field, many staff positions require more than one training, not all of which can be delivered in a field environment.

According to the FCO for Hurricane Harvey, limited funding dedicated to training also hampered the agency’s ability to meet basic training needs. This resulted in FEMA delivering aspects of the training even as the Surge Capacity Force actively responded to the disasters. FEMA officials stated that in the absence of required training, they developed just-in-time training, as well as hiring contractors to provide training locally. According to a FEMA official in Florida, FEMA should ideally provide training before a disaster so that the agency knows who is volunteering and can tailor training for tasks that fit their skills.

[71]According to FEMA officials, “Qualified” or “FQS qualification” is an official designation that refers to the fulfillment of criteria established by the FEMA Qualification System (FQS). The term is applied to FEMA personnel who, following an evaluation and validation of cadre-specific tasks and training requirements, are capable of independently executing their incident-based roles. The proportion of staff serving in a capacity in which they did not hold the title of "qualified" does not include non-FEMA disaster workforce components, such as the Surge Capacity Force and contractors. The qualification of these non-FEMA disaster workforce personnel is not tracked in FQS. For example, according to FEMA officials, Surge Capacity Force personnel are expected to self-report their skills when they arrive at their assigned location and receive training for roles that fit their self-assessment, prior to being deployed to the field to perform that role. If they are assigned a new role once they get to their duty station, they receive training for their new role. FEMA contractors as well as USACE members and local hires also receive program specific training before they begin working.

Retaining Staff

FEMA officials reported multiple challenges in retaining staff, including IMAT staff who play a key role in supporting the response to major disasters. According to FEMA officials, low pay and difficulty maintaining work-life balance have been identified as contributing to retention challenges on national Type I and regional Type II IMATs. According to the IMAT chief for Hurricane Harvey, attrition was high among IMAT staff because of the demanding nature of the job and low pay. FEMA officials in Florida also said that they faced challenges in hiring and retaining specialists such as engineers. According to these officials, the hiring process is lengthy and the pay is not competitive. Challenges revising and delivering training in a timely fashion may have also contributed to high turnover among reservists and other staff, according to the FCO in Texas. This is consistent with issues we had found in 2016 when we reported that the IMAT program had experienced high attrition across national and regional IMATs—since its implementation in fiscal year 2013—and that FEMA had not developed a strategy to address this challenge.[72] We recommended that FEMA develop a plan and workforce strategy for retention of IMAT staff. However, FEMA had not completed actions to respond to this recommendation as of July 2018. Nonetheless, FEMA officials said that the agency is examining its workforce challenges and has taken a number of actions to address staff retention. For example, officials told us they are working to expedite hiring decisions for IMAT personnel and increase the readiness of IMAT teams. According to FEMA officials, the agency has also made changes to ensure the composition of IMATs better reflect response priorities and foster greater team cohesion. Finally, it has established working groups to examine critical long-standing issues, such as training and equipment, that impact the team's ability to deploy and perform, in an effort to improve morale and retain personnel. We provide more details on the disaster workforce and related challenges in appendix V.

[72]GAO-16-87.

Use of Alternative Procedures and New Approaches to Service Delivery Offer Opportunities to Enhance Recovery Efforts but Also Present Challenges for the Public Assistance Program

Use of the alternative procedures and redesigned PA delivery model offers FEMA opportunities to help address some challenges experienced in past disasters and enhance overall recovery efforts. However, the relative lack of experience in administering disaster assistance using these approaches coupled with the magnitude of expertise and resource shortages presented by the response to multiple large-scale disasters also presents challenges.

Alternative Procedures

Local officials told us that, in consultation with FEMA, they are considering the extent to which they will use the Public Assistance Program alternative procedures to support their infrastructure recovery goals. As shown in figure 14, the alternative procedures offer a modified approach to estimating and funding debris removal and permanent work under the Public Assistance programs in ways that can offer substantial benefits to disaster-affected communities.

Figure 14: Summary of Alternative Procedures for Federal Emergency Management Agency's (FEMA) Public Assistance Program, Authorized in 2013

Debris removals

- Provide grants on the basis of fixed estimates to provide financial incentives for governments with FEMA-approved debris removal plan and one or more pre-qualified debris removal contracts prior to a disaster.
- Uses a sliding scale for determining the federal cost share for debris removal based on the time it takes to complete debris and wreckage removal.
- Allow applicants to recycle debris and use the proceeds from recycling without reducing the award amount.
- Reimburse for the base and overtime wages for employed staff performing debris removal-related activities.
- Incentivize local governments to have FEMA-approved debris management plans.
- If actual costs are less than estimated costs, allow grantee to use all or part of remaining funds for specifed purposes, such as debris managment planning.

Permanent work

- Allows for the consolidation of multiple individual facilities into a single project to the extent determined appropriate by the Administrator.
- Issue PA grants to applicants based on fixed estimates of their total public assistance eligibility if the applicant agrees to be responsible for any actual costs that exceed the estimate.
- Provide an option for applicants to receive an in-lieu contribution, without reduction, on the basis of estimates of certain costs and providing guidance on cost estimating procedures and dealing with differences between estimates and actual final costs.

Source: GAO analysis of FEMA information. | GAO-18-472

Note: See Pub. L. No. 113-2, div. B, § 1102(2), 127 Stat. 39, amending Pub. L. No. 93-288, tit. IV, § 428 (codified at 42 U.S.C. § 5189f).Following both Hurricane Katrina and Sandy, Congress authorized similar pilot programs to provide similar flexibilities in the Public Assistance Program, in an effort to reduce challenges and costs associated with the program, and incentivize states to speed the recovery process. FEMA operated that pilot program from June 2007 through December 2008 when authority for the pilot program expired.

According to FEMA officials, in the U.S. Virgin Islands and in the states, participation in the pilot program for permanent work alternative

procedures will occur for select projects, by applicant request. These projects are to be administered using existing guidance that FEMA previously developed for its pilot program to implement the permanent work alternative procedures.[73] In contrast, for permanent work projects in Puerto Rico, alternative procedures will be used for all large permanent work projects.[74] On April 11, 2018, FEMA issued the *Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work* to guide recovery from Hurricane Maria in Puerto Rico after the Puerto Rico governor requested the use of alternative procedures for all large permanent work projects due to the unique circumstances in the territory (i.e., the magnitude of impacts and Puerto Rico's fiscal circumstances). They added that this approach will provide the flexibility Puerto Rico requires to achieve its post-disaster recovery goals while limiting risk to the federal government.[75] According to FEMA and Puerto Rico officials, use of the alternative procedures is appropriate to support the large-scale rebuilding effort there. However, it is unclear whether such flexibilities will eliminate other challenges associated with the PA program, such as reducing delays from challenges to eligibility determinations and supporting a timely recovery. According to FEMA officials, although the front end of the PA alternative procedures pilot program may take longer than the standard PA procedures, once project formulation (including any identified hazard mitigation measures) and cost agreements are made, the entire sum of the agreed-upon funding level is obligated and made available to the recipient at a quicker rate due to the entire amount of the

[73]FEMA updated this guide in 2016 and is applicable to all disasters declared on or after March 29, 2016. This guide is available at www.fema.gov/media-library/assets/documents/115868.

[74]Due to the extraordinary level of infrastructure damage caused by Hurricane Maria, as well as the financial status of Puerto Rico, officials chose to use the alternative procedures for all large project funding for Public Assistance categories C through G pursuant to section 428 of the Stafford Act. Puerto Rico; Amendment No. 5 to Notice of a Major Disaster Declaration, 82 Fed. Reg. 53,514 (Nov. 16, 2017). For fiscal year 2018, the large project threshold is $125,500.

[75]According to FEMA, any permanent work started before 12:00 am on September 17, 2017 will be attributed to Disaster Declaration 4336 in Puerto Rico, using the traditional PA procedures, and any work started after that time, regardless of whether the work was required by Hurricane Irma or Hurricane Maria, will be attributed to Disaster Declaration 4339 in Puerto Rico and will follow the procedures established in the disaster-specific guide. This guide describes the scope and limitations of the alternative procedures, the changes to the aspects of the PA Program to which these procedures apply, and identifies responsibilities for certain activities, as well as timelines for key actions and decisions. Where appropriate, FEMA may develop additional guidance and tools for implementation.

project being obligated from the outset. Additionally, the ability of an applicant to share funds between consolidated projects under alternative procedures reduces delays that occur when managing multiple complex projects coming in at higher or lower than anticipated costs, thus making for a smoother and more efficient recovery, according to FEMA officials. FEMA continues to develop a robust data collection and evaluation plan to perform substantive analysis of the pilot program and to better position itself to provide data on increased or decreased recovery timeframes, according to agency officials.

As of April 1, 2018, FEMA had approved 52 alternative procedures subawards in 30 states. Officials stated that the 52 awards likely represent large numbers of projects under the normal PA procedures, and therefore do not accurately reflect the frequency of FEMA and the states' use of the procedures. However, none of these projects were for recovery from a disaster the scale of the 2017 hurricanes and wildfires. Nonetheless, according to FEMA officials, the projects have provided valuable lessons learned which the agency has incorporated into its alternative procedures program guidance for Puerto Rico. We provide more details on the implementation of the PA program, including use of the alternative procedures, in appendix IX.

New Delivery Model

In recent years, FEMA has taken steps to redesign the PA program to address past challenges and make the program easier for FEMA and grantee officials to manage. As part of this effort, FEMA redesigned processes for developing, reviewing, and approving grant applications. The redesign also involves hiring for new PA staff positions, a standardized grant processing approach, and a new information system to better maintain and share grant documentation.

FEMA's original intention was to implement the new PA delivery model for all future disasters beginning in January 2018. However, in September 2017, FEMA expedited full implementation of the new model shortly after Hurricane Harvey made landfall. In a November 2017 report, we reviewed early implementation of the new delivery model in disasters that occurred prior to the four large-scale disasters of 2017 and found that FEMA needed to do more to assess the workforce needed to fully implement the model, such as the number of staff needed to fill certain new positions, or achieve staffing goals for supporting hazard mitigation on PA projects.[76]

[76]GAO-18-30.

We also found that FEMA had developed a new information-sharing system (now known as PA Grants Manager and Grants Portal) to address past information-sharing challenges, such as difficulties in sharing grant documentation among FEMA, state, and local officials and tracking the status of PA projects, but had not fully addressed two of four key information technology (IT) management controls—requirements development and systems testing and integration—that are necessary to ensure systems work effectively and meet user needs. In our report, we recommended that FEMA assess the workforce needed for the new delivery model and improve the key IT management controls for Grants Portal. The agency concurred with our recommendations and according to officials, is taking steps to implement them. Our early observations about the workforce challenges experienced using the new delivery model in Texas, Florida, and California are similar to the challenges we cited in our prior work.[77] Although we saw some of the intended benefits of the redesign, officials in all eight municipalities we met with also cited one or more challenges with training and customer service, the new information system, or the incorporation of hazard mitigation into PA Projects, that have not yet been fully addressed.

Training and Customer Service. We interviewed local government officials from eight Texas, Florida, and California municipalities about their experiences using the new delivery model and officials from four of the municipalities said that they had positive experiences with the customer service provided by PA staff. For example, officials with a Texas municipality said that they have good communication with FEMA PA personnel whom they said are responsive to questions about Grants Portal. Officials from a Florida county said that under the old model they were forced to submit documents multiple times as a result of FEMA staff losing them, whereas with the new model, they can submit documents just once by uploading them directly into Grants Portal. However, local officials also noted challenges with the new delivery model. Specifically, officials with one California county said that they experienced staff turnover, and after about a month without any PA Program Delivery

[77]In our previous report, we found that officials who were testing the new delivery model for PA delivery experienced a variety of challenges. FEMA managers and PA applicants at the state and local level cited insufficient staff levels and problems with poorly trained staff, which affected customer service and the timely processing of PA grant applications from the states. Furthermore, we found deficiencies in how FEMA developed its new information system, which affected how well the system's capabilities would meet user needs and insufficiently addressed integration of the system with other internal and external information systems. See GAO-18-30.

Manager, FEMA assigned a new official who was untrained and inexperienced in the new process, and therefore unable to provide guidance on using the new IT system or answer questions about the process. Additionally, local officials in a Texas jurisdiction said that they received better customer service under the old model because the project manager writing the project worksheet could provide the applicant some information immediately to help gauge eligibility, and inform local fiscal decisions. Texas officials added that with the new process, all of the information is passed to centralized staff to write up the project while the Program Delivery Manager only collects project information, leaving the applicant unaware of next steps or reimbursement eligibility.

Speaking about their experiences using the new delivery model, officials in four municipalities we interviewed noted that they had little or no prior knowledge of these changes before using the new process for recovery from their 2017 disasters. Further, the officials stated that FEMA did not provide sufficient information about the new process. Texas, Florida, and California county officials we interviewed also expressed frustration with the lack of consistency in the implementation guidance FEMA provides and with project eligibility determination. According to officials from three of the eight jurisdictions, FEMA's process and decision-making is not clear and this is further complicated by the inability of FEMA staff to fully articulate the new process, due in part to limited training. FEMA officials acknowledged the challenge of training a large number of new employees on the new delivery model and stated that the agency has taken a number of steps to address these challenges and provide training to applicants and FEMA employees. For example, as part of its initial rollout of the new model, FEMA participated in "listening sessions" with state and local stakeholders. FEMA has also established and advertised a mechanism (the Change Control Tool) by which users of Grants Manager and Grants Portal can suggest a process improvement. Submissions to the tool are evaluated and prioritized on a monthly basis, according to FEMA officials. Additionally, officials said that FEMA is working to improve and expand its capacity to deliver training to applicants and FEMA employees. For example, in addition to hiring additional trainers, the agency is expanding the length and content of program training for field personnel, according to FEMA officials.

New Information System. Local government officials from two of the eight Texas, Florida, and California municipalities we interviewed about their experiences using Grants Portal commended the new PA information system for its transparency, however, officials from four jurisdictions expressed concerns about delays, not having sufficient

guidance on how to use the new system, and how the system interfaces with their own state systems. Also, local officials from Texas, Florida and California expressed concerns about experiencing delays with FEMA's processing of their projects, and subsequent obligation of the necessary funds. Further, officials from three municipalities said it is unclear what happens once applicants submit their project applications to Grants Portal. For example, county officials in Florida said that under the old PA model, a FEMA project manager was available to walk applicants through the process of developing and submitting a project application; however, with the new model, applicants are required to develop and submit project applications without any assistance. Texas, Florida, and California officials said that after submitting their applications, they typically receive little information from FEMA about the processing of their application. According to FEMA officials, FEMA operates a hotline that FEMA staff and PA Program applicants can call to obtain answers to questions regarding use of the Grants Portal. FEMA is also working on further improving the functionalities of Grants Manager and Grants Portal to meet the needs of all of its users and to interface with the various federal and non-federal systems that track and manage PA grants. Additionally, expanding training will help improve both applicants' understanding of the process and FEMA employees' ability to work with applicants, according to FEMA officials.

Although it is too early to determine the effects of challenges with customer service and use of the information system under the new delivery model, local officials we met with have noted delays in processing PA applications. We provide more details on the experiences of each state using the new delivery model in appendix IX.

Incorporating Hazard Mitigation. The new delivery model under PA offers opportunities to better integrate hazard mitigation into recovery projects. Initial estimates indicate that the cost of damages from the 2017 hurricanes and wildfires will be far greater than the cost of damages for both hurricanes Katrina and Sandy. We have previously reported that using hazard mitigation and climate adaptation to enhance disaster resilience is critical to help address the federal fiscal exposure to disaster losses.[78] We also observed that although most funding for resilience activities is provided in the wake of a disaster, there are several aspects of incorporating resilience into post-disaster rebuilding efforts that may

[78]GAO-15-515.

create barriers to its effectiveness. For example, in our prior work on Hurricane Sandy, we found that in some states, officials with primary responsibility for hazard mitigation noted that they wore other hats in the emergency operations center in the initial hours to days and were too focused on response functions to think about hazard mitigation.[79]

FEMA designed the new PA delivery model to help state and local officials interact with FEMA experts to identify opportunities to incorporate hazard mitigation into PA projects early and throughout the process. Officials from 3 of the 6 municipalities we interviewed in Texas and Florida that are implementing the new delivery model confirmed that FEMA has provided mitigation experts to assist local officials with incorporating hazard mitigation on PA projects.[80] However, these officials also noted limitations in the extent to which mitigation experts were able to provide support on project development, echoing FEMA's broad workforce training challenges already discussed. According to officials with FEMA's PA Program Delivery Branch, FEMA is currently in the process of conducting a comprehensive workforce review through which PA is assessing the size and composition of the deployable workforce. As part of this effort, FEMA is assessing the way it uses all available resources, including FEMA staff and technical assistance contractors to meet the demands of variable disaster cycles.

On site visits to Texas and Florida, we observed how instances of previous investments in disaster resilience reduced the damages from the storms, and may have lowered associated disaster costs. Both states and California have efforts underway that demonstrate their commitment to a resilient recovery. For example, Texas has a systematic approach to solicit hazard mitigation projects from local governments through Rebuild Texas—a commission set up by the Texas governor to marshal statewide resources and effort to rebuild public infrastructure damaged by Hurricane Harvey. Nevertheless, officials in Texas and Florida raised concerns about challenges to building disaster resilience during recovery, which were similar to the challenges we previously found reported by state and local officials affected by Hurricane Sandy.[81] These include the

[79]GAO-15-515.

[80]According to state officials in California, while disaster mitigation is a goal generally, due to the nature of the damages from these fires, the officials do not expect many opportunities for mitigation. California officials we spoke to did not state any challenges with hazard mitigation related to their PA recovery efforts.

[81]GAO-15-515.

challenges with incorporating hazard mitigation that we previously discussed, and also challenges that go beyond PA projects, such as coordinating federal aid from multiple programs and local barriers to investment in resilience efforts. For example, Texas and Florida officials each described difficulties finding adequate funding to carry out key projects to make communities more resilient to flooding.

We provide more details on how each state plans to incorporate disaster resilience, and their challenges, in appendix X.[82]

Agency Comments

We provided a draft of this report to DHS and DOD for their review and comment. DHS provided a comment letter that is reprinted in appendix XIII and technical comments that we incorporated, as appropriate. DOD provided only technical comments that we incorporated, as appropriate.
.
In its comment letter, DHS acknowledged the challenges it faced conducting concurrent response operations for three major hurricanes—Harvey, Irma, and Maria—while preparing to take action on two more (hurricanes Jose and Nate) during the 2017 hurricane season. DHS also listed various actions it has taken since 2017 that are intended to expedite affected jurisdictions' recovery from the 2017 disasters, prepare for the 2018 hurricane season, and incorporate lessons learned to better prepare the nation for future disasters.

[82]We plan to conduct future work on states' experiences incorporating resilience enhancements in response to and recovery from the 2017 disasters.

We will send copies of this report to the secretaries of Defense and Homeland Security, the FEMA Administrator, and appropriate congressional committees. 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. Other key contributors to this report are listed in appendix XV.

Chris P. Currie
Director
Homeland Security and Justice

Congressional Addressees
The Honorable Richard Shelby
Chairman
The Honorable Patrick Leahy
Vice Chairman
Committee on Appropriations
United States Senate
The Honorable Susan M. Collins
Chairman
The Honorable Robert P. Casey, Jr.
Ranking Member
Special Committee on Aging
United States Senate
The Honorable Mike Enzi
Chairman
Committee on the Budget
United States Senate
The Honorable Lisa Murkowski
Chairman
The Honorable Maria Cantwell
Ranking Member
Committee on Energy and Natural Resources
United States Senate
The Honorable Ron Johnson
Chairman
The Honorable Claire McCaskill
Ranking Member
Committee on Homeland Security and Governmental Affairs
United States Senate
The Honorable Rand Paul
Chairman
The Honorable Gary Peters
Ranking Member
Subcommittee on Federal Spending, Oversight and Emergency Management
Committee on Homeland Security and Governmental Affairs
United States Senate
The Honorable Bill Nelson
United States Senate
The Honorable Marco Rubio
United States Senate
The Honorable Rodney Frelinghuysen
Chairman

The Honorable Nita Lowey
Ranking Member
Committee on Appropriations
House of Representatives
The Honorable Greg Walden
Chairman
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The Honorable Frank Pallone, Jr
Ranking Member
Committee on Energy and Commerce
House of Representatives
The Honorable Jeb Hensarling
Chairman
The Honorable Maxine Waters
Ranking Member
Committee on Financial Services
House of Representatives
The Honorable Ann Wagner
Chairwoman
The Honorable Al Green
Ranking Member
Subcommittee on Oversight Investigations
Committee on Financial Services
House of Representatives

The Honorable Sean Duffy
Chairman
The Honorable Emanuel Cleaver
Ranking Member
Subcommittee on Housing and Insurance
Committee on Financial Services
House of Representatives
The Honorable Michael McCaul
Chairman
The Honorable Bennie Thompson
Ranking Member
Committee on Homeland Security
House of Representatives
The Honorable Dan Donovan
Chairman
The Honorable Donald Payne Jr.
Ranking Member
Subcommittee on Emergency Preparedness, Response, and Communications
Committee on Homeland Security
House of Representatives
The Honorable Trey Gowdy
Chairman
The Honorable Elijah Cummings
Ranking Member
Committee on Oversight and Government Reform
House of Representatives
The Honorable Gary Palmer
Chairman
Subcommittee on Intergovernmental Affairs
Committee on Oversight and Government Reform
House of Representatives
The Honorable Greg Gianforte
Chairman
Subcommittee on the Interior, Energy, and Environment
Committee on Oversight and Government Reform
House of Representatives

The Honorable Bill Shuster
Chairman
The Honorable Peter DeFazio
Ranking Member
Committee on Transportation and Infrastructure
House of Representatives
Resident Commissioner Jenniffer González-Colón
House of Representatives

The Honorable John Culberson
House of Representatives

The Honorable Jeff Denham
House of Representatives

The Honorable Ron DeSantis
House of Representatives

The Honorable Alcee L. Hastings
House of Representatives

The Honorable Jared Huffman
House of Representatives

The Honorable Zoe Lofgren
House of Representatives

The Honorable Mike Thompson
House of Representatives

The Honorable Debbie Wasserman Schultz
House of Representatives
The Honorable Nydia Velázquez
House of Representatives

Appendix I: Objectives, Scope, and Methodology

This report addresses the following: (1) our observations of the federal response coordination for hurricanes Harvey and Irma, in Texas and Florida, as well as for the California wildfires; (2) our observations of the federal response to hurricanes Irma and Maria in Puerto Rico and the U.S. Virgin Islands; and (3) existing and emerging disaster recovery challenges as well as opportunities highlighted by the 2017 hurricanes and wildfires.

To address all three objectives, we analyzed federal laws and FEMA policies, procedures, and guidance specific to emergency management. Specifically, we reviewed select sections of the Post-Katrina Act, including those associated with the establishment of (1) the *National Response Framework*, (2) the Federal Coordinating Officer (FCO) position—the lead federal official in charge of response, (3) Incident Management Assistance Teams (IMAT)—FEMA staff who rapidly deploy to an incident to provide leadership in the identification and provision of federal assistance and federal response capabilities, (4) the surge capacity force; and (5) the Sandy Recovery Improvement Act, particularly those sections associated with FEMA's public assistance program and debris removal responsibilities.[1] We also reviewed the *National Response Framework; the National Disaster Recovery Framework*; the 2017 *National Preparedness Report;* FEMA's 2014-2018 Strategic Plan, and the 2017 Hurricane Season FEMA After-Action Report. We included relevant information from our prior reports. Additionally, we obtained and analyzed key data from FEMA's financial management, workforce, emergency operations systems, and the federal procurement system. We

[1]The *National Response Framework* is the part of the National Preparedness System established in Presidential Policy Directive 8 that is to be used to manage any type of disaster or emergency response, regardless of scale, scope, and complexity. Specifically, this framework covers actions to save lives, protect property and the environment, stabilize communities, and meet basic human needs following an incident. Response also includes the execution of emergency plans and actions to support short-term recovery. Department of Homeland Security, Federal Emergency Management Agency, *National Response Framework, Third Edition* (Washington, D.C.: June 2016). The surge capacity force is a cadre of non-FEMA federal employees who augment FEMA's disaster response and recovery efforts.

focused on the highest period of disaster response activity for the federal government—August 2017 to January 2018, and we updated information provided as available in the subsequent months through June 2018. To ensure the reliability of the updated data, we interviewed officials at FEMA headquarters about their data quality control procedures, reviewed existing information about data systems—particularly data definitions and data validation, conducted electronic testing, and reviewed the data for obvious errors and omissions. We found the data to be sufficiently reliable for the purposes of this report.

Moreover, in October and November 2017, we visited hurricane-damaged areas in the greater Houston area, throughout the southern part of Florida, in San Juan, Puerto Rico, and St. Croix, U.S. Virgin Islands. Further, we interviewed state emergency management officials or their designees in each disaster-affected state and territory as well as local government officials from eight municipalities in Texas, Florida, and California to gain their insights and perspectives on the federal response to the hurricanes and wildfires in their respective states and territories. We selected the cities and counties whose officials we interviewed based on their geographic proximity to the disaster affected sites we were already visiting, as well as their availability. The findings from these interviews cannot be generalized to all disaster-affected states; however, they provided insights to the respective states' response to and recovery from the disasters along with the federal government's role. We visited FEMA's joint field offices for: Hurricane Harvey, located in Austin Texas; Hurricane Irma, located in Orlando Florida; and hurricanes Irma and Maria, located in San Juan and St. Croix. We interviewed FEMA's on-site leadership in all of these locations, and conducted telephone interviews with FEMA's on-site leadership responsible for the response and recovery efforts in California. In addition, we conducted site visits to various FEMA branch offices and Disaster Response Centers (DRC) in Houston, Texas; Bonita Springs and Marathon, Florida; San Juan, Puerto Rico; and St. Croix, U.S. Virgin Islands.

To address our first objective of the federal response coordination for hurricanes Harvey and Irma, in Texas and Florida, as well as for the California wildfires, we:

- Conducted site visits to hurricane-impacted areas of Florida and Texas.
- Conducted interviews with: emergency management officials from California, Florida, and Texas; FEMA leadership from Regions IV,

VI, and IX; officials from Houston, Texas, Harris County, Texas, Marathon, Florida, and Monroe County, Florida.

- Analyzed the implementation of the National Response Framework for hurricanes Harvey and Irma, and the California wildfires.

To address our second objective on the federal response to Hurricanes Irma and Maria in Puerto Rico and the U.S. Virgin Islands, we:

- Conducted site visits to hurricane impacted areas of Puerto Rico and U.S. Virgin Islands.
- Conducted interviews with officials from: the Puerto Rico Emergency Management Agency, the Puerto Rico Aqueduct and Sewer Authority, the Puerto Rico Electric Power Authority; the U.S. Virgin Islands Emergency Management Office; FEMA Region II; the Department of Defense (DOD) U.S. Northern Command (NORTHCOM); the U.S. Transportation Command (TRANSCOM); and the National Guard Bureau.
- Obtained information provided by DOD and FEMA on federal resources pre-positioned and provided in response to hurricanes Irma and Maria.

To address our third objective, existing and emerging disaster recovery challenges as well as opportunities highlighted by the 2017 hurricanes and wildfires; we:

- Conducted interviews with: emergency management officials from California, Florida, and Texas; FEMA leadership from Regions IV, VI, and IX; officials from Houston, Texas, Harris County, Texas, Marathon, Florida, and Monroe County, Florida..
- We obtained and analyzed data from FEMA's Deployment Tracking System (DTS)—FEMA's system for maintaining information on their workforce, including managing deployments of workforce elements to respond to declared disasters, and maintaining information on staff skills, qualifications, and training. To ensure that the data were sufficiently reliable for our purposes, we interviewed officials at FEMA headquarters and regional offices about their data quality control procedures, reviewed existing information about data systems—particularly data dictionary and data validation, conducted electronic testing, and reviewed the data for obvious errors and omissions.

- We obtained and analyzed DHS and FEMA guidance related to federal response and recovery from major disasters. These include the 2017 *National Preparedness Report*; select DHS OIG Reports; our relevant prior reports; FEMA's *2014 – 2018 Strategic Plan; the National Disaster Recovery Framework*; FEMA's Alternative Procedures for Public Assistance Authorized in 2013 by the Sandy Recovery Improvement Act.

In addition, we undertook the following for the detailed information included in our appendices:

Appendix II: Federal Appropriations and FEMA Obligations for the 2017 Hurricanes and California Wildfires

- We obtained and analyzed data from FEMA's Integrated Financial Management Information System (IFMIS) on the amount of Disaster Relief Fund obligations and spend plans for the hurricanes and wildfires for fiscal years 2017 and 2018. IFMIS is FEMA's official accounting and financial management system that pulls all of FEMA's financial data from other FEMA, DHS, and government-wide systems (subsystems), and is the source of data for both internal and external financial reporting. The system records and tracks all financial transactions. To assess the reliability of these data, we reviewed the data and discussed data quality control procedures with FEMA officials. We determined that the data we used from these systems were sufficiently reliable for the purposes of this report.

  We also obtained and analyzed disaster-related supplemental appropriations acts which provided additional direct funding for the 2017 hurricanes and wildfires included in our review.

Appendix III: Federal Response Coordination during the 2017 Hurricanes and Wildfires

- We obtained and analyzed FEMA's third edition of the National Response Framework (NRF). The NRF is a guide to how the nation responds to all types of disasters and emergencies. It establishes the federal response structure for disaster response that includes 14 core capabilities. We used the NRF to assess the FEMA-led federal response to the 2017 hurricanes and wildfires included in our review.
- We obtained and analyzed data from FEMA's web-based Emergency Operations Command (Web EOC)—the database used for submitting and tracking the disposition of resource requests from state and local officials to the federal government following a presidentially-declared

disaster, among other things. To assess the reliability of these data, we reviewed the data for errors and discussed data quality control procedures with FEMA officials. We determined that the data we used from this system were sufficiently reliable for the purposes of this report.

Appendix IV: Federal Contracting for the 2017 Disasters

- We obtained and analyzed data from FEMA, the U.S. Army Corps of Engineers, and the Federal Procurement Data System-Next Generation (FPDS-NG) through January 31, 2018, to determine federal contract obligations for each hurricane, the types of products and services procured, and rates of competition. We assessed the reliability of FPDS-NG data by reviewing existing information about the FPDS-NG system and the data it collects— specifically, the data dictionary and data validation rules—and performed electronic testing. We determined the FPDS-NG data were sufficiently reliable for the purposes of this report.

Appendix V: FEMA Disaster Workforce Capacity

- We obtained and analyzed data from DTS. To assess the reliability of these data, we reviewed the data and discussed data quality control procedures with FEMA officials. We determined that the data we used from these systems were sufficiently reliable for the purposes of this report.
- We obtained and analyzed FEMA's Human Capital Strategic Plan 2016-2020. The plan outlines FEMA's focus on five strategic goals specific to their workforce, and establishes goals for retention, training, recruitment, and capabilities gaps, among other things.

Appendix VI: FEMA's Individual Assistance Program

- We obtained and analyzed FEMA's Individuals and Households Programs Unified Guidance –September 2016, which documents FEMA's policies and procedures for its Individual Assistance program—to include FEMA's housing program for individuals.
- Further, we obtained data from FEMA's Emergency Management Mission Integrated Environment (EMMIE)—on the number of individual Assistance (IA) applicants for the hurricanes and wildfires in our review; and we obtained and analyzed data from FEMA's IFMIS on the amounts obligated towards IA by FEMA as of February 28, 2018.

- We also obtained aggregated data from FEMA on the number of survivors who registered for disaster assistance as well as the number who were approved for each type of housing and sheltering assistance, by disaster location as of June 22, 2018.

Appendix VII: Fraud Risk Management in FEMA's Disaster Assistance Programs

- We obtained and analyzed information relevant to fraud risk management in FEMA's disaster-assistance programs. Specifically, we interviewed officials from FEMA's Fraud and Internal Investigations Division and obtained and analyzed relevant documentation including FEMA's Fraud Prevention and Investigation Directive. In addition, we reviewed information on FEMA's antifraud efforts reported in the DHS Fiscal Year 2017 Agency Financial Report. We also reviewed our relevant prior work and DHS Office of the Inspector General reports.

Appendix VIII: Payment Integrity Related to Disaster Relief Funding

- We analyzed information from our prior work on payment integrity and internal controls.

Appendix IX: FEMA's Public Assistance Program

- We obtained PA obligation amounts from FEMA derived from EMMIE for California, Florida, Puerto Rico, Texas, and the U. S. Virgin Islands as of February 15, 2018.

Appendix X: Disaster Resilience and Hazard Mitigation

- We reviewed information from our prior work on the costs of natural disasters and the impact of hazard mitigation efforts. We obtained and analyzed information from FEMA and local officials on previous hazard mitigation efforts and future mitigation projects.
- We obtained and analyzed information from the draft National Mitigation Investment Strategy in 2018. The National Mitigation Investment Strategy provides a national approach to investments in mitigation activities and risk management across the United States.
- We obtained and analyzed information from FEMA's and HUD's guidance on hazard mitigation grant programs. This information details for what purpose and when hazard mitigation funding is available to states, tribes or territories.

Appendix XI: Department of Defense's Support of Civil Authorities during the 2017 Hurricanes and Wildfires

- We conducted interviews with the following DOD components—Office of the Undersecretary for Defense Policy, Defense Support of Civilian Authorities (DSCA), NORTHCOM, TRANSCOM, Defense Logistics Agency, Army North, and Defense Coordinating Officers—who are the lead DOD representatives to FEMA during a major disaster declaration for FEMA Regions II, IV, VI, and IX. We also interviewed and collected data from the U.S. Army Corps of Engineers on their response efforts. We interviewed National Guard Bureau officials who provided personnel and logistical support for the 2017 disaster response efforts. During these interviews, we obtained information on their efforts to assist in the response to the 2017 hurricanes and wildfires. We also obtained summary data from these components on their response efforts. However, we did not verify the reliability of their data, although DOD officials noted that most of the data was also provided to external parties or made publicly available.

Appendix II: Federal Appropriations and FEMA Obligations for the 2017 Hurricanes and California Wildfires

Table 2: Supplemental Appropriations For 2017 Hurricanes and California Wildfires

Figure 15: Disaster Relief Fund Obligations and Expenditures for Hurricanes Harvey, Irma, Maria, and California Wildfires, Through April 30, 2018

Figure 16: Actual and Projected Disaster Relief Fund Obligations For 2017 Hurricanes and California Wildfires, By Program and Disaster

Appendix III: Federal Response Coordination during the 2017 Hurricanes and Wildfires

Table 3: Examples of Federal Disaster Preparedness Activities Undertaken Prior to the 2017 Hurricanes, By Location

Figure 17: Federal Government Response Activity and Obligations through Mission Assignments for Each 2017 Disaster, as of January 29, 2018

Table 4: Emergency Support Function (ESF) Response to the 2017 Disasters and Selected Examples of Support, as of January 29, 2018

Appendix IV: Federal Contracting for the 2017 Disasters

Figure 18: Contract Obligations in Support of Hurricanes Harvey, Irma, and Maria, by Agency, through January 31, 2018

Table 5: Contracting Information by 2017 Hurricane through January 31, 2018

Table 6: Information on Advance Contracting by 2017 Hurricane, through January 31, 2018

Figure 19: Top Five Product Groups in Terms of Contract Obligations through January 31, 2018, and Proportion of Obligations by Hurricane

Figure 20: Top Five Service Groups in Terms of Contract Obligations through January 31, 2018, and Proportion of Obligations by Hurricane

Appendix V: FEMA Disaster Workforce Capacity

Figure 21: Federal Disaster Workforce Deployed In Response to the 2017 Disasters from September 2017 through February 2018

Figure 22: Federal Emergency Management Agency Qualification Levels for Deployed Staff During the 2017 Disaster Response

Figure 23: Federal Emergency Management Agency (FEMA) Employee in Texas

Figure 24: Federal Emergency Management Agency (FEMA) Surge Capacity Force Volunteer in Florida

Appendix VI: FEMA's Individual Assistance Program

Figure 25: Total Number of Applicants and Funds Awarded through FEMA's Individual Assistance Program for each event, as of February 28, 2018

Table 7: Number of Registrations and Approved Applicants for Each Type of Housing and Sheltering Assistance Provided by Disaster Location, as of June 22, 2018

Figure 26: Example of an Off-the-lot FEMA-purchased Trailer in Key Largo, Florida for Mobility-impaired Survivors

Appendix VII: Fraud Risk Management in FEMA's Disaster Assistance Programs

Figure 27: Examples of Disaster Fraud Hotline Posters Displayed in the Joint Field Office in San Juan, Puerto Rico

Appendix VIII: Payment Integrity Related to Disaster Relief Funding

Appendix IX: FEMA's Public Assistance Program

Figure 28: Public Assistance Obligations for Emergency and Permanent Work for Each of the 2017 Disasters, as of February 2018

Figure 29: Staging Debris along Route 1 near Big Pine Key, Florida October 2017

Appendix X: Disaster Resilience and Hazard Mitigation

Figure 30: Resilience – What, Why and How

Figure 31: Elevated Air Conditioning Unit in Greater Houston Area, October 2017

Figure 32: Reinforced Power Line Poles in Monroe County, Florida, October 2017—Post Hurricane Irma

Appendix XI: Department of Defense's Support of Civil Authorities during the 2017 Hurricanes and Wildfires

Table 8: DOD Components and Personnel that Provided Support

Figure 33: DOD Mission Assignment and Contract Activity for Four 2017 Disasters

Figure 34: Army High-water Vehicle use in Texas

Figure 35: Air Force Reservist Prepare a Pallet of Supplies for Shipment to Florida

Figure 36: Supply delivery to U. S. Virgin Islands and Puerto Rico

Figure 37: Ambulance and Support Vehicles Staged at Travis Air Force Base, California

Appendix XII: Federal Emergency Management Agency (FEMA) Regional Structure

FEMA has 10 Regional offices located across the United States as depicted below in figure 38.

Region I: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont

Region II: (New Jersey, New York, Puerto Rico, and the U.S. Virgin Islands

Region III: (Delaware, District of Columbia, Maryland, Pennsylvania, Virginia and W. Virginia

Region IV: Alabama, Florida, Georgia, Kentucky, Mississippi, N. Carolina, S. Carolina and Tennessee

Region V: Illinois, Indiana, Michigan, Minnesota, Ohio and Wisconsin

Region VI: Arkansas, Louisiana, New Mexico, Oklahoma and Texas

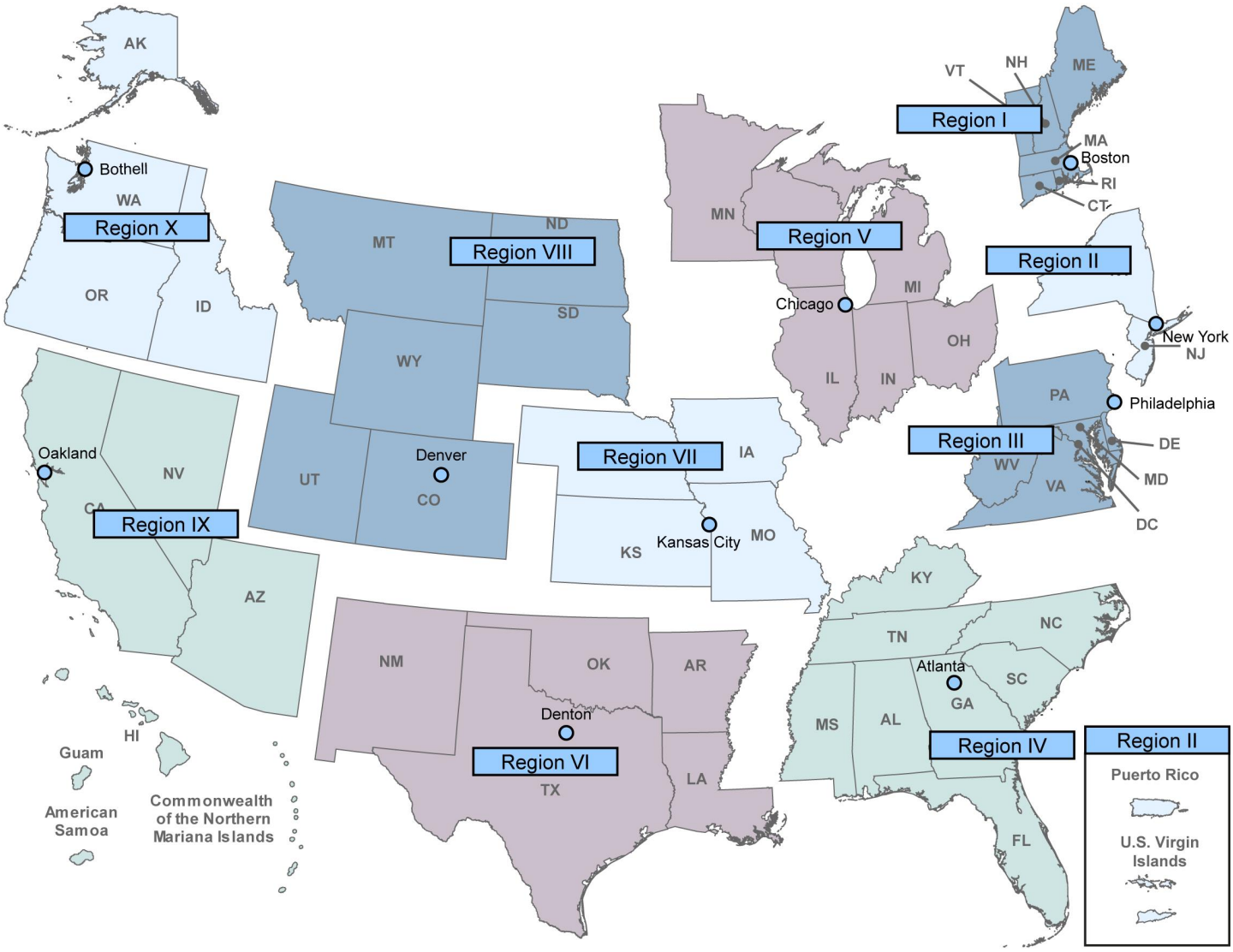
Region VII: Iowa, Kansas, Missouri and Nebraska

Region VIII: Colorado, Montana, N. Dakota, S. Dakota, Utah and Wyoming

Region IX: Arizona, California, Hawaii, Nevada, American Samoa, Guam, Commonwealth of the Northern Mariana Islands, Republic of the Marshall Islands, and Federated States of Micronesia

Region X: Alaska, Idaho, Oregon and Washington

Figure 38: Map of Federal Emergency Management Agency (FEMA) Regions and Their Member States and Territories



Source: Federal Emergency Management Agency; Map Resources (map). | GAO-18-472

Appendix XIII: Comments from the Department of Homeland Security

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

Homeland Security

August 28, 2018

Chris 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 18-472, "2017 HURRICANES AND WILDFIRES: Initial Observations on the Federal Response and Key Recovery Challenges"

Dear Mr. Currie:

Thank you for the opportunity to review and comment on the subject 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 Federal Emergency Management Agency (FEMA) and its partners' preparedness and coordination efforts before, during, and after the 2017 hurricanes and wildfires. Of particular note, the draft report highlighted many of the challenges that complicated response and recovery efforts. Overall, the report provides many insights to the emergency management community that stakeholders and others may not have had otherwise.

Last year's disasters were a devastating experience for millions of Americans, with more disaster survivors registering for FEMA assistance than the previous 10 years combined. The Nation responded to three major hurricanes (Harvey, Irma, and Maria) and then California wildfires in quick succession. These events came at a time when FEMA was already supporting 692 federally declared disasters and tested the Nation's ability to respond to and recover from multiple concurrent disasters. FEMA Urban Search and Rescue Task Forces, comprised of state and local emergency responders, saved or assisted in saving nearly 9,500 lives across the three hurricanes. These numbers stand in addition to the thousands of lives saved or assisted by the Department of Defense, the U.S. Coast Guard, state and local first responders, and neighbors helping neighbors. Concurrent with response operations, FEMA moved quickly to meet long-term survivor needs.

In addition to conducting concurrent response operations for Hurricanes Harvey, Irma, and Maria, FEMA took action on Hurricanes Jose and Nate. The impacts from those two storms were minimal by comparison, but nevertheless required FEMA's focus and resources. Hurricane Jose also complicated Hurricane Irma and Hurricane Maria response efforts in the Caribbean by limiting sea transport of food and water as well as transit of U.S. Naval response assets to the U.S. Virgin Islands and Puerto Rico. Hurricane Nate resulted in Major Disaster declarations in two states, Alabama and Mississippi.

The draft report also highlights the positive driving force of pre-existing relationships and coordination. During the aftermath of Hurricanes Harvey and Irma in September 2017, Acting Secretary of Homeland Security Elaine Duke activated the Surge Capacity Force for only the second time in history. This time the program was expanded beyond DHS to the entirety of the Federal Government. In total, more than 4,000 federal employees deployed and performed duties in positions within several of FEMA's incident workforce field programs. Based on this experience, FEMA has taken action to increase preparedness for the 2018 Hurricane Season by updating hurricane plans, annexes, and procedures for states, tribal lands, and territories. FEMA has also made improvements in staffing for incidents, logistics operations, and refining communications from land mobile radios to satellite communications. Finally, FEMA has updated high priority national level contracts to be better prepared to cope with responding to multiple concurrent disasters across the Nation.

FEMA is constantly reviewing its program delivery, decision-making processes, and response efforts to ensure that it can improve, minimize errors, and better serve survivors. This approach allows FEMA to build a culture of preparedness, ready the Nation for catastrophic disasters, and reduce the complexities. FEMA has reflected this commitment by incorporating objectives in its 2018-2022 Strategic Plan to include improving the readiness of incident workforce cadres; building staff, equipment, and contract capacity to achieve and maintain a higher logistics readiness rate; improving continuity and resilient communications capabilities; and streamlining the disaster survivor and grantee experience. For example, FEMA has already published alternative procedures guidance to promote outcome-based recovery in Puerto Rico by simplifying the funding process, reducing the time to receive federal funding, and providing the Commonwealth greater flexibility to rebuild its infrastructure. In addition, FEMA has initiated an update to the National Response Framework based on lessons learned in 2017 and is continuing work on a housing assistance initiative with the goal of empowering state and local governments to provide scalable disaster housing solutions tailored to the impacts of disasters and the needs of affected communities.

Disaster can strike at any time and in any place, building slowly, or occurring suddenly without warning. FEMA is part of a larger team of federal agencies, state, local, tribal,

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and territorial governments, and non-governmental stakeholders that share responsibility for emergency management and National preparedness. Those closest to impacted areas are the true first responders during any emergency or disaster – individuals, families, neighbors, and local communities. Whatever the scenario, FEMA serves in a coordination and integration role, collaborating with others to ensure we are a more prepared and resilient Nation.

Again, thank you for the opportunity to review and comment on the draft report. Technical comments were provided under separate cover. 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, CIA, CFE
Director
Departmental GAO-OIG Liaison Office

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Appendix XIV: GAO Contacts and Staff Acknowledgments

GAO Contact:

Chris Currie, (202)512- 8777 or CurrieC@gao.gov

Staff Acknowledgement:

In addition to the contacts above, the following staff members made significant contributions to this report:

Aditi S. Archer, Assistant Director, Edith Sohna, Analyst-in-Charge, Thomas E. Baril, Jr. Claudia Becker, Lorraine Ettaro, Suellen Foth, Kathryn Godfrey, Eric Hauswirth, Ellie Klein, Monica Kelly, Caryn Kuebler, Elisha Matvay, Amanda K. Miller, Heidi Nielson, Amanda Parker, Meghan Perez, George Scott, Katherine Trimble, Matthew Valenta, Erin Villas, Adam Vogt, and Su Jin Yon.

Appendix XV: Accessible Data

Data Tables

Accessible Data for Federal Emergency Management Agency Disaster Relief Fund Obligations and Expenditures for Hurricanes Harvey, Irma, Maria, and California Wildfires through April 30, 2018

Event	Obligations (in billions)	Expenditures (in billions)
Hurricane Harvey	5.201	3.9
Hurricane Irma	3.21	2.212
Hurricane Maria	12.816	6.31
California Wildfires 2017	1.406	0.816

Accessible Data for Figure 3: Federal Disaster Workforce As of January 31, 2018

Category	Percentage	Number of personnel
Surge capacity force	39	12876
Stafford Act employees	36	11873
Title 5 employees	15	5105
Other	9	2982
FEMA Corps	<1	205

Agency Comment Letter

Accessible Text for Appendix XIII Comments from the Department of Homeland Security

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August 28, 2018

Chris 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 18-472, "2017 HURRICANES AND WILDFIRES: Initial Observations on the Federal Response and Key Recovery Challenges"

Dear Mr. Currie:

Thank you for the opportunity to review and comment on the subject 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 Federal Emergency Management Agency (FEMA) and its partners' preparedness and coordination efforts before, during, and after the 2017 hurricanes and wildfires. Of particular note, the draft report highlighted many of the challenges that complicated response and recovery efforts. Overall, the report provides many insights to the emergency management community that stakeholders and others may not have had otherwise.

Last year's disasters were a devastating experience for millions of Americans, with more disaster survivors registering for FEMA assistance than the previous 10 years combined. The Nation responded to three major hurricanes (Harvey, Irma, and Maria) and then California wildfires in quick succession. These events came at a time when FEMA was already supporting 692 federally declared disasters and tested the Nation's ability to respond to and recover from multiple concurrent disasters. FEMA Urban Search and Rescue Task Forces, comprised of state and local emergency responders, saved or assisted in saving nearly 9,500 lives across the three hurricanes. These numbers stand in addition to the thousands of lives saved or assisted by the Department of Defense, the U.S. Coast Guard, state and local first responders, and neighbors helping neighbors. Concurrent with response operations, FEMA moved quickly to meet long-term survivor needs.

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In addition to conducting concurrent response operations for Hurricanes Harvey, Irma, and Maria, FEMA took action on Hurricanes Jose and Nate. The impacts from those two storms were minimal by comparison, but nevertheless required FEMA's focus and resources. Hurricane Jose also complicated Hurricane Irma and Hurricane Maria response efforts in the Caribbean by limiting sea transport of food and water as well as transit of U.S. Naval response assets to the U.S. Virgin Islands and Puerto Rico. Hurricane Nate resulted in Major Disaster declarations in two states, Alabama and Mississippi.

The draft report also highlights the positive driving force of pre-existing relationships and coordination. During the aftermath of Hurricanes Harvey and Irma in September 2017, Acting Secretary of Homeland Security Elaine Duke activated the Surge Capacity Force for only the second time in history. This time the program was expanded beyond OHS to the entirety of the Federal Government. In total, more than 4,000 federal employees deployed and performed duties in positions within several of FEMA's incident workforce field programs. Based on this experience, FEMA has taken action to increase preparedness for the 2018 Hurricane Season by updating hurricane plans, annexes, and procedures for states, tribal lands, and territories. FEMA has also made improvements in staffing for incidents, logistics operations, and refining communications from land mobile radios to satellite communications. Finally, FEMA has updated high priority national level contracts to be better prepared to cope with responding to multiple concurrent disasters across the Nation.

FEMA is constantly reviewing its program delivery, decision-making processes, and response efforts to ensure that it can improve, minimize errors, and better serve survivors. This approach allows FEMA to build a culture of preparedness, ready the Nation for catastrophic disasters, and reduce the complexities. FEMA has reflected this commitment by incorporating objectives in its 2018-2022 Strategic Plan to include improving the readiness of incident workforce cadres; building staff, equipment, and contract capacity to achieve and maintain a higher logistics readiness rate; improving continuity and resilient communications capabilities; and streamlining the disaster survivor and grantee experience. For example, FEMA has already published alternative procedures guidance to promote outcome-based recovery in Puerto Rico by simplifying the funding process, reducing the time to receive federal funding, and providing the Commonwealth greater flexibility to rebuild its infrastructure. In addition, FEMA has initiated an

update to the National Response Framework based on lessons learned in 2017 and is continuing work on a housing assistance initiative with the goal of empowering state and local governments to provide scalable disaster housing solutions tailored to the impacts of disasters and the needs of affected communities.

Disaster can strike at any time and in any place, building slowly, or occurring suddenly without warning. FEMA is part of a larger team of federal agencies, state, local, tribal,

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and territorial governments, and non-governmental stakeholders that share responsibility for emergency management and National preparedness. Those closest to impacted areas are the true first responders during any emergency or disaster - individuals, families, neighbors, and local communities. Whatever the scenario, FEMA serves in a coordination and integration role, collaborating with others to ensure we are a more prepared and resilient Nation.

Again, thank you for the opportunity to review and comment on the draft report. Technical comments were provided under separate cover. 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, CIA, CFE

Director

Departmental GAO-OIG Liaison Office

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