United States Government Accountability Office

Report to Congressional Requesters

October 2019

Puerto Rico Electricity Grid Recovery

Better Information and Enhanced Coordination Is Needed to Address Challenges

Highlights

Highlights of GAO-20-141, a report to Congressional Requesters

Why GAO Did This Study

In 2017, Hurricanes Irma and Maria damaged Puerto Rico's electricity grid, causing the longest blackout in U.S. history. It took roughly 11 months after the hurricanes for power to be restored to all of the customers with structures deemed safe for power restoration. Federal agencies, including FEMA, provided about $3.9 billion to help restore electricity service, which included temporary or partial repairs. Now that electricity service has been restored, local entities face the longer-term and more expensive task of grid recovery to more fully repair and rebuild the grid. Federal programs provide opportunities to incorporate resilience into disaster recovery efforts and the federal government has appropriated billions in funding to support electricity grid recovery in Puerto Rico.

GAO was asked to review the federal response to the 2017 hurricanes. This report (1) describes the role of federal agencies in supporting electricity grid recovery efforts in Puerto Rico; and (2) examines the status of federal support for grid recovery in Puerto Rico and challenges affecting progress on grid recovery efforts. GAO reviewed relevant laws, regulations, and federal policies for disaster recovery; and agency documents. GAO also interviewed federal and local officials and industry and stakeholder groups.

What GAO Recommends

GAO is making four recommendations, including that FEMA (1) provide clear written information in the form of policy, guidance, or regulations that clarifies how it will implement new authorities and (2) take steps to enhance coordination among local and federal entities. FEMA generally agreed with our recommendations.

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October 2019

Puerto Rico Electricity Grid Recovery

Better Information and Enhanced Coordination Is Needed to Address Challenges

What GAO Found

Federal agencies can support long-term electricity grid recovery efforts in Puerto Rico through three primary roles—providing funding and technical assistance and coordinating among local and federal agencies. The Federal Emergency Management Agency (FEMA) and the Department of Housing and Urban Development (HUD) are the primary federal funding sources for grid recovery. The Department of Energy (DOE) can provide technical assistance to local and federal entities to support grid recovery efforts. In addition, FEMA is to coordinate federal capabilities to support and expedite recovery.

Damaged Power Lines in Puerto Rico in November 2017 after Hurricane Maria

Source: Federal Emergency Management Agency. | GAO-20-141

As of July 2019, neither FEMA nor HUD had funded long-term grid recovery projects in Puerto Rico, but DOE had provided technical assistance. Progress on grid recovery efforts has been hindered in part because FEMA has not provided clear written information on what will be eligible for funding. For example, FEMA has new authorities to fund projects that enhance resilience and restore grid infrastructure to the latest industry standards, but FEMA has not defined resilience or specified what standards it will accept. Consequently, it is unclear which technologies and approaches are eligible for funding. According to FEMA, developing a policy to implement its new authorities created challenges for establishing clear guidance but FEMA officials believed they had reached an understanding with local entities through discussions and trainings. However, without clarification from FEMA, local entities do not have sufficient information to implement plans and risk spending resources developing projects that may not be eligible for funding. Also, the need for coordination among the numerous entities involved in grid recovery in Puerto Rico poses challenges, according to local and federal officials. FEMA is to lead the coordination of federal support for local agencies to achieve recovery goals, but has not established a mechanism that is working to facilitate coordination among the numerous entities involved in grid recovery. According to FEMA, coordination across federal leadership is occurring and agencies communicate directly with local entities. However, these efforts do not involve all federal and local entities and, given the unique situation, without a mechanism to enhance coordination among these entities, coordination challenges may continue to hinder progress.

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Abbreviations

BBA	Bipartisan Budget Act of 2018
CDBG-DR	Community Development Block Grant Disaster Recovery
COR3	Central Office for Recovery, Reconstruction, and Resiliency
DOE	Department of Energy
DHS	Department of Homeland Security
DRRA	Disaster Recovery Reform Act of 2018
FEMA	Federal Emergency Management Agency
FOMB	Financial Oversight Management Board
HMGP	Hazard Mitigation Grant Program
HUD	Department of Housing and Urban Development
IRP	Integrated Resource Plan
NDRF	National Disaster Recovery Framework
PA	Public Assistance Program
PREB	Puerto Rico Energy Bureau
PREPA	Puerto Rico Electric Power Authority
RSF	Recovery Support Functions
RSFLG	Recovery Support Function Leadership Group
USACE	U.S. Army Corps of Engineers

Recommendations for Executive Action

Recommendations for Executive Action

We are making a total of four recommendations, three to FEMA and one to HUD. Specifically:

- The Administrator of FEMA should develop and provide clear written information in the form of policy, guidance, or regulations, as appropriate, to COR3 and PREPA that clarifies how FEMA will implement new authorities for the electricity grid recovery in Puerto Rico, including guidance on industry standards and defining resilience. (Recommendation 1)
- The Secretary of HUD should establish time frames and a plan for publication of the grant process and requirements for CDBG-DR funding available for improvements to Puerto Rico's electricity grid. (Recommendation 2)
- The Administrator of FEMA, in coordination with DOE, HUD, and other federal and local entities, should establish a mechanism, or take steps to improve existing mechanisms, for coordination among the multiple local and federal entities involved in grid recovery that facilitates decision-making and information sharing among local and federal agencies. (Recommendation 3)
- The Administrator of FEMA, in coordination with DOE, should establish an interagency agreement to define roles and responsibilities to clarify how FEMA will consult with DOE in grid recovery planning, implementation, and decision-making. (Recommendation 4)

Introduction

October 08, 2019

Congressional Requesters

In 2017, Hurricanes Irma and Maria damaged Puerto Rico's electricity grid, causing the longest blackout in U.S. history. Federal agencies provided about $3.9 billion to help restore electricity service in the aftermath of the hurricanes; this included temporary or partial repairs such as attaching electricity lines to damaged poles.[1] With electricity service restored,[2] local entities face the longer-term and more expensive task of grid recovery to more fully repair and rebuild the grid. In August 2018, Puerto Rico submitted a recovery plan to Congress that included a total cost estimate of $30 billion to modernize the energy sector.[3] The federal government has appropriated billions in disaster relief funding to support these efforts.

The Federal Emergency Management Agency (FEMA) is leading the federal effort to support Puerto Rico's recovery from the 2017 hurricane season in coordination with other federal agencies. Prior to Hurricanes Irma and Maria, Puerto Rico's electricity grid was known to be in poor condition, largely due to underinvestment and poor maintenance practices.[4] Because much of the electricity grid in Puerto Rico may need to be repaired or replaced, recovery efforts have the opportunity to enhance the grid's resilience to (1) reduce the magnitude and duration of disruptive events and more rapidly recover from future disasters and (2) reduce the associated costs. In 2018, the federal government enacted new authorities for enhancing resilience

[1]As of June 30, 2019, FEMA had obligated $1.9 billion to the local electric utility for emergency work for power restoration efforts and $2 billion for the U.S. Army Corps of Engineers mission assignment to provide direct federal assistance for temporary emergency power and grid restoration efforts in Puerto Rico.

[2]It took roughly 11 months after the hurricanes for power to be restored to all customers with structures deemed safe for power restoration, according to the Puerto Rico Electric Power Authority (PREPA). This does not mean that all pre-storm customers have power, as some structures may not have been deemed safe for power restoration.

[3]Central Office for Recovery, Reconstruction, and Resiliency, Government of Puerto Rico, *Transformation and Innovation in the Wake of Devastation: An Economic and Disaster Recovery Plan for Puerto Rico* (Aug. 8, 2018).

[4]Congressional Research Service, *Repair or Rebuild: Options for Electric Power in Puerto Rico* (Nov. 16, 2017).

when replacing and restoring disaster-damaged facilities in Puerto Rico, including electric utility infrastructure.

You asked us to review the federal government's response to the 2017 hurricanes. This report is part of a broader body of work we are conducting on various disaster response and recovery issues. Specifically, this report (1) describes the role of federal agencies in supporting electricity grid recovery in Puerto Rico in response to the 2017 hurricane season; and (2) examines the status of federal support for grid recovery in Puerto Rico after the 2017 hurricane season and challenges affecting progress on grid recovery efforts.[5]

To describe the role of federal agencies in supporting Puerto Rico's electricity grid recovery in response to the 2017 hurricane season, we reviewed federal laws and regulations, including the Stafford Act, the Bipartisan Budget Act of 2018, and the Disaster Recovery Reform Act of 2018. We also reviewed policies related to federal roles and responsibilities in the energy sector for disaster recovery, including the National Disaster Recovery Framework. We also reviewed relevant federal policies and plans, including the Recovery Federal Interagency Operational Plan and the Power Outage Incident Annex to the Response and Recovery Federal Interagency Operational Plans. In addition, we reviewed documents related to FEMA's Public Assistance (PA) Program, including FEMA's Public Assistance Program and Policy Guide and FEMA Recovery Policy (FP-104-009-5 Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program).

We also reviewed agency documents, reports, and prior GAO reports that describe the federal role in grid recovery and enhancing grid resilience and funding sources. We also reviewed FEMA's Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work in Puerto Rico and FEMA documents describing the Public Assistance process, including draft standard operating procedures and Section 428 applicant briefing documents provided for Puerto Rico. We also reviewed Puerto Rico Central Office for Recovery, Reconstruction, and Resiliency (COR3) documents related to grid recovery planning efforts. We reviewed documentation of Department

[5]When we refer to grid recovery in this report we are referring to long-term efforts to rebuild the electricity grid. We are not referring to the immediate emergency restoration work that is generally a part of the initial response phase to a disaster. For information on the initial response see GAO, *2017 Hurricane Season: Federal Support for Electricity Grid Restoration in the U.S. Virgin Islands and Puerto Rico*, GAO-19-296 (Washington, D.C.: Apr. 18, 2019).

of Energy (DOE) efforts to support enhancing grid resilience and recovery efforts in Puerto Rico. We also reviewed Department of Housing and Urban Development (HUD) guidance and documentation related to available Community Development Block Grant Disaster Recovery (CDBG-DR) funding.

To examine the status of federal support for grid recovery in Puerto Rico after the 2017 hurricane season and challenges affecting progress on grid recovery efforts, we analyzed documents, reports, and studies to summarize views from local, federal and other entities. We reviewed documents, including Congressional testimony, Puerto Rico recovery planning documents, FEMA guidance, and relevant Puerto Rico Electric Power Authority (PREPA) and Financial Oversight Management Board (FOMB) fiscal plans and reports. We also reviewed reports and studies relevant to grid recovery plans and efforts in Puerto Rico from the Congressional Research Service, DOE, local and federal government-sponsored research, and nongovernmental organizations such as nonprofits and research institutes. In addition, we reviewed reports and documents issued after the 2017 hurricane season. We identified these reports and documents by conducting a literature search using databases such as ProQuest and based on recommendations from stakeholders we interviewed. We also analyzed policy, planning, and guidance documents and GAO internal control standards to determine the extent to which the status of federal efforts to support grid recovery aligned with existing policies and standards.

For all of our objectives, we interviewed representatives of federal and local government agencies involved in grid recovery and a nongeneralizable sample of 13 stakeholders in Puerto Rico, including those in industry and other organizations. We identified these stakeholders by reviewing documents and obtaining recommendations during our interviews about others knowledgeable about grid recovery efforts in Puerto Rico.[6] We interviewed officials from federal agencies including DOE, FEMA, the Federal Energy Regulatory Commission, HUD, the Department of the Interior, and the U.S. Army Corps of Engineers (USACE). We also interviewed officials from local government agencies, including COR3, PREPA, the Puerto Rico Public-Private Partnerships Authority, the Puerto Rico Energy Policy Office, the Comptroller's Office of Puerto Rico, the Puerto Rico Manufacturer's Association, and the Puerto Rico Energy

[6]Stakeholder views are not generalizable but provide a range of views relevant to our objectives.

Bureau. In addition, we interviewed representatives from relevant industry organizations (Edison Electric Institute, American Public Power Association, New York Power Authority, Gridwise Alliance, National Association of State Energy Offices, National Association of Regulatory Utility Commissioners, a former PREPA CEO, and Southern States Energy Board). We spoke with officials from the FOMB, a board established in the Puerto Rico Oversight, Management, and Economic Stability Act that has broad budgetary and financial control over Puerto Rico.[7] We also conducted site visits to Puerto Rico to interview representatives of local and federal agencies.

We conducted this performance audit from February 2018 to October 2019 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.

[7]The Puerto Rico Oversight, Management, and Economic Stability Act established the FOMB to provide a method for Puerto Rico to achieve fiscal responsibility. Pub. L. No. 114-187, § 101(a), 130 Stat. 549, 553 (2016). FOMB is responsible for certifying Puerto Rico's financial plans, approving and monitoring budgets and budgetary activities, advising Puerto Rico on financial management, and certifying restructuring and approving actions related to debt issuance. FOMB is also responsible for certifying Puerto Rico's economic and disaster recovery plan, released on August 8, 2018.

Background

Impact of 2017 Hurricanes

Hurricanes Irma and Maria left Puerto Rico's entire electricity grid inoperable in September 2017, according to the economic and disaster recovery plan for Puerto Rico.[8] Because of the extensive and unprecedented damage, a significant portion of the generation, transmission, and distribution system must be rebuilt, including high-voltage transmission lines that often survive lower-category hurricanes, according to a report by the Puerto Rico Energy Resiliency Working Group.[9] As we previously reported, Puerto Rico's system was in poor condition prior to the hurricanes largely because of PREPA's underinvestment and poor maintenance practices.[10] For example, PREPA canceled its vegetation management program because of its difficult financial situation; this contributed to the destruction of transmission and distribution lines when the hurricane arrived, according to FEMA officials. Cost estimates for rebuilding Puerto Rico's grid range from $2 billion to $30 billion.[11] Estimates vary greatly, depending on many technical, financial, and other assumptions such as the level of deployment of renewable generation. See figure 1 for photographs of damage sustained to electricity grid infrastructure in Puerto Rico.

[8]Central Office for Recovery, Reconstruction, and Resiliency, Government of Puerto Rico, *Transformation and Innovation in the Wake of Devastation*.

[9]Puerto Rico Energy Resiliency Working Group and Navigant Consulting, Inc., *Build Back Better: Reimagining and Strengthening the Power Grid of Puerto Rico* (Dec. 11, 2017). This working group included representatives from utility companies and National Laboratories, among others.

[10]GAO, *2017 Hurricane Season: Federal Support for Electricity Grid Restoration in the U.S. Virgin Islands and Puerto Rico*, GAO-19-296 (Washington, D.C.: Apr. 18, 2019).

[11]Central Office for Recovery, Reconstruction, and Resiliency, Government of Puerto Rico, *Transformation and Innovation in the Wake of Devastation*. According to the plan, because the cost of transforming the energy sector depends on decisions still to be made, the total amount that must be spent is uncertain and could differ by many millions to up to many billions of dollars depending on these decisions. According to the plan, low-cost scenarios include investments of $2 billion to $4 billion, and would fund repairs that would not substantially improve on or modernize the existing electricity grid. Higher-cost scenarios are estimated to exceed $30 billion, and would fund increased deployment of renewable energy generation, widespread system modernization, and improved system resilience.

Figure 1. Damaged Power Lines and Electricity Grid Infrastructure in Puerto Rico in November 2017 after Hurricane Maria

Source: Federal Emergency Management Agency (top) and Puerto Rico's Central Office for Recovery, Reconstruction, and Resiliency (bottom). | GAO-20-141

Before being hit by the hurricanes, Puerto Rico's economy had been in decline for over a decade, and the government of Puerto Rico had amassed large amounts of debt. The government of Puerto Rico began to default on its debt in August 2015 and has been operating with austerity measures in place, such as hiring freezes and budget cuts. In fiscal year 2016, the last year for which audited financial statements were available, Puerto Rico had $65.2 billion in outstanding debt and a net pension liability of approximately $44.9 billion; Puerto Rico's three main public pension systems are nearly insolvent. As we previously reported, one factor contributing to Puerto Rico's debt levels is the government of Puerto Rico's persistent annual deficits, where expenses exceeded revenues.[12] Puerto Rico's

[12]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).

prospects for debt repayment depend on factors including outcomes of the current debt restructuring process.[13] The 2017 hurricanes negatively affected Puerto Rico's economy, in part, because of prolonged power outages associated with damage to the grid. While federal funds for recovering from Hurricanes Irma and Maria are likely to stimulate the economy in the short term, it is unclear whether the resulting economic benefits will be sustained going forward.

Local Entities in Puerto Rico's Electricity Grid Recovery

Puerto Rico Electric Power Authority. PREPA, a public electric utility owned by the Commonwealth of Puerto Rico, operates Puerto Rico's electricity grid, which consists of generation, transmission, distribution, communication, and control center facilities. PREPA is one of the nation's largest public power utilities, serving approximately 1.5 million customers on the main island of Puerto Rico and the smaller islands of Vieques and Culebra. Before Hurricanes Irma and Maria, PREPA was insolvent and approximately $9 billion in debt. Further, its electric power infrastructure was known to be in poor condition, largely due to underinvestment and poor maintenance practices. In a May 2018 report, we found that PREPA had not updated or improved its electric generation and transmission systems, which hampered the systems' performance and led to increased costs of producing electricity that PREPA did not fully pass on to consumers.[14] PREPA is subject to the oversight of the federally established FOMB, which reviews and certifies PREPA's fiscal plans and budgets. PREPA's financial challenges likely limit its ability to borrow funds for capital investments or liquidity.

The government of Puerto Rico plans to make significant changes aimed at restructuring PREPA and the overall electricity system. First, Puerto Rico issued a request for proposals for an independent operator to operate and maintain PREPA's transmission and distribution system. Further steps could include privatizing or privately operating PREPA's generation assets and procuring new generation services through long-term contracts. In addition, in April 2019, Puerto Rico enacted the Puerto Rico Energy Public Policy Act, which aims to set the parameters for a resilient, reliable, and robust

[13]For additional information on Puerto Rico's debt and the restructuring process see GAO, *U.S. Territories: Public Debt Outlook*, GAO-18-160, (Washington, D.C.: Oct. 2, 2017) and GAO, *U.S. Territories: Public Debt Outlook–2019*, GAO-19-525 (Washington, D.C.: June 28, 2019).

[14]GAO-18-387.

energy system. For example, the law requires planning for greater resilience through such measures as the establishment of microgrids, distributed generation, and underground distribution lines.

Puerto Rico Energy Bureau. The Puerto Rico Energy Bureau (PREB) was established in 2014 and is responsible for regulating, monitoring and enforcing the energy public policy of the Government of Puerto Rico. As PREPA's regulator, PREB oversees the quality and reliability of the services PREPA provides. The bureau is currently reviewing PREPA's integrated resource plan—a planning process used to determine which facilities should be built to meet future power demand.[15]

Central Office for Recovery, Reconstruction, and Resiliency. The Governor of Puerto Rico established COR3 in 2017 after Hurricane Maria. COR3's role is to identify, procure, and administer all federal, territory, and private resources available to Puerto Rico for recovery. COR3 administers federal funding for electricity grid projects to repair or replace damaged electricity grid infrastructure.

The Stafford Act and the Disaster Relief Fund

The Stafford Act, as amended, outlines the federal government's role during disaster response and recovery when the President declares a major disaster. The President can declare a major disaster after a governor of an affected state or chief executive of an affected Indian tribal government finds that effective response is beyond the capabilities of the state, tribal, or local governments.[16] If the President declares a major disaster, the declaration can trigger a variety of federal assistance programs through which the federal government provides disaster assistance to state, tribal, territorial, and local governments as well as certain nonprofit organizations and individuals. Since PREPA is owned by the Commonwealth, it is eligible to receive assistance for infrastructure repairs or replacement through these federal programs.

[15]The purpose of integrated resource planning is to meet future power demand by identifying the need for generating capacity and determining the best mix of resources to meet the need on a least-cost, system-wide basis. The integrated approach considers a broad range of feasible supply-side and demand-side options and assesses them with respect to financial, economic, and environmental impacts.

[16]The Stafford Act defines "state" to include the District of Columbia, Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands.

FEMA is the primary federal agency responsible for mitigating, responding to, and overseeing recovery from disasters. FEMA is also responsible for coordinating the assistance provided under the provisions of the Stafford Act. The Disaster Relief Fund funds Stafford Act disaster relief and recovery programs, including FEMA's Public Assistance Program and Hazard Mitigation Grant Program. The Disaster Relief Fund is the primary source of federal disaster assistance for state and local governments when a disaster is declared. Disaster Relief Fund appropriations historically have been provided for general disaster relief rather than dedicated to specific presidentially declared disasters or emergencies.

Energy Sector Recovery Plans and Reports

Multiple entities have produced plans or reports related to the recovery of the electricity grid in Puerto Rico, as shown in table 1.

Table 1: Plans or Reports Related to Electricity Grid Recovery in Puerto Rico

Plan	Source	Date	Description
Build Back Better	Governor of Puerto Rico	Nov. 2017	The report includes an initial assessment of the cost to rebuild a stronger, more resilient Puerto Rico.
Build Back Better: Reimagining and Strengthening the Power Grid of Puerto Rico	Puerto Rico Energy Resiliency Working Group and Navigant Consulting, Inc.[a]	Dec. 2017	The report provides an assessment of the electric power system storm damage caused by Hurricanes Maria and Irma; describes a new system design basis; and proposes redesign and rebuild recommendations for strengthening the electricity grid of Puerto Rico.
Energy Resilience Solutions for the Puerto Rico Grid	U.S. Department of Energy	June 2018	The report contains resilience recommendations for the Government of Puerto Rico to consider for incorporation into its recovery plans and provides insights for the disbursement of any federal appropriations intended to rebuild or improve the energy infrastructure in the Commonwealth of Puerto Rico.
Governor's Recovery Plan: Transformation and Innovation in the Wake of Devastation	Governor of Puerto Rico	Aug. 2018	This plan states that it lays out the Government of Puerto Rico's strategic vision and goals and provides a detailed framework for achieving them. This plan was required by the Bipartisan Budget Act of 2018.[b] Section 21210 directed the Governor of Puerto Rico, in coordination with the Federal Emergency Management Agency (FEMA), to submit a report to Congress describing an economic and disaster recovery plan that, among other things, is consistent with actions as may be necessary to mitigate vulnerabilities to future extreme weather events and natural disasters and increase community resilience. The plan should define the priorities, goals, and expected outcomes of the recovery effort for the Commonwealth, including electric power systems and grid restoration.
Puerto Rico Electric Power Authority's (PREPA) Proposed Integrated Resource Plan (IRP)	PREPA	June 2019[c]	PREPA is required to prepare an IRP that shall consider all reasonable resources to satisfy the demand for electricity services over a 20-year planning horizon, including resources related to energy supply and demand.
Grid Modernization Plan for Puerto Rico	Central Office for Recovery, Reconstruction, and Resiliency (COR3) and PREPA	July 2019	The plan includes programs and initiatives for the fulfillment of key objectives in the Governor's plan. It also includes an initial analysis of funding sources. The plan will evolve and is subject to revision pending input from FEMA, other stakeholders, and the integrated resource planning process, according to COR3 officials.

Source: GAO summary of agency and government of Puerto Rico documents. | GAO-20-141

[a]The working group included the New York Power Authority; Puerto Rico Electric Power Authority; Puerto Rico Energy Commission; Consolidated Edison Company of New York, Inc.; Edison International; Electric Power Research Institute; Long Island Power Authority; Smart Electric Power Alliance; the U.S. Department of Energy; Brookhaven National Laboratory; National Renewable Energy Laboratory; Pacific Northwest National Laboratory; Grid Modernization Lab Consortium; and Public Service Electric and Gas Long Island.

[b]For more information on this plan, see GAO *Puerto Rico Hurricanes: Status of FEMA Funding, Oversight, and Recovery Challenges*, GAO-19-256 (Washington, D.C.: Mar. 14, 2019).

[c]PREPA submitted its IRP to the Puerto Rico Energy Bureau (PREB) on February 13, 2019, and PREB found that the proposal was not in compliance with PREB orders. PREPA refiled its proposed IRP with PREB in June 2019.

Major Findings

Federal Agencies Can Support Electricity Grid Recovery in Puerto Rico through Funding, Technical Assistance, and Coordinating Federal and Local Efforts

Federal agencies have three primary roles in supporting electricity grid recovery in Puerto Rico: (1) providing funding, (2) providing technical assistance, and (3) fostering coordination among local and federal agencies. FEMA and HUD disaster recovery programs are the primary federal funding sources for grid recovery and provide opportunities to incorporate resilience into disaster recovery efforts. DOE also can provide technical assistance to local and federal entities to support grid recovery efforts. In addition, FEMA leads the coordination of federal efforts to support local agencies, such as COR3 and PREPA, to achieve their recovery goals.

FEMA and HUD Programs Can Provide Funding to Support Grid Recovery and Incorporate Resilience

FEMA and HUD disaster recovery programs serve as the primary sources of federal funding for electricity grid recovery in Puerto Rico. These programs provide opportunities to incorporate resilience into disaster recovery efforts.[17] The FEMA disaster recovery programs include

- the Public Assistance (PA) Program and
- the Hazard Mitigation Grant Program (HMGP).

The Community Development Block Grant Disaster Recovery (CDBG-DR) program is HUD's disaster recovery program. As shown in table 2, the total amount that may be available for grid recovery under these programs has yet to be determined.

[17]In addition to the disaster recovery programs, other authorities exist for federal agencies to provide assistance that could enhance grid resilience. For example, authority exists under 48 U.S.C. § 1492 for DOE and the Department of the Interior to provide financial assistance to the Government of Puerto Rico and other insular area governments that can be used to adopt measures to enhance grid resilience. In addition, under the authority of the Rural Electrification Act of 1936, the U.S. Department of Agriculture Rural Utilities Service's Electric Program can make direct loans and loan guarantees, as well as grants and other energy project financing, to electric utilities that serve customers in rural areas.

Table 2: Sources of Disaster Recovery Funding that Can Be Used to Improve the Resilience of the Electricity Grid in Puerto Rico

Agency	Program	Amount of funding available	Potential use for resilience
Federal Emergency Management Agency (FEMA)	Public Assistance Program	Not less than 75 percent of eligible costs.	May fund measures to reduce future risks in conjunction with repair of disaster-damaged facilities, if cost-effectiveness can be demonstrated.
FEMA	Hazard Mitigation Grant Program	Up to 75 percent of costs.	Provides funding for projects designed to improve resilience to future disasters during recovery.
Department of Housing and Urban Development (HUD)	Community Development Block Grant Disaster Recovery (CDBG-DR)	Federal law requires HUD to allocate $2 billion specifically for enhancing or improving the electrical power systems in Puerto Rico and the U.S. Virgin Islands. Puerto Rico may also decide to use some of the other CDBG-DR funding it received for grid recovery.	Designed to address needs not met by other disaster recovery programs, which can include disaster resilience-building projects.

Source: GAO analysis of agency documents. | GAO-20-141

FEMA's Public Assistance (PA) Program

FEMA's PA Program provides supplemental federal disaster grant assistance to state, local, tribal, and territorial governments and certain types of private nonprofit organizations to help them respond to and recover from major disasters or emergencies. The program—which represents the largest share of federal aid from the Disaster Relief Fund—is administered through a partnership between FEMA and the recipient, COR3, which in turn provides funding to local entities who are the subrecipients of a PA grant award (e.g., PREPA).[18]

Through its PA Program, FEMA provides funds to support recovery, including,[19]

[18]FEMA's PA Program 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 to document eligibility. As a public utility, PREPA can be a recipient of PA funds for eligible work. FEMA's PA Program is implemented using the policies and procedures as outlined in FEMA's Public Assistance Program and Policy Guide.

[19]PA funding is also provided for emergency work, such as emergency protective measures that must be done immediately to protect public health and safety. When we refer to grid recovery in this report we are referring to projects that could qualify for PA permanent work funding or HMGP funding. We are not referring to emergency work, which is generally a part of the initial response phase to a disaster.

- permanent work, which includes the restoration of and cost-effective hazard mitigation for disaster-damaged public utilities; and
- management costs, which include expenses a recipient or subrecipient incurs in administering and managing projects, such as to develop and submit projects for FEMA's approval.[20]

Hazard mitigation measures funded by FEMA's PA Program are those that directly reduce the potential of future, similar damage to a facility damaged by a disaster. FEMA evaluates proposed mitigation measures for cost-effectiveness and technical feasibility, among other things.[21] FEMA may also require cost-effective hazard mitigation measures not required by applicable standards when approving grant assistance to restore facilities. FEMA will reimburse the cost of any hazard mitigation measures that FEMA requires beyond applicable standards at the set federal cost share.

There is not a set amount of funding available for PA grants for a specific disaster or location; instead, FEMA can provide PA funding for eligible work completed and costs incurred within regulatory deadlines, subject to total appropriations to the Disaster Relief Fund and other FEMA allocations from it.[22] FEMA PA funding is subject to a

[20]On October 5, 2018, the Disaster Recovery Reform Act of 2018 amended the definition of management costs to include any indirect cost, any direct administrative cost, and any other administrative expense associated with a specific project. See Pub. L. No. 115-254, § 1215, 132 Stat. 3186, 3449 (codified at 42 U.S.C. § 5165b(a)). Recipients and subrecipients for disasters or emergencies declared from Aug. 1, 2017 through Oct. 4, 2018 were able to opt to use FEMA's interim policy implementing the amended definition or to use previous existing options, which reimburse management (indirect) costs and direct administrative costs separately. Puerto Rico as a recipient opted to use the new interim policy, whereas several subrecipients opted to use previous options.

[21]FEMA Public Assistance policy allows three different methods to test for cost-effective hazard mitigation. First, under the 15 percent rule, hazard mitigation measures may amount to up to 15 percent of the total eligible cost of repair work on a project. Second, certain hazard mitigation measures that have been predetermined to be cost- effective may qualify under the 100 percent rule, which permits the hazard mitigation as long as it does not exceed 100 percent of the eligible cost of the repair work on a project. Third, for measures that exceed eligible costs, the recipient or subrecipient must demonstrate through an acceptable benefit/cost analysis methodology that the measure is cost-effective.

[22]The deadline for permanent work is generally 18 months from the declaration date. For Puerto Rico, FEMA authorized a blanket extension until September 20, 2019, for any permanent work related to Hurricane Maria obligated prior to March 20, 2019, and an 18-month performance period for permanent work obligated

cost share. Generally, a recipient may be responsible for a cost share of up to 25 percent of the total eligible amount of grant assistance. On November 2, 2017, the President authorized federal funds for Public Assistance for Puerto Rico at 90 percent of total eligible costs with a 10 percent cost share except for assistance previously approved at 100 percent.

Two aspects of FEMA's PA Program are new in Puerto Rico—the use of alternative procedures for all large permanent work projects and the implementation of new FEMA authorities for funding eligible work under the Stafford Act for enhancing resilience. First, on November 2, 2017, Amendment 5 to the President's disaster declaration for Hurricane Maria imposed a number of grant conditions, including that FEMA must obligate all large project funding for Public Assistance permanent work through alternative procedures.[23] Under the standard PA Program, FEMA funds the actual cost of a project. In contrast, under the PA alternative procedures, FEMA provides funds for large permanent work projects based on fixed-cost estimates to provide financial incentives for the timely and cost-effective completion of work. Under the PA alternative procedures, FEMA works with COR3 (the recipient) and PREPA (the subrecipient) to develop and reach agreement on fixed-cost estimates for electricity grid recovery project work eligible for reimbursement. The deadline for alternative procedures fixed-cost estimates for PA permanent work is October 2019.[24] However, pursuant to alternative procedures

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between March 21, 2019 and March 20, 2020. In addition, the recipient has authority to extend deadlines for individual projects based on extenuating circumstances. For example, the recipient may extend permanent work projects by 30 months. For Puerto Rico, this means the deadline for a permanent work project may be extended to September 2021 by the recipient. The FEMA Regional Administrator may approve an extension of a project deadline beyond September 20, 2021, if an appropriate justification may be made for doing so.

[23]Grant conditions include that all large project funding for Public Assistance Categories C-G be obligated by FEMA only through alternative procedures as FEMA shall establish under 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 disasters declared during fiscal year 2017, including Hurricane Maria, the large project threshold is $123,100.00.The Sandy Recovery Improvement Act of 2013 authorized the use of alternative procedures in administering the PA Program, thereby providing new flexibilities to FEMA, states, territories, and local governments for debris removal, infrastructure repair, and rebuilding projects using funds from this program. For more information on the alternative procedures, see GAO, *Puerto Rico Hurricanes: Status of FEMA Funding, Oversight, and Recovery Challenges*, GAO-19-256 (Washington, D.C.: Mar. 14, 2019).

[24]Amendment 5 to the notice of Puerto Rico's major disaster declaration also directs that estimates for projects exceeding a threshold amount are to be validated by an independent, third-party expert. Puerto Rico; Amendment No. 5 to Notice of a Major

guidance published in April 2018, this time frame may be adjusted on a project-by-project basis, based on extenuating circumstances.

Under these alternative procedures, if the actual cost of the project exceeds the fixed-cost estimate agreed upon by FEMA and the recipient, the recipient or subrecipient is responsible for the additional costs. However, if the actual cost of completing eligible work for a project is below the estimate, the recipient may use the remaining funds for additional cost-effective hazard mitigation measures to increase the resilience of public infrastructure. In addition, these funds may also be used for activities that improve the recipient's or subrecipient's future PA operations or planning.

Second, in 2018 the federal government enacted legislation that provides additional authorities for enhancing resilience when replacing or restoring disaster-damaged facilities in Puerto Rico, including electricity grid infrastructure. The Bipartisan Budget Act of 2018 (BBA) provided a new authority to FEMA, when using the Public Assistance alternative procedures in Puerto Rico and the U.S. Virgin Islands in response to Hurricanes Irma and Maria, to provide assistance for critical services, including the electricity grid. Specifically, FEMA is authorized to fund the replacement or restoration of 1) a facility or system to industry standard without regard to pre-disaster condition, and 2) components of the facility or system not damaged by the disaster where necessary to fully effectuate the replacement or restoration of disaster-damaged components to restore the function of the facility or system to industry standards.[25] In addition, the Disaster Recovery Reform Act of 2018 (DRRA) provides that FEMA is to fund Public Assistance projects to replace and restore disaster-damaged facilities consistent with the latest published editions of relevant consensus-based codes and standards to ensure that facilities are restored in a manner that allows them to be resilient.[26] Previously, costs were eligible for reimbursement only for repairs or rebuilding to existing codes and standards "applicable at the time at which the disaster occurred."

Disaster Declaration, 82 Fed. Reg. 53,514-01 (Nov. 16, 2017). FEMA has determined that this amount will be $5 million.

[25]Pub. L. No. 115-123, § 20601, 132 Stat. 64, 85 (2018).

[26]Pub. L. No. 115-254, § 1235(b), 132 Stat. 3186 (2018). The act also requires FEMA, in consultation with the heads of relevant federal departments and agencies, to issue a final rulemaking to define "resilient" by April 2020 and issue interim guidance pending issuance of the final regulations. According to FEMA, it expected to issue the interim guidance in September 2019.

FEMA's Hazard Mitigation Grant Program

The HMGP 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. Projects funded through this program are to improve the resilience of either disaster-damaged or undamaged facilities from future events of any kind. 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. To be eligible for HMGP funding, a project must conform with the state and local mitigation plan. HMGP funding in response to Hurricane Maria must be prioritized toward protecting federal investments in Puerto Rico's public infrastructure.

The amount of HMGP funding available under a particular disaster declaration is limited. The program may provide Puerto Rico with up to 15 percent of the total disaster assistance awarded by FEMA.[27] FEMA can fund up to 75 percent of the eligible costs of projects. Puerto Rico must provide at least a 25 percent match, which can include a combination of cash and in-kind sources as well as CDBG-DR funds. As with FEMA's PA Program, legislation in 2018 has introduced changes to the program as FEMA will be implementing it in Puerto Rico. Specifically, while the Stafford Act previously authorized contributions to the cost of measures that are cost-effective and substantially reduce the risk of future damage, hardship, loss, or suffering in any area affected by a major disaster, the DRRA now also authorizes contributions to the cost of measures that increase resilience in such scenarios.

[27]The amount of funding FEMA can provide under the HMGP is not to exceed 15 percent of the first portion of total disaster assistance up to $2 billion; not to exceed 10 percent of the portion of such assistance between $2 billion and $10 billion; and not to exceed 7.5 percent of the portion of such assistance between $10 billion and $35.333 billion. If Puerto Rico meets higher mitigation planning criteria, it may qualify for a higher percentage. According to FEMA, the total amount of HMGP funding is based on a percentage of the estimated total federal assistance for the event projected one year after the disaster. According to Puerto Rico's recovery plan, FEMA estimated that $3.0 billion in HMGP grants will be awarded. According to FEMA's HMGP guidance, in rare circumstances, at the request of the recipient, FEMA may conduct an additional review of its estimate.

HUD's Community Development Block Grant Disaster Recovery

HUD's CDBG-DR provides funding to address needs not met by other disaster recovery programs after a disaster, which can include disaster resilience-building projects. Communities can use their CDBG-DR grants to address a wide range of unmet recovery needs—losses not met with insurance or other forms of assistance, including federal disaster assistance—related to housing, infrastructure, and economic revitalization. When disasters occur, the federal government often appropriates CDBG-DR funding through supplemental appropriations. These appropriations often provide HUD the authority to waive or modify many of the statutory and regulatory provisions governing the CDBG program, thus providing states with greater flexibility and discretion to address recovery needs.

As of June 2019, HUD had awarded approximately $19.9 billion in CDBG-DR funds to Puerto Rico, but the agency had not yet specified the requirements and process for the $2 billion appropriated specifically for enhancing or improving the electrical power systems in Puerto Rico and the U.S. Virgin Islands.[28] Once HUD receives CDBG-DR appropriations, HUD publishes notices in the *Federal Register* to allocate the funding to affected communities based on unmet needs and to outline the grant process and requirements for the grantees' use of the funds. HUD has not issued such a notice for the funds specifically appropriated to enhance or improve the electricity grid because, according to HUD officials, this is the first time HUD has received supplemental CDBG-DR appropriations specific to a sector and purpose, and HUD also has to develop and finalize the requirements for other sizable appropriations.[29]

[28]Overall, the federal government appropriated $35.4 billion in CDBG-DR funds after the 2017 hurricanes. The Supplemental Appropriations for Disaster Relief Requirements Act, 2017, Pub. L. No. 115-56, div. B, 131 Stat. 1129, 1137 (2017), enacted on September 8, 2017, appropriated $7.4 billion in CDBG-DR funding for major disasters declared in calendar year 2017. On February 9, 2018, the federal government appropriated an additional $28 billion in CDBG-DR funding primarily for major disasters declared in 2017 through the Further Additional Supplemental Appropriations for Disaster Relief Requirements Act, 2018, Pub. L. No. 115-123, div. B, Subdivision 1, 132 Stat. 64, 103 (2018). The act required HUD to allocate in total no less than $11 billion to Puerto Rico and the U.S. Virgin Islands, including the $2 billion for enhancing or improving the electrical power systems in Puerto Rico and the U.S. Virgin Islands. For more information on CDBG-DR. see GAO, *Disaster Recovery: Better Monitoring of Block Grant Funds Is Needed*, GAO-19-232 (Washington, D.C.: Mar. 25, 2019).

[29]As of June 2019, HUD had, via Federal Register notices, specified the requirements and process for $9.7 billion of the $19.9 billion awarded to Puerto Rico. See *Allocations, Common Application, Waivers, and Alternative Requirements for 2017 Disaster Community Development Block Grant Disaster Recovery Grantees, 83 Fed. Reg. 5844 (Feb.*

In contrast to the funds specifically appropriated for grid enhancement, HUD has taken action with respect to other Puerto Rico disaster relief funds. According to the February 2018 *Federal Register* notice allocating the initial CDBG-DR funds, grantees were required to take a number of steps before they could enter into a grant agreement with HUD and begin expending funds. These steps included submitting an action plan for disaster recovery that includes an assessment of unmet needs for housing, infrastructure, and economic revitalization and a description of activities intended to meet these needs. In July 2018, HUD approved Puerto Rico's Action Plan for the use of its initial $1.5 billion in CDBG-DR funds. The plan included $100 million for local match requirements for infrastructure projects receiving FEMA PA or HMGP funds. In February 2019, HUD approved an amended Action Plan, which described plans for the use of an additional $8.2 billion in CDBG-DR funds and included $400 million for critical infrastructure resilience and $900 million for local match requirements for infrastructure projects receiving FEMA PA or HMGP funds. CDBG-DR grant agreements include a requirement for grantees to expend their entire CDBG-DR allocations on eligible activities within 6 years of signing their grant agreements.[30] As previously mentioned, the FEMA PA and HMGP programs generally require that recipients contribute to the costs of approved projects. Puerto Rico has the option to use CDBG-DR funds to cover the cost-share related to these programs or to fund related activities. As a result, CDBG funds could provide important flexibility to help mitigate the effects of Puerto Rico's limited ability to borrow money for capital investments and liquidity.

9, 2018), hereafter referred to as the February 2018 Federal Register notice, and *Allocations, Common Application, Waivers, and Alternative Requirements for Community Development Block Grant Disaster Recovery Grantees, 83 Fed. Reg. 40314 (Aug. 14, 2018),* hereafter referred to as the August 2018 Federal Register notice.

[30]According to HUD officials, this requirement has been included in grant agreements since 2015.

DOE Can Provide Expertise and Technical Assistance to Federal and Local Entities in Puerto Rico to Support Grid Recovery

DOE can provide technical assistance to federal and local entities to support grid recovery efforts. Specifically, DOE can provide energy-related expertise and information and analysis about energy disruptions and help facilitate the restoration of damaged energy infrastructure.[31] In addition, DOE is the sector-specific agency for federal resilience efforts in the energy sector, which includes the electricity grid, and funds research and development to strengthen the resilience of the U.S. power grid.[32] In addition, after the 2017 hurricanes, DOE received a $13 million supplemental appropriation for necessary expenses related to the consequences of Hurricanes Harvey, Irma, and Maria. DOE allocated part of these funds to its Office of Electricity to provide modeling, analysis, and technical assistance in Puerto Rico.

[31]DOE provides energy-related expertise to FEMA, interagency partners, and the Administration as part of DOE's emergency response activities under the National Response Framework and as the Sector-Specific Agency for Energy under Presidential Policy Directive 21. In addition to its role in emergency response, DOE is a primary agency for the Infrastructure Systems Recovery Support Function under the National Disaster Recovery Framework. As the lead for Emergency Support Function #12 - Energy, DOE is responsible for providing information and analysis about energy disruptions and helping facilitate the restoration of damaged energy infrastructure.

[32]In 2013, the President directed federal agencies to work with owners and operators of critical infrastructure and state, local, tribal, and territorial governments to take proactive steps to manage risk and strengthen the security and resilience of critical infrastructure from all hazards, including natural disasters, cyberattacks, and acts of terrorism. Presidential Policy Directive/PPD-21. DOE was designated as the sector-specific agency for federal resilience efforts in the energy sector. In this role, DOE is responsible for coordinating with the Department of Homeland Security, itself responsible for coordinating the overall federal effort to promote the security and resilience of the nation's critical infrastructure. DOE is also responsible for coordinating with other relevant federal agencies and for collaborating with critical infrastructure owners and operators to prioritize and coordinate federal resilience efforts.

FEMA Is the Lead Agency for Coordination among Local and Federal Agencies and Programs to Support Grid Recovery

FEMA is the lead agency for the coordination of federal efforts to provide support to local agencies, such as COR3 and PREPA, in their efforts to achieve their recovery goals. The National Disaster Recovery Framework (NDRF) defines the roles and responsibilities federal agencies have to facilitate recovery efforts.[33] According to FEMA documentation, due to the size and complexity of the recovery from Hurricane Maria in Puerto Rico, the recovery operation has aligned with the principles and concepts articulated in the NDRF and the Recovery Federal Interagency Operational Plans.[34]

The NDRF identifies Recovery Support Functions (RSF) through which federal agencies are to provide assistance and support to state and local communities for key functional areas of assistance, such as health and social services, housing, and infrastructure systems.[35] These RSFs are intended to, among other things, facilitate problem solving; improve access to resources; ensure more effective and efficient use of federal, state, nongovernmental, and private-sector funds; and foster coordination among state and federal agencies and nongovernmental entities. Each RSF has a federal department or agency designated as the coordinating agency along with a number of primary and supporting organizations. The Infrastructure Systems RSF includes the energy sector, and DOE, FEMA, and USACE have roles in facilitating the integration of federal capabilities to support local entities, such as COR3 and PREPA, in their efforts to achieve recovery goals, expedite recovery, and improve resilience. Table 3 describes federal roles in the NDRF and the Infrastructure Systems RSF relevant to the electricity grid.

[33]The Presidential Policy Directive on National Preparedness directs the preparation of a recovery framework. Presidential Policy Directive/PPD-8: National Preparedness (Mar. 30, 2011). DHS, *National Disaster Recovery Framework, Second Edition* (June 2016).

[34]FEMA, *Public Assistance Alternative Procedures for Permanent Work (Section 428) Standard Operating Procedures*; FEMA-4339-DR-PR, Draft – March 2019. DHS, *Recovery Federal Interagency Operational Plan - Second Edition*, August 2016. We previously identified steps FEMA could take to enhance outreach efforts among its regional offices and potentially improve implementation of the NDRF nationwide. GAO, *Disaster Recovery: FEMA Needs to Assess Its Effectiveness in Implementing the National Disaster Recovery Framework*, GAO-16-476 (Washington, D.C.: May 26, 2016).

[35]The scope of the Infrastructure Systems RSF includes, but is not limited to, the following infrastructure sectors and subsectors: energy, water, dams, communications, transportation systems, agriculture (food production and delivery), government facilities, utilities, sanitation, engineering, flood control and other systems that directly support the physical infrastructure of communities; as well as physical facilities that support essential services, such as public safety, emergency services and public recreation.

Table 3. Federal Roles Supporting Electricity Grid Recovery in Puerto Rico under the National Disaster Recovery Framework and the Infrastructure Systems Recovery Support Function (RSF)

Agency	Role	Description
Federal Emergency Management Agency (FEMA)	Lead agency	FEMA is the focal point for all federal interagency coordination for disaster recovery issues at the department or agency headquarters level. FEMA coordinates all RSF activities at the national level through the designated RSF coordinating and primary agencies for most incidents. Activation of Infrastructure Systems RSF agency members is contingent upon receipt of a FEMA mision agreement. According to FEMA, given the long-term nature of recovery, it is expected that an interagency agreement may be needed to define and fund the Infrastructure Systems RSF after the initial mission assignments expire.
Department of Energy (DOE), FEMA, and other agencies	RSF primary agencies	As primary agencies under the Infrastructure Systems RSF, DOE and FEMA are responsible for identifying and coordinating relevant federal programs and capabilities to support recovery, working with local jurisdictions by participating in or coordinating interagency assessments or support teams as necessary.
U.S. Army Corps of Engineers (USACE)	RSF coordinating agency	USACE, with the assistance of FEMA, is to provide leadership, coordination and oversight and, when appropriate, facilitates the efforts of the primary and other agencies to ensure those agencies with the requisite authorities, expertise, and resources are positioned to provide assistance to and collaborate with public and private-sector infrastructure partners to the extent authorized by law.

Source: GAO analysis of agency documents. | GAO-20-141

Note: The scope of the infrastructure sectors and subsectors includes: energy, water, dams, communications, transportation systems, agriculture (food production and delivery), government facilities, utilities, sanitation, engineering, flood control, and other systems that directly support the physical infrastructure of communities, as well as physical facilities that support essential services such as public safety, emergency services and public recreation. In addition, when we refer to grid recovery in this report we are referring to long-term efforts to rebuild the electricity grid. We are not referring to the immediate emergency restoration work, which is generally a part of the initial response phase to a disaster. For information on the initial response see GAO, *2017 Hurricane Season: Federal Support for Electricity Grid Restoration in the U.S. Virgin Islands and Puerto Rico*, GAO-19-296 (Washington, D.C.: Apr. 18, 2019). As we previously reported, as part of the emergency response, FEMA and USACE undertook unprecedented roles of helping to coordinate and directly assist with grid restoration in Puerto Rico. FEMA assigned USACE to lead federal efforts to repair Puerto Rico's electricity grid—a role USACE had not played in the past during a domestic disaster response.

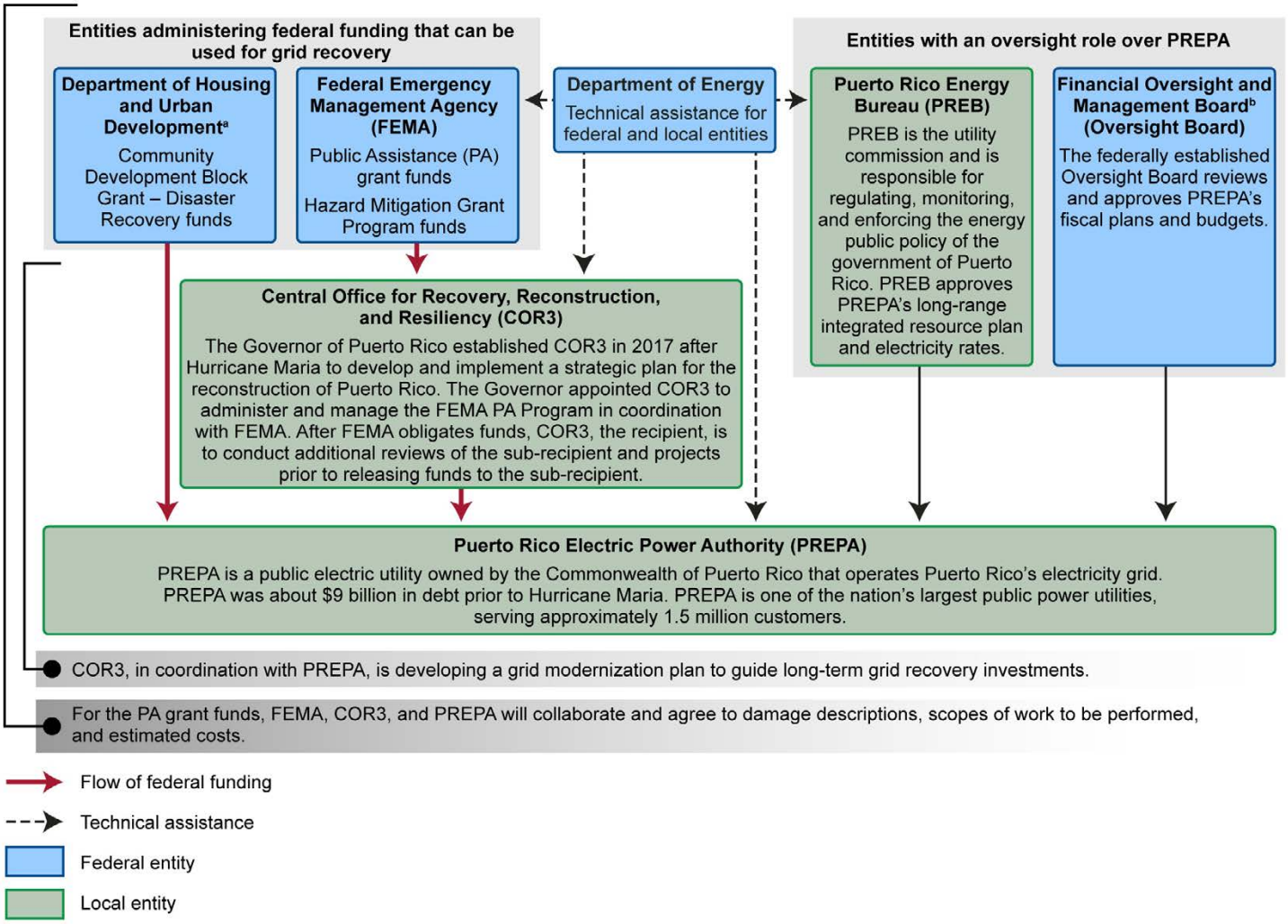
According to FEMA officials, the Recovery Support Function Leadership Group (RSFLG), a group of federal agency leaders coordinating disaster recovery work across the federal government, is the primary mechanism under the NDRF for cross-agency

coordination at the upper leadership level.[36] In addition, the RSFLG's Puerto Rico Energy Subgroup—comprised of leaders from DOE, FEMA, HUD, the Office of Management and Budget, and other federal agencies—also plays a key role in cross-agency collaboration specific to the energy sector, according to FEMA officials. According to FEMA officials, the subgroup meets to coordinate federal policy and communications, including DOE technical recommendations, industry standards, and FEMA and HUD funding eligibility and timelines. According to FEMA guidance, Puerto Rico's recovery requires leveraging and expanding on the RSFs and partnerships with the Government of Puerto Rico and its municipalities to take a unified solutions approach and develop resilient solutions that align with Puerto Rico's recovery priorities.[37] FEMA's Puerto Rico Joint Recovery Office, established in Puerto Rico to coordinate disaster recovery efforts across agencies, is to assist the Government of Puerto Rico in evaluating current and anticipated recovery needs and accessing all available resources, including those beyond traditional recovery programs. According to FEMA, the Joint Recovery Office is taking a sector-based approach in supporting Puerto Rico by coordinating recovery resources across federal and other entities; FEMA guidance describes a Sector-based Recovery Organization, also known as the Unified Solutions-Based Approach. FEMA's Energy Sector is to lead the sector-based approach in the Puerto Rico Joint Recovery Office and is the mechanism established by FEMA to coordinate local and federal entities involved in grid recovery, according to FEMA. See figure 2 for information on key local and federal entities involved in Puerto Rico's electricity grid recovery.

[36]According to FEMA officials, in the wake of Hurricanes Irma and Maria, the RSFLG began to convene regularly at the Under Secretary level to act as the primary policy coordination committee for Puerto Rico and U.S. Virgin Islands recovery.

[37]Federal Emergency Management Agency, *Public Assistance Alternative Procedures for Permanent Work (Section 428) Standard Operating Procedures; FEMA-4339-DR-PR*, Draft–March 2019.

Figure 2. Key Local and Federal Entities in Puerto Rico's Electricity Grid Recovery



Source: GAO analysis of FEMA, Department of Housing and Urban Development, Department of Energy, PREB, Oversight Board, COR3, and PREPA documents. | GAO-20-141

[a]The Puerto Rico Department of Housing is responsible for administering the HUD Community Development Block Grant-Disaster Recovery grant program in close collaboration with COR3.

[b]In June 2016, Congress passed and the President signed the Puerto Rico Oversight, Management, and Economic Stability Act in response to Puerto Rico's fiscal crisis. This act established the Oversight Board and granted it broad powers of fiscal supervision over Puerto Rico, and the act established a mechanism through which the Oversight Board could petition U.S. courts on Puerto Rico's behalf to restructure debt.

According to FEMA guidance on the sector-based approach, the Joint Recovery Office's Energy Sector is to convene stakeholders, provide expertise, and coordinate with federal, private sector, and nonprofit resources to provide integrated solutions that support the Commonwealth of Puerto Rico in building a more efficient, resilient

and sustainable energy system.[38] According to FEMA guidance, once solutions (or courses of action) are identified, Puerto Rico, various federal agencies, and other private-sector and nongovernmental partners will need to work together to identify optimal sources of funding within law and policy that can then be applied.[39] The guidance calls for solutions that are effective, resilient, and mutually supportive and that identify available funding mechanisms needed to complete the proposed work. The guidance further emphasizes the concept of unified solutions across recovery funding programs versus individual projects that may be funded under one program or another. According to FEMA officials, the RSFLG and Energy Subgroup rely on FEMA headquarters leadership who coordinate with the FEMA Joint Recovery Office leadership working in Puerto Rico to gather or disseminate information and strategies for recovery to COR3 and PREPA. According to FEMA officials, RSFLG partners, such as DOE, also communicate with PREPA and COR3 on recovery issues. In Puerto Rico, USACE coordinates across potentially related infrastructure projects for recovery efforts but has a more limited role than it played during the initial power restoration efforts. For example, USACE helps coordinate between FEMA and local agencies on infrastructure projects, including electricity grid infrastructure.[40] USACE has an interagency agreement with FEMA for its support of the recovery of infrastructure systems in Puerto Rico. The agreement includes two positions stationed in Puerto Rico. The support USACE provides to Puerto Rico will cover all infrastructure work, including power and public buildings.

Long-Term Grid Recovery Projects in Puerto Rico Have Not Received Funding and Several Challenges are Hindering Progress

Long-term grid recovery projects in Puerto Rico have not received funding, and several challenges have hindered progress on grid recovery efforts in Puerto Rico. Specifically, as of July 2019, no

[38]Federal Emergency Management Agency, *Puerto Rico Recovery – DR-4336 and DR-4339, Sector-Based Approach Organizational Guidance*, August 2018.

[39]Federal Emergency Management Agency, *Public Assistance Alternative Procedures for Permanent Work (Section 428) Standard Operating Procedures; FEMA-4339-DR-PR*, Draft–March 2019.

[40]USACE is also continuing to replenish PREPA's stockpile of materials used during power restoration efforts, according to USACE officials. See GAO-19-296 for additional details about federal efforts to support power restoration in Puerto Rico.

permanent work grid recovery projects have been approved, including projects to address outstanding grid vulnerabilities. DOE has provided a range of technical assistance, including recommendations to local entities to support grid recovery planning. Progress has been hindered due to uncertainty about the kinds of projects that may be eligible for FEMA funding, local capacity constraints, uncertainty about available federal funding, and the need for coordination among local and federal stakeholders.

No Funding for Grid Recovery Projects Has Been Approved, including Funding for Priority Projects to Address Key Grid Vulnerabilities

FEMA and other federal agencies are working with local entities in Puerto Rico to determine how to carry out grid recovery projects. As of July 2019, FEMA had not approved funding for FEMA permanent work grid recovery projects, and HUD had not provided CDBG-DR funding for grid recovery work.[41] Priorities for permanent work are still being established and, as of July 2019, COR3 had submitted several permanent work grid recovery projects to FEMA for eligibility review. On June 26, 2019, FEMA obligated $111 million for architectural and engineering design services for design work for electricity grid recovery projects.[42]

To guide recovery planning, COR3 and PREPA have developed a Grid Modernization Plan for Puerto Rico that identifies $20.3 billion in potential investments to modernize the Puerto Rico electricity grid.[43] According to the plan, COR3 and PREPA incorporated

[41]To support the initial restoration of power in Puerto Rico, FEMA obligated about $1.9 billion for Public Assistance projects for emergency work for the electricity grid. This includes funding for emergency repair of the electricity grid and transmission lines and assistance from other utilities to restore service. Of the $1.9 billion obligated for emergency work projects for related to the restoration of power in Puerto Rico, FEMA had disbursed approximately $1.4 billion, as of June 30, 2019. According to FEMA officials, temporary work projects, begun during emergency power restoration and continuing, have addressed many pre-existing vulnerabilities in a permanent way by replacing damaged components with new code-compliant components, but many outstanding issues await permanent solutions or mitigation.

[42]According to FEMA, engineering and design work have been funded to enable PREPA and its contractors to design permanent work projects and contribute to the fixed cost estimates required under Section 428.

[43]COR3, PREPA, and their consultants prepared the draft *Grid Modernization Plan for Puerto Rico*, July 2019. The plan was developed to align with the energy sector recovery goals presented in Puerto Rico's economic and disaster recovery plan (Office of the Governor of Puerto Rico, *Transformation and Innovation in the Wake of Devastation*). For the energy sector, Puerto Rico's economic and disaster recovery plan estimated that $30 billion was needed to build a grid capable of withstanding a major storm event and identified a number of priorities, including the construction of new generation

recommendations from previous studies examining options to enhance Puerto Rico's electricity grid against future storm events and aimed to align this plan with PREPA's draft integrated resources plan, which is currently under review by PREB.[44] In addition to describing plans for electric grid modernization, the plan also provides guidance to FEMA on how to organize and evaluate funding support for requests for energy projects. The largest portion of the $20.3 billion plan is about $12.2 billion (60 percent of the total) to rebuild transmission, substation, and distribution systems to improve their ability to withstand hurricane conditions. In addition, the plan includes

- about $3.9 billion (19 percent) to improve the reliability of existing generating units;
- about $1.8 billion (9 percent) for infrastructure to enable grid operators to better monitor customer demand and facilitate expansion of rooftop solar technology;
- about $1.8 billion (9 percent) to implement a more decentralized grid including microgrids; and
- the remaining investments to improve operational controls and enhance system operations, preparedness, and security.

Table 4 describes the proposed plan for investments in Puerto Rico's electricity grid.

capacity, rebuilding and upgrading transmission and distribution lines, incorporating smart grid capabilities, and adopting updated operational technology systems.

[44]The plans and recommendations COR3 used to support the development of the Grid Modernization Plan include: Office of the Governor of Puerto Rico, *Transformation and Innovation in the Wake of Devastation*; Puerto Rico Energy Resiliency Working Group, *Build Back Better*; U.S. Department of Energy, *Energy Resilience Solutions for the Puerto Rico Grid* (Washington, D.C.: June 2018); Federal Emergency Management Agency, *2017 Hurricane Season After Action Report*, July 2018.

Table 4: Elements of Puerto Rico's Proposed Grid Modernization Plan for the Electricity Grid

Category	Funding needed	Areas identified for investment
Transmission and Substations	$6.5 billion	• Enhancement of 230-kilovolt transmission system • Reinforcement or relocation of substations • Hardening of lower voltage 115-kilovolt transmission lines • Rebuilding of transmission lines to a more common design standard
Distribution	$5.7 billion	• Pole strengthening • Flood-proofing equipment and underground deployment • Automation and relocation of inaccessible lines
Generation	$3.9 billion	• Additional renewable energy generation capacity, including battery storage • Upgrades or conversion of existing generation assets
Distributed Energy Resources & Microgrids	$1.8 billion	• Establishing microgrids for key infrastructure
Technology	$1.8 billion	• Grid automation • Metering systems • Smart street lights • Customer systems
Security	$290 million	• Physical security controls • Cybersecurity and physical security staffing • Assessment, planning, testing, and implementation
System Operations	$215 million	• Hardening of Information Technology infrastructure system and distribution control centers • Post-hurricane system restoration and planning studies • Hardening and expansion of selected generation control rooms
Emergency Preparedness	$112 million	• Development of emergency response plans • Equipment for hurricane response and related inventory management

		• Development of mutual assistance plans and memoranda of understanding
Operational Efficiency	$21 million	• Educational Outreach • Transmission and distribution training facility • Asset management program
Regulatory & Policy	$12 million	• Codes and standards revised to require transmission and distribution that can withstand hurricane conditions • Policy to ensure effective implementation of the Grid Modernization Plan
Total	**$20.3 billion**	

Source: GAO analysis of the *Grid Modernization Plan for Puerto Rico*, Prepared for COR3, July 2019. | GAO-20-141

Note: The plan described is from the July 2019 draft of the *Grid Modernization Plan for Puerto Rico*. The draft will evolve and is subject to revision pending input from FEMA, other stakeholders, and the integrated resource planning process, according to Central Office for Recovery, Reconstruction, and Resiliency officials.

Some of the priority projects that the July 2019 plan outlined were identified soon after the hurricanes hit, but limited progress has been made on addressing them. Specifically, COR3 and PREPA have identified priority projects to address outstanding grid vulnerabilities and projects to improve the transmission, distribution, and generation infrastructure.[45] However, projects to address key grid vulnerabilities identified in the months following the storm are not likely to be complete 2 years after the hurricanes. For example, a number of critical substations require repair or hardening against future weather events and are in danger of failure, according to documents we reviewed and stakeholders we interviewed. According to the Grid Modernization Plan, COR3 has identified 18 substations in need of priority repairs.[46] Based on damage assessments conducted by

[45]Some priority projects identified in the recovery plan include hardening of north-south transmission lines to San Juan, relocating overhead lines subject to high wind exposure and potential tree damage underground, and improving generation assets to incorporate future renewable generation infrastructure. According to FEMA, some of these grid vulnerabilities include pre-existing conditions such as aging equipment, building roof leaks, corroded connections, rusted equipment, damaged fencing, and substation yard deficiencies, which cannot all be linked to the storm or storm damaged systems.

[46]According to FEMA, as of July 2019, 17 substations are in need of priority repairs; the Punta Lima substation has been taken off the list of priorities because the outcome of other plans for generating power on the islands will impact plans for the substation. According to FEMA, Punta Lima substation is unique due to its location, on

New York Power Authority in October 2017, these substations are unreliable and should be relocated or elevated above the flood plain. Overall, 252 of PREPA's 334 substations experienced some level of storm damage. Figure 3 shows damage at three different critical substations, including the Punta Lima substation, in Puerto Rico.

Figure 3: Evidence of Damage and Flooding from Hurricanes Irma and Maria at Critical Substations in Puerto Rico

Source: New York Power Authority. | GAO-20-141

the shore close to where Hurricane Maria made landfall, and because it is the source of power for the islands of Vieques and Culebra.

According to the Grid Modernization Plan, while initial repairs were made to substations to enable their return to normal operation, equipment remains at risk, with many components obsolete or below current design standards. Some stakeholders report that the substations are in danger of imminent failure. According to DOE, substations found within flood areas should be relocated, raised, or waterproofed—this is particularly important for key substations that are deemed essential to the reliability of the overall transmission and distribution infrastructure or are associated with key generating assets.[47] Stakeholders have also identified grid vulnerabilities such as aging transmission breakers, transformers, sagging overhead lines, and other equipment that are priorities in need of repair.[48] According to PREPA, New York Power Authority, and DOE officials we spoke to, these vulnerabilities negatively affect reliability under normal conditions and are likely to result in system-wide failures during another hurricane season.

DOE Has Provided Technical Assistance to Support Puerto Rico's Grid Recovery Planning, including Modeling to Identify Key Grid Vulnerabilities

DOE has provided a range of technical assistance, including recommendations, to various stakeholders to support grid recovery efforts and enhance resilience in Puerto Rico. Specifically, DOE is providing support on how to improve grid resilience in Puerto Rico in the following ways.

Recommendations to inform investments in resilience. In June 2018, DOE issued a report that included recommendations to help inform investments in Puerto Rico's energy infrastructure resilience.[49] DOE's recommendations included both near-term and potential long-term actions that would require further analysis to inform investment decisions. For example, DOE recommended that substations should be hardened using revised flood estimates.

Technical assistance to PREPA to model system operations. In November 2018, DOE and its National Laboratories completed the first phase of its Multi-Lab Near-Term Grid Modeling Support

[47]U.S. Department of Energy, *Energy Resilience Solutions for the Puerto Rico Grid*.

[48]According to FEMA, these vulnerabilities include equipment that is at or near the end of its economic lifecycle and PREPA has historically struggled with budgeting and implementing a capital plan to address these issues.

[49]U.S. Department of Energy, *Energy Resilience Solutions for the Puerto Rico Grid*.

for Puerto Rico, an effort to support the recovery of Puerto Rico's electricity grid.[50] This included modeling to

- show interdependencies and predict storm impacts on electricity, fuel, and telecommunications infrastructure;
- provide data on renewable generation and identify potential locations for new generation;
- identify, evaluate, and rank opportunities for investing in distribution system improvements; and
- provide recommendations for energy storage and microgrid deployment.

DOE's and the National Laboratories' efforts resulted in a December 2018 report that summarized DOE efforts and identified potential operational and capital improvements.[51] In addition, in June 2019, DOE officials told us that they provided a report to PREPA that included investment considerations that Puerto Rico

- add 1200 to1600 megawatts of generation in the San Juan area,
- implement a vegetation management program,
- address 18 critical substations damaged by the storms, and
- pursue a workforce development plan necessary for effective grid operation.

In addition, DOE and lab personnel also provided 2 weeks of training to PREPA personnel on the results of DOE's modeling effort. DOE also told us they are in the early stages of a partnership with the University of Puerto Rico to develop the technical capacity of PREPA's workforce.

Additional DOE technical assistance. DOE has also taken steps to provide technical comments to the Puerto Rico Energy Office and the National Association of State Energy Offices in the ongoing

[50]Argonne National Laboratory, the National Renewable Energy Laboratory, Oak Ridge National Laboratory, Pacific Northwest National Laboratory, and Sandia National Laboratories participated in this modeling effort.

[51]Argonne National Laboratory, et al., *Multi-Lab Near-Term Grid Modeling Support for Puerto Rico: Phase 1 Final Report* (Washington, D.C.: December 2018).

development of Puerto Rico's Energy Assurance Plan, according to DOE and local officials.[52] In addition, DOE awarded $850,000 to the Southern States Energy Board—an interstate compact composed of governors and state legislators from 16 southern states, Puerto Rico, and the U.S. Virgin Islands—to help Puerto Rico's government evaluate the issues and options for future regulation of the Puerto Rico electric grid. According to a Southern States Energy Board report issued in November 2018, it is leading a task force to

- build a stakeholder participation network of government, industry, academia, and the public;
- create potential legislative options for an electric energy grid system;
- define the long-term goals and objectives of policies and a regulatory framework; and
- review risks associated with privatization of PREPA.[53]

The report discussed the possible privatization of PREPA in light of a variety of factors, including the utility's fiscal status and the condition of existing infrastructure.

Challenges Hindering Progress on Grid Recovery include Uncertainty about FEMA Funding Eligibility, Capacity Constraints, Uncertainty about Federal Funding and a Need for Coordination

Local and federal government officials and other stakeholders we interviewed and documents we reviewed identified challenges in the following areas that are hindering progress on grid recovery efforts in Puerto Rico.

Uncertainty about FEMA funding eligibility. According to local officials, FEMA has not provided sufficient guidance on how it will implement new authorities and determine eligible uses of FEMA funding to guide grid recovery efforts. As discussed earlier, in 2018, the federal government enacted two new authorities—the Bipartisan Budget Act of 2018 (BBA) and the Disaster Recovery Reform Act

[52]According to the National Association of State Energy Offices, the goal of energy assurance planning is to achieve a robust, secure, and reliable energy infrastructure that is able to restore services rapidly in the event of a disaster.

[53]Southern States Energy Board, *Blue Ribbon Task Force Report: Strategizing an Electric Energy Policy and Regulatory Framework in Puerto Rico and Blue Ribbon Task Force Recommendations* (Peachtree Corners, Ga.: November 2018).

(DRRA) of 2018—that provide greater flexibility to restore facilities to industry standards and enhance resilience.[54] The Bipartisan Budget Act of 2018 includes authorities applicable to the response to Hurricanes Irma and Maria in Puerto Rico and the U.S. Virgin Islands for determining the eligibility of work under PA alternative procedures to restore facilities and systems that provide critical services, including electric utility services. Specifically, FEMA has the authority (under Section 20601) to provide assistance to

- replace or restore the function of a facility or system to industry standards without regard to the pre-disaster condition of the facility or system; and
- replace or restore components of a facility or system not damaged by the disaster where necessary to fully effectuate the replacement or restoration of disaster-damaged components to restore the function of the facility to industry standards.[55]

In addition, the DRRA calls for the inclusion of measures that increase resilience. The DRRA amended provisions of the Stafford Act to provide that FEMA is to fund work consistent with the latest published editions of relevant consensus-based codes, specifications, and standards, among other things.[56] Specifically, the DRRA calls for FEMA to use the latest published editions of relevant consensus-based codes, specifications, and standards that incorporate the latest hazard-resistant designs and establish minimum acceptable criteria for the design, construction, and maintenance of residential structures and facilities that may be eligible for assistance under the Stafford Act for the purposes of protecting the health, safety, and general welfare of a facility's users against disasters and in a manner that allows the facility to meet the definition of resilient.[57]

[54]Pub. L. No. 115-123 (2018) and Pub. L. No. 115-254 (2018).

[55]Section 601 of the Additional Supplemental Appropriations for Disaster Relief Act, 2019 states that FEMA shall implement this provision to include the costs associated with addressing pre-disaster condition, undamaged components, codes and standards, and industry standards in the cost of repair when determining whether repair or replacement is eligible for funding. Pub. L. No. 116-20 (2019); 44 C.F.R. § 206.226(f).

[56]Pub. L. No. 115-254, § 1235(b)(1)(A).

[57]Previously, costs were eligible for reimbursement only for repairs or rebuilding to existing codes and standards "applicable at the time at which the disaster occurred." The act requires FEMA, in consultation with the heads of relevant federal departments and agencies, issue final rulemaking to define resilient by April 2020 and issue interim

FEMA headquarters issued a policy for implementing section 20601 of the 2018 Bipartisan Budget Act in September 2018. In early 2019, officials from FEMA headquarters, COR3, and the FEMA Puerto Rico Joint Recovery Office participated in briefings on implementing the 2018 Bipartisan Budget Act, in addition to reviewing PA alternative procedures.[58] In its policy, FEMA states that it will maximize supplemental assistance available through the act to improve recovery outcomes and will implement its new authority in a consistent manner.[59] According to the policy, FEMA may approve standards that are widely accepted and used or best practices that are generally accepted by experts in the industry. FEMA's policy states that FEMA may identify and apply relevant industry standards, but it may be necessary to adjust industry standards to be appropriate to the needs of the community. In addition, FEMA will evaluate the reasonableness of projects to ensure funds are used in an appropriate manner based on the intent to improve the resilience of the critical services defined in the 2018 Bipartisan Budget Act.

Even after FEMA issued its Bipartisan Budget Act policy in 2018, COR3 and PREPA officials said there is still uncertainty among local officials about how FEMA plans to implement its new authorities. Moreover, COR3 stated concerns that FEMA will not implement the Bipartisan Budget Act authority to provide funding to improve and modernize the grid to make it more resilient to future disasters. In particular, FEMA has not indicated how it will implement the Bipartisan Budget Act authority for electricity grid recovery in Puerto Rico and the agency has not clearly indicated what industry standards or resilience measures it will deem eligible for funding, according to COR3. Further, according to COR3, FEMA has not provided clear written information on whether projects incorporating certain approaches to enhance

guidance pending the issuance of final regulations. According to FEMA, it is expected to issue interim guidance in September 2019.

[58]According to FEMA, since February 2019, each sector has been working together to implement BBA as appropriate in accordance with policy. FEMA stated that guidance on how to implement policy for specific types of facilities, such as the electricity grid, is provided by the FEMA staff working in each sector.

[59]The policy applies to facilities or systems when the facility or system provides power, water, or other critical services or is an administrative or support building essential to the provision of the critical service; the facility is part of a FEMA PA alternative procedures permanent work pilot project; the cost to repair only the disaster damage at the site equals or exceeds $123,100 (the threshold for a large project) prior to any insurance reductions and the disaster damage adversely impacts the function of the facility or system as it relates to the critical service. FEMA, Recovery Policy (FP-104-009-5 Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program) September 14, 2018.

resilience, such as smart grid technology, will be eligible for funding under the new authority.[60] According to DOE's June 2018 report,[61] DOE, New York Power Authority, PREPA, FOMB, and Congressional Research Service all recommended that Puerto Rico increase the grid's smart capabilities, such as by upgrading control systems to improve the ability to monitor and provide information on grid conditions. In particular, smart grid technology is essential for adopting distributed energy resources and renewable energy projects—key components of Puerto Rico's Grid Modernization Plan, according to COR3 officials.[62]

According to FEMA officials, not all of the elements of Puerto Rico's Grid Modernization Plan are required to repair the grid and therefore may not be eligible for FEMA funding; some elements of the plan focus on increasing the capacity of the system and do not address storm damage. COR3 officials said that FEMA's opinion and guidance is needed on the treatment of certain projects and how to relate them to FEMA's requirements to determine eligibility; this is especially true for hazard mitigation funding for resilience initiatives and the technologies needed to support those. According to FEMA officials, FEMA will not fund costs associated with technologies that were not in place prior to the storm, such as smart grid technology, unless it determines adopting such technologies is a reasonable way to promote resilience. Officials also stated they will make these determinations on a case-by-case basis. According to FEMA, it has informed both COR3 and PREPA that "industry standards" are those

[60]The electric power industry—including transmission and distribution systems—increasingly uses smart grid technologies, which include information and communications systems to automate actions with the aim of improving the electric grid's reliability and efficiency as well as facilitating the use of alternative energy sources. GAO, *Electricity Grid Modernization: Progress Being Made on Cybersecurity Guidelines, but Key Challenges Remain to Be Addressed*, GAO-11-117 (Washington, D.C.: Jan. 12, 2011). The Energy Independence and Security Act of 2007, establishes the policy of the United States to support modernization of the nation's electricity grid through, among other things, deployment of smart technologies and calls for federal matching funding for smart grid investment costs. Pub. L. No 110-140, 121 Stat. 1492 (2007).

[61]U.S. Department of Energy, *Energy Resilience Solutions for the Puerto Rico Grid*.

[62]We previously reported on the possible benefits of smart grid technologies, including: improved reliability from fewer and shorter outages; downward pressure on electricity rates due to the ability to shift peak demand; an improved ability to transmit power from alternative energy sources such as wind; an improved ability to detect and respond to potential attacks on the grid; and an improved ability for consumers to make more informed choices about when to use electricity, particularly when demand and prices are high. Although utilities across the country are increasingly deploying smart grid technologies, state utility regulators evaluate applications for smart grid investments on a case-by-case basis. GAO-11-117.

standards required to meet the norm in the industry for a functional, safe and reliable power system, and smart grid technology is not required for the power systems to function safely and reliably according to industry norms. According to FEMA's written policy for implementing section 20601 of the 2018 Bipartisan Budget Act, FEMA may also approve best practices that are generally accepted by experts in the industry. PREPA has not formally requested funding from FEMA for the addition of this technology, so FEMA has not formally denied the request, according to FEMA. However, according to FEMA officials, it has clearly stated that, based on the information provided to date, this work likely will not be eligible for FEMA PA funding.[63]

It is more difficult for local entities to design and plan grid recovery projects without clear information on how FEMA plans to apply aspects of the policy related to industry standards and resilience, according to COR3 and PREPA officials. According to these officials, FEMA officials have provided oral feedback during meetings, but this feedback has also been unclear. According to FEMA officials, developing a policy to implement the new authority created challenges for FEMA in establishing clear guidance and eligibility criteria but they believe the policy has been clear since early 2019. FEMA officials stated in July 2019 that after the BBA policy was published in September 2018, through subsequent discussions and trainings provided to FEMA and local entities in Puerto Rico, FEMA officials believed they had reached a point of clarity and understanding with local entities. According to FEMA, industry standards must be submitted to FEMA for approval and, as of July 2019, the only request for approval of an industry standard for the grid that FEMA had received was for the U.S. Department of Agriculture's Rural Utilities Service standards, which FEMA approved in May 2019.[64]

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[63]According to FEMA, the agency is not authorized to apply all aspects of an industry standard, only those that affect the restoration of an impacted function for facilities that provide critical services and meet the criteria for BBA applicability. Federal Emergency Management Agency, Implementing the Bipartisan Budget Act and Public Assistance Alternative Procedures for Permanent Work (DR-4339), presentation in February 2019.

[64]The U.S. Department of Agriculture's Rural Utilities Service standards govern the engineering and component specification of all voltage ranges of electrical transmission and distribution networks used by every rural electric utility in North America that borrows from these standards. DOE previously recommended that these standards be adopted where feasible and appropriate to standardize equipment and design in Puerto Rico. U.S. Department of Energy, *Energy Resilience Solutions for the Puerto Rico Grid*.

As of August 2019, FEMA was updating its BBA policy to, among other things, provide further clarity about the process for identifying and approving industry standards, according to FEMA officials.[65] However, FEMA did not provide information on anticipated time frames for completing this update to its policy and, according to FEMA, the revised policy will not address how FEMA plans to implement the DRRA provision with regard to resilience. FEMA also said that the DRRA would not apply to critical services, including the electricity grid, in Puerto Rico. In addition, FEMA officials expressed concerns about the potential resources required to develop written sector-specific information for local entities. FEMA stated that guidance on how to implement policy for specific types of facilities, such as the electricity grid, is provided by the FEMA staff working in each sector, and FEMA energy sector staff meet regularly with COR3 and PREPA to discuss specific concerns or issues with the implementation of the BBA.

Federal internal control standards state that agencies should externally communicate the necessary quality information to achieve their objectives.[66] The standards also state that management should design control activities to achieve objectives and respond to risks, by, for example, clearly documenting internal controls in management directives, administrative policies, or operating manuals. Without clarifying how FEMA will implement new authorities for grid recovery projects—including information on industry standards and defining resilience—local entities do not have sufficient information to implement the Grid Modernization Plan and determine what type of projects will be eligible for funding. Moreover, local entities risk spending resources and federal funding for consultants to develop and design projects that ultimately may not be eligible for funding. In addition, given the number and scope of new authorities that FEMA is implementing in Puerto Rico, clarification in the form of additional policy, guidance or new regulations, as appropriate, could provide the agency with greater assurance that staff implement these authorities consistently.

Lack of HUD requirements. There are no published requirements for HUD CDBG-DR funds for mitigation or for enhancing and improving

[65]On June 6, 2019, the Additional Supplemental Appropriations for Disaster Relief Act of 2019 was signed into law with a provision directing FEMA to include certain costs when calculating repair versus replacement costs in its implementation of the BBA authority. FEMA is updating its policy to incorporate this change. Pub. L. No. 116-20, § 601.

[66]GAO, *Standards for Internal Control in the Federal Government*, GAO-14-704G (Washington, D.C.: Sept. 10, 2014).

Puerto Rico's electricity grid, and HUD does not have anticipated time frames or a plan for publication of these requirements, according to HUD officials. Specifically, HUD has published the grant process and requirements for $9.7 billion in CDBG-DR funding but has not done the same for an additional $8.3 billion available for mitigation or for the portion of the $2 billion in CDBG-DR funding appropriated for enhancing or improving the electricity grid that will be available to Puerto Rico. Regarding the CDBG-DR mitigation funding, the Additional Supplemental Appropriations for Disaster Relief Act, 2019 requires HUD to publish the requirements by September 2019.[67] Regarding the additional $2 billion for improving the electricity grid, HUD officials told us they were working on developing the requirements for the grid funding, including consulting with DOE and FEMA, which are taking the lead with grid recovery.

According to HUD officials, this is the first time HUD has received supplemental CDBG-DR appropriations specific to a sector and purpose and it has had to develop and finalize the requirements for other sizable appropriations, including the mitigation funding. HUD officials said that they do not have time frames established for finishing the development and publication of the grant process and requirements for the grid funding. The local cost share required for FEMA projects could come from CDBG-DR funds. As discussed above, the deadline for agreeing on fixed-cost estimates for these projects is October 2019. Federal internal control standards state that agencies should externally communicate the necessary quality information to achieve their objectives.[68] In addition, these standards call for management to define objectives clearly, for example by clearly defining what is to be achieved, who is to achieve it, how it will be achieved, and the time frames for achievement. Yet, as of July 2019, 17 months after HUD received electricity-specific CDBG-DR appropriations and 3 months prior to the deadline for fixed cost estimates for FEMA projects, local entities do not have information on the grant process and requirements for how Puerto Rico's portion of the $2 billion in CDBG-DR funding may be used. Without a timeframe and a plan for providing such information, grid recovery planning efforts are more complicated and local entities do not have complete information on available funding and therefore may spend time

[67]Pub. L. No. 116-20.

[68]GAO-14-704G.

and other resources developing projects that ultimately may not be approved.[69]

Assessment of grid damage. FEMA will not fund large permanent work projects until the agency and recipients agree on the damage assessment. FEMA and PREPA have reached agreement on some damage assessments but given the extent of the grid damage, assessing disaster-related damage has posed a challenge for developing projects, according to some local and federal officials and stakeholders. In particular, assessing the damage for the entire electricity grid, including every utility pole and transmission tower, would be cumbersome and slow the pace of grid recovery, according to PREPA and COR3 officials. According to COR3, discussions have been under way about using a sampling methodology to streamline damage assessments. According to FEMA documents, the Bipartisan Budget Act reduces, but does not eliminate, FEMA's need to differentiate damage caused by Hurricane Maria from pre-existing damage.[70] FEMA's Cost Analysis and Validation teams have been developing sampling methodologies for damage assessment, according to FEMA officials. COR3, PREPA, and FEMA are coordinating to determine the appropriate methodology for damage assessment, according to COR3 officials.

PREPA's capacity constraints, management, and oversight. Based on our review of documents and interviews with federal and local officials, PREPA's capacity constraints, including its financial condition and workforce difficulties, pose challenges for grid recovery efforts. Specifically, COR3 and FEMA officials said that FEMA and local entities face challenges working with PREPA on grid recovery efforts because of its lack of capacity. As discussed above, PREPA is bankrupt, and,

[69]We previously reported that CDBG-DR appropriations require HUD to customize grant requirements for each disaster in *Federal Register* notices—a time-consuming process that has delayed the disbursement of funds. GAO-19-232. We recommended that Congress consider legislation establishing permanent statutory authority for a disaster assistance program administered by HUD or another agency that responds to unmet needs in a timely manner and direct the applicable agency to issue implementing regulations. According to HUD officials, such a permanent authority for the disaster assistance program administered by HUD would not alleviate the need for HUD to customize grant requirements for appropriations for specific purposes such as the $2 billion in CDBG-DR funding for the electricity grid.

[70]Federal Emergency Management Agency, Implementing the Bipartisan Budget Act and Public Assistance Alternative Procedures for Permanent Work, presentation in March 2019. The presentation describes the need to document the link between disaster damage and the eligible scope of work and cost by including several components in the Damage Description and Dimensions and/or Scope of Work, as applicable.

as we reported in April 2019, PREPA's financial challenges led to poor maintenance practices and underinvestment in the electricity grid.[71] For example, prior to Hurricane Maria, PREPA had cancelled its vegetation management program due to financial constraints.[72] With limited financial resources of its own, PREPA is more reliant on federal funding for all aspects of grid recovery. Moreover, PREPA faces staffing challenges, including high staff turnover and a shrinking workforce. As a result of these capacity challenges, federal officials and other stakeholders expressed concerns about PREPA's ability to effectively plan for and manage federal investments and to operate and maintain the grid.

Stakeholders also identified concerns about PREPA management's capacity to manage federal investments. Specifically, some local government officials told us that federal funding provided to PREPA should be accompanied by embedded federal support for compliance and monitoring of federal funds. Moreover, a former FOMB official proposed the creation of an independent federal coordinator to oversee grid recovery efforts in Puerto Rico who would also be involved in any procurement activity involving federal recovery funds.

While local efforts are under way to restructure PREPA and strengthen the utility's oversight, the outcome of these efforts is uncertain, posing risks to federal investments, according to federal officials and other stakeholders. According to a Southern States Energy Board report, the way in which the concession of the transmission system is established and generation assets are privatized will affect options for transforming the electricity system.[73] According to a FOMB official and local entities involved in the restructuring of PREPA, the selection of a private entity to operate and maintain the transmission and distribution system is expected to be complete by the end of 2019, with the transfer of management responsibilities to a private operator in 2020. Local officials said that PREPA will retain ownership of assets and continue to be the subrecipient of federal funding for grid

[71] GAO, *2017 Hurricane Season: Federal Support for Electricity Grid Restoration in the U.S. Virgin Islands and Puerto Rico*, GAO-19-296 (Washington, D.C.: Apr. 18, 2019).

[72] GAO-19-296.

[73] Southern States Energy Board, *Blue Ribbon Task Force Report*. Also, according to some local officials and stakeholders, while public and nonprofit utilities can be eligible recipients of FEMA PA funding, FEMA will not accept permanent work proposals for assets designated for privatization. Investor-owned utilities may not be eligible for certain forms of federal funding because, as for-profit entities, they can claim federal tax deductions and allocations to offset losses from disasters.

recovery; however, the future composition and structure of PREPA's management and its employees is not clear.

In addition, several documents and stakeholders cited the need for an independent and robust regulator of the electricity utility to ensure transparency and effective management and operations. Local efforts are under way to improve the oversight of PREPA; specifically, the Puerto Rico Energy Public Policy Act, passed in April 2019, aims to strengthen the authorities and functions of the PREB as a regulatory entity.[74] The PREB is currently in the process of developing a staff structure and compensation system to establish a dedicated career staff.

Uncertainty about multiple federal funding sources available and need for coordination. Uncertainty about the multiple federal funding sources available and coordination among local and federal entities involved in grid recovery in Puerto Rico pose challenges for grid recovery, according to local and federal officials we interviewed. COR3 and PREPA have developed a Grid Modernization Plan but the timing and amount of federal funds are uncertain, making it difficult to prioritize and develop projects, according to COR3 officials. Multiple sources of federal funding are available, but each funding source has different eligibility criteria, requirements, and time frames.[75] FEMA PA funding is available to repair or replace disaster-damaged facilities—damage that local entities and FEMA are still assessing. In addition, as stated above, HUD has not specified requirements for the CDBG-DR funding that the federal government appropriated for enhancing or improving the grid in Puerto Rico. According to FEMA

[74]According to a former PREB official, the agency's ability to enforce its regulatory framework has been limited in practice. Specifically, the agency has faced significant budgetary and staffing constraints. According to other PREB officials, Act 17-2019, *Puerto Rico Energy Public Policy Act* (Apr. 11, 2019), increases PREB's annual budget from $5 million to $20 million. The act also broadens PREB's budget autonomy and strengthens its powers and authorities to establish performance-based incentives and penalties for entities under its jurisdiction.

[75]In our July 2015 report on Hurricane Sandy, we found that different federal disaster response programs are initiated at different times, making it challenging for state and local officials to determine how to use federal funds in a comprehensive manner. We reported that 12 of 13 states and cities that we surveyed responded that navigating the multiple funding streams and various regulations was a challenge that affected their ability to maximize disaster resilience opportunities. 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). In addition, we previously reported that CDBG-DR grantees have faced challenges coordinating the use of CDBG-DR funds with other disaster recovery programs that are initiated at different times and administered by other agencies. GAO-19-232.

officials, the Recovery Support Function Leadership Group (RSFLG) is developing information for local entities to guide recovery efforts including an estimate of federal funding available for grid recovery. As of July 2019, this estimate was not finalized and had not been shared with COR3 but, according to FEMA, feedback on concepts, potential funding gaps, eligibility and scopes of work for each project proposed for FEMA funding has been shared with COR3 and PREPA at meetings and in correspondence.

Given the uncertainty and complexity of available federal funding sources for grid recovery, in addition to the efforts under way to restructure PREPA's management and oversight, extensive coordination across local and federal entities will be needed to identify the amount of funding and appropriate sources to support Puerto Rico's grid recovery efforts and refinement of the Grid Modernization Plan.[76] To date there have been various coordination mechanisms, but these have not included all relevant local stakeholders and federal agencies. First, the RSFLG provides a mechanism for coordinating national policy and strategy across federal agency leadership, but local entities involved in grid recovery do not participate in these meetings. In addition, the RSFLG Energy Subgroup is also comprised of federal agencies and plays a role in cross-agency collaboration specific to the energy sector. Moreover, FEMA's Puerto Rico Joint Recovery Office will work with COR3, applicants, and federal partners to identify available funding mechanisms and efforts needed to complete proposed work for Puerto Rico's recovery plans, according to FEMA officials. This office will also fully embrace partnership and collaboration to help Puerto Rico evaluate current and anticipated recovery needs and access all available resources, including those beyond traditional recovery programs, according to FEMA. To facilitate this assistance, FEMA's Joint Recovery Office, through the Energy Sector, coordinates with local entities through weekly meetings. However, according to local and federal officials, the scope of these meetings is focused on individual projects and PA funding, and DOE and HUD do not participate. According to FEMA, DOE and HUD have had limited participation since these meetings focus on identifying damage and eligibility under the PA program. DOE is utilized as a technical resource to provide expertise and guidance where needed as issues arise and HUD is expected to play a more active role once projects are formulated and

[76]The Grid Modernization Plan will evolve and is subject to revision pending input from FEMA, other stakeholders, and the integrated resource planning process, according to COR3 officials. According to FEMA, it must analyze the work described in the plan to determine eligibility for funding.

the need to identify where HUD funds will be applied becomes more of the focus, according to FEMA.

According to FEMA, the Energy Sector is the mechanism established by FEMA to coordinate local and federal entities involved in grid recovery but, according to FEMA, recent meetings have focused on individual projects and PA funding and FEMA must analyze the work in the grid recovery plan based on Public Assistance eligibility. FEMA guidance outlines broader priorities for the Energy Sector in the Puerto Rico Joint Recovery Office.[77] These priorities include, among others, that the Energy Sector will

- develop plans in accordance with Puerto Rico's fiscal plan, privatization, and any other associated direction from the Commonwealth of Puerto Rico;
- support the creation of a system with diversified generation to enhance resilience;
- review and adjudicate all plans, recommendations, and assessments to aid in the design of a new, innovative, resilient power system;
- assist in the rebuilding and modernizing of the power grid using new technologies to make the system efficient, resilient and sustainable; and
- incorporate renewable technologies, such as wind and solar along with energy storage to decrease costs of the distribution system.

Moreover, FEMA's guidance states that the Joint Recovery Office's Energy Sector is led by a team comprised of representatives from DOE, FEMA, and PREPA and identifies key partners including entities such as FOMB that should be involved in determining solutions.

Coordination has been difficult, according to several local and federal agency officials and stakeholders we interviewed, in part because a mechanism is not in place for coordination among the numerous local and federal entities involved in electricity grid recovery to facilitate decision-making and information sharing among these entities. The Energy Sector has not been working in a manner consistent

[77]FEMA, Puerto Rico Recovery – DR-4336 and DR-4339, Sector-Based Approach Organizational Guidance, August 2018.

with the FEMA guidance describing its goals and priorities and the involvement of key partners. Moreover, according to FEMA's Guide to Permanent Work in Puerto Rico, PA funding should be integrated into a recovery planning process in coordination with the Recovery Support Functions and local and federal agencies, as appropriate, and FEMA will coordinate with the appropriate local and federal agencies in developing scopes of work, formulating projects, and building resilience. Moreover, under the NDRF, FEMA is to lead coordination of all disaster recovery activities and as the lead agency FEMA is responsible for defining other agencies' roles and responsibilities through mission assignments, interagency agreements, or other federal authorities when appropriate. As we have previously reported, to enhance collaboration and decision-making to achieve outcomes, collaborating agencies need to agree on roles, responsibilities, and steps for decision-making, and establish mutually reinforcing or joint strategies.[78] Also, it is important to ensure that the relevant participants have been included in the collaborative effort; this can include other federal agencies, state and local entities, and organizations from the private and nonprofit sectors.[79] Moreover, as we have previously reported, federal agencies have used a variety of mechanisms to implement interagency collaborative efforts, such as the President appointing a coordinator, agencies co-locating within one facility, or establishing interagency task forces.[80] For example, after Hurricane Sandy, the federal government established a task force to ensure government-wide and regional coordination and guidance, including transparent and inclusive decision processes, as communities made decisions about long-term rebuilding.

As stated above, FEMA does not have a mechanism in place that is working to facilitate coordination among the multiple local and federal entities involved in grid recovery in Puerto Rico. As mentioned previously, according to FEMA officials, RSFLG provides a mechanism for coordinating across federal agency leadership and RSFLG agencies communicate with PREPA and COR3 separately on grid recovery issues. According to FEMA officials, coordinating and sharing

[78]GAO, *Managing for Results: Key Considerations for Implementing Interagency Collaborative Mechanisms*, GAO-12-1022 (Washington, D.C.: Sept. 27, 2012); and *Results-Oriented Government: Practices That Can Help Enhance and Sustain Collaboration among Federal Agencies*, GAO-06-15 (Washington, D.C.: Oct. 21, 2005).

[79]GAO-12-1022.

[80]GAO-12-1022. These mechanisms can be used to address a range of purposes including policy development; program implementation; oversight and monitoring; information sharing and communication; and building organizational capacity, such as staffing and training.

information between FEMA and local entities has been challenging and the complexity and magnitude of the Puerto Rico recovery effort compared to previous disasters is unique. A mechanism that is working to facilitate coordination among the multiple local and federal entities could enhance efficiency in delivering federal assistance for grid recovery, optimize efforts to enhance grid resilience, and maximize effective use of available federal funds. Due to the unique circumstances surrounding grid recovery in Puerto Rico—including extensive and unprecedented damage; new authorities FEMA is implementing; a resource-constrained, government-owned utility aiming to hire a private operator; and a new utility regulator in the process of building capacity—federal efforts are needed to enhance coordination and ensure federal agencies can help local entities maximize opportunities to enhance grid resilience. Without such a mechanism, coordination challenges may continue to hinder progress on grid recovery efforts, leaving the electricity grid at risk for severe damage in future extreme weather events. In addition, federal and local entities may need to use limited resources to determine available funding for projects to implement the Grid Modernization Plan.

Moreover, DOE's role in grid recovery in Puerto Rico has not been clearly defined, according to DOE officials. There is no agreement defining roles and responsibilities related to grid recovery for the agencies participating in RSFLG Energy Subgroup meetings, according to DOE officials. As a result, it is unclear to what extent DOE will be involved in grid recovery planning. According to DOE officials, local entities established Grid Modernization Plan working groups to provide input into grid recovery plans, but these groups rarely met; and DOE had little input into the development of the most recent plan. Furthermore, DOE officials do not participate in weekly meetings with FEMA and local entities, and DOE officials were not familiar with FEMA's unified solutions approach.

As we have previously reported, key features of interagency collaboration include written guidance and agreements. Agencies that formally document their agreements can strengthen their commitment to working collaboratively.[81] However, FEMA and DOE have not implemented an interagency agreement that describes DOE's role in supporting Puerto Rico's grid recovery and that

[81] GAO-12-1022. According to FEMA guidance, given the long-term nature of infrastructure recovery, an interagency agreement may be needed. Federal Emergency Management Agency, *Recovery Federal Interagency Operational Plan—Second Edition* (August 2016).

clarifies how FEMA will consult with DOE in grid recovery planning, implementation, and decision-making. According to FEMA officials, FEMA meets and coordinates with DOE on grid recovery, and the RSFLG Energy Subgroup, which DOE participates in, plays a key role in interagency collaboration specific to the energy sector. However, as mentioned previously, DOE's role has not been clearly defined, according to DOE officials. According to FEMA officials, recommendations DOE and other agencies made pertaining to the electricity grid do not affect the amount of funding that FEMA can provide through its PA program because funding decisions are based on eligibility criteria established in regulation and policy. However, FEMA will have to make decisions related to approving industry standards and determining project funding eligibility for enhancing resilience, and it may need to leverage DOE expertise regarding grid recovery approaches, technologies, and industry standards. For example, Puerto Rico's Grid Modernization Plan includes certain design standards for new or rebuilt substations that are highly susceptible to damage. According to PREPA officials, designing substations to these standards may make them more resistant to corrosion in Puerto Rico's climate and require less maintenance, but it is unclear whether FEMA will fund such a rebuild.[82] Without establishing an interagency agreement, DOE's role will continue to not be clearly defined and FEMA may not adequately leverage DOE's expertise to support grid recovery and maximize opportunities to enhance grid resilience.

[82]According to FEMA, these techniques are reviewed under PA guidelines as a repair with associated mitigation; however, the benefit cost analysis for this type of mitigation may not result in its approval.

Conclusions

The federal government will be a major partner in the long-term rebuilding of Puerto Rico's electricity grid after the September 2017 hurricanes. The federal government appropriated billions of dollars to FEMA and HUD programs for recovery and enacted new authorities to ensure that federal funding contributes to rebuilding a grid that is resilient and in better shape than it was before the hurricanes. This effort raises issues regarding the need for consensus on what rebuilding should be done and who will pay for it.

FEMA and HUD have taken some steps to provide information about funding sources that are available for recovery projects, but local entities remain uncertain; this contributed to no long-term grid recovery projects being approved in the 2 years after the hurricanes. Local entities are refining plans and, without clear information from FEMA and HUD on what will be eligible for funding, these entities risk expending resources on consultants to develop projects that may not be eligible for funding. Without information from FEMA clarifying how the agency will implement authorities related to industry standards and defining resilience and from HUD outlining the grant process and requirements for CDBG-DR funding available for electricity improvements, local entities will continue to be uncertain about what is eligible for funding. This uncertainty will limit these entities' ability to develop and implement comprehensive grid recovery plans and leave citizens at risk if another hurricane strikes the island.

Due to the unique circumstances surrounding grid recovery in Puerto Rico—including extensive and unprecedented damage; new authorities FEMA is implementing; a resource-constrained, government-owned utility aiming to hire a private operator; and a new utility regulator in the process of building capacity—federal efforts are needed to enhance coordination and ensure federal agencies can help local entities maximize opportunities to enhance grid resilience. Although FEMA is the focal point for coordination, FEMA does not have a mechanism in place that is working to facilitate communication and coordination among local and federal entities to support Puerto Rico's grid recovery planning efforts. Such a mechanism, or improvements to existing mechanisms, could enhance efficiency in delivering federal assistance for grid recovery, optimize efforts to enhance grid resilience, and maximize effective use of available federal funds. Similarly, though FEMA will make highly technical decisions regarding appropriate standards and measures to enhance resilience as it examines project proposals, DOE's role in the

recovery process has not been clearly defined. Without establishing an interagency agreement, as called for in FEMA guidance, FEMA may not adequately leverage DOE's expertise to support grid recovery and maximize opportunities to enhance grid resilience.

Agency Comments and Our Evaluation

We provided a draft of this report to the Department of Defense, the Department of Homeland Security (DHS), DOE, HUD, and the Commonwealth of Puerto Rico (Puerto Rico) for review and comment. We received written comments from DHS, HUD, and Puerto Rico. These comments are reprinted in appendixes I through III and summarized below. DOE and FEMA provided technical comments which we incorporated as appropriate.

In its written comments, reproduced in appendix I, DHS concurred with the three recommendations directed at FEMA. Specifically:

- The department concurred with our first recommendation that FEMA develop and provide clear written information that clarifies how it will implement new authorities for the electricity grid in Puerto Rico. The department stated that FEMA plans to update existing guidance to provide clarification and additional guidance for implementing authorities under the BBA. However, DHS stated that FEMA will not define resilience as part of these updates. In addition, the guidance that FEMA plans to update is not specific to the electricity grid. The DRRA requires FEMA to define resilient, but DHS stated that the DRRA provision will not affect the assistance provided for the power grid and that guidance on the definition of resilience will not provide additional assistance or clarity to COR3 and PREPA with regard to electricity grid recovery. FEMA has not provided a clear explanation as to why the DRRA provision, which does not conflict with the BBA authority, should not be implemented with regard to critical services in Puerto Rico. We continue to believe that the action we recommended is needed and FEMA should provide clarity on the eligibility of measures that could enhance the resilience of the electricity grid in Puerto Rico. As discussed in the report, without clarifying how FEMA will implement new authorities for grid recovery projects, local entities do not have sufficient information to implement the Grid Modernization Plan and determine what type of projects will be eligible for funding. We will monitor FEMA's efforts as part of our regular recommendation follow-up and additional work examining federal support to improve grid resilience in Puerto Rico.
- The department concurred with our third recommendation that FEMA establish a mechanism for coordination among the multiple local and federal entities involved in grid recovery that facilitates decision-making and information sharing among local

and federal agencies. DHS described FEMA's coordination efforts in Puerto Rico including the role of the Joint Recovery Office (JRO) Energy Sector. In response to the recommendation, DHS stated that FEMA will chronicle the purpose and function of the JRO Energy Sector and its Unified Solutions Group in writing to COR3, PREPA, DOE and other stakeholders, to ensure the best use of expertise as eligibility decisions are made. In response to the draft report, FEMA also provided technical comments describing various coordination mechanisms and additional documentation describing the sector-based organization in the JRO Energy Sector. We incorporated this information into our report and, as such, we have revised the third recommendation to state that FEMA should establish a mechanism, or take steps to improve existing mechanisms, for coordination among the multiple local and federal entities involved in grid recovery. We also note that the guidance FEMA provided in response to our draft report describes priorities for the JRO Energy Sector that go beyond the scope of the current JRO Energy Sector's focus on individual projects and Public Assistance funding. For example, the priorities include assisting in the rebuilding and modernizing of the power grid using new technologies to make the system efficient, resilient, and sustainable.

- The department concurred with our fourth recommendation that FEMA, in coordination with DOE, should establish an interagency agreement to define roles and responsibilities to clarify how FEMA will consult with DOE in grid recovery planning, implementation, and decision-making. The department stated that DOE and FEMA are in the process of preparing an interagency agreement to clarify how FEMA will leverage DOE expertise in grid recovery planning, implementation, and decision-making going forward.

In its written comments, reproduced in Appendix II, HUD stated its appreciation for our recommendation that HUD establish time frames and a plan for publication of the grant process and requirements for CDBG-DR funding available for improvements to Puerto Rico's electricity grid. In response to the recommendation, the department stated that the Office of Community Planning and Development has prioritized hazard mitigation and electrical grid funding and that it has been working closely with its federal partners at DOE, FEMA, and the Office of Management and Budget on the requirements for CDBG-DR electrical grid funding. The department did not specifically state whether it would establish time frames and a plan for publication of the grant process and requirements for CDBG-DR funding available

for improvements to Puerto Rico's electricity grid. We continue to believe that the action we recommended is needed and, as discussed in the report, without information from HUD outlining the grant process and requirements for CDBG-DR funding available for electricity improvements, local entities will continue to be uncertain about what is eligible for funding. We will monitor HUD's efforts as part of our regular recommendation follow-up and additional work examining federal support to improve grid resilience in Puerto Rico.

In its written comments, reproduced in Appendix III, Puerto Rico agreed with our recommendations to FEMA and HUD, and stated that grid recovery and enhancement are critical components of every economic and humanitarian initiative in Puerto Rico. In addition, Puerto Rico stated that to develop recovery plans with local and federal partners, they need FEMA and HUD to make available the guidelines and framework in which to develop these plans. In addition, Puerto Rico stated that it encourages FEMA to implement a meaningful interagency coordination process consistent with the National Disaster Recovery Framework that is inclusive of PREPA, COR3, HUD, DOE, the U.S. Army Corps of Engineers and other stakeholders.

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

If you or your staff have any questions about this report, please contact me at (202) 512-3841 or ruscof@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix IV.

Frank Rusco

Director, Natural Resources and Environment

Congressional Addressees

The Honorable Michael Enzi
Chairman
Committee on the Budget
United States Senate

The Honorable Ron Johnson
Chairman
The Honorable Gary C. Peters
Ranking Member
Committee on Homeland Security and Governmental Affairs
United States Senate

The Honorable Marco Rubio
Chairman
Committee on Small Business and Entrepreneurship
United States Senate

The Honorable Rand Paul, M.D.
Chairman
Subcommittee on Federal Spending Oversight and Emergency Management
Committee on Homeland Security and Governmental Affairs
United States Senate

The Honorable Maxine Waters
Chairwoman
Committee on Financial Services
House of Representatives

The Honorable Bennie Thompson
Chairman
Committee on Homeland Security
House of Representatives

The Honorable Elijah Cummings
Chairman
The Honorable Jim Jordan
Ranking Member
Committee on Oversight and Reform
House of Representatives

The Honorable Nydia Velázquez
Chairwoman
Committee on Small Business

House of Representatives

The Honorable Peter DeFazio
Chairman
The Honorable Samuel “Sam” Graves
Ranking Member
Committee on Transportation and Infrastructure
House of Representatives

The Honorable Al Green
Chairman
Subcommittee on Oversight and Investigations
Committee on Financial Services
House of Representatives

The Honorable Sean Duffy
Ranking Member
Subcommittee on Housing, Community Development and Insurance
Committee on Financial Services
House of Representatives

The Honorable Emanuel Cleaver, II
House of Representatives

The Honorable Michael McCaul
House of Representatives

The Honorable Gary Palmer
House of Representatives

The Honorable Ann Wagner
House of Representatives

Appendixes

Appendix I: Comments from the Department of Homeland Security

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

Homeland Security

September 16, 2019

Frank Rusco
Director, Natural Resources and Environment
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Re: Management Response to Draft Report GAO-19-642, "PUERTO RICO ELECTRICITY GRID RECOVERY: Better Information and Enhanced Coordination is Needed to Address Challenges"

Dear Mr. Rusco:

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

In partnership with the Commonwealth of Puerto Rico, the Federal Emergency Management Agency (FEMA) instituted mechanisms to ensure robust coordination among the territorial and federal entities involved in the repair of the Commonwealth's electricity grid following Hurricane Maria. The immediate goal was to restore power as quickly as possible and stabilize the power system.

As the emergency repairs were completed and the power system stabilized, focus shifted to the development of the Commonwealth's Grid Modernization Plan (GMP). Informing this plan are two laws passed by Congress that impact FEMA's Public Assistance Program. First, the Bipartisan Budget Act of 2018 (BBA) authorizes FEMA to provide assistance to address pre-disaster conditions and undamaged components in the United States Virgin Islands and Puerto Rico, where necessary, and to restore certain types of disaster-impacted infrastructure to industry standards. Secondly, the Disaster Recovery Reform Act (DRRA) of 2018, which amended several provisions of the Stafford Act, provided FEMA with new authorities, and applied retroactively to Hurricane Maria and other disasters.

FEMA continues to work with its federal partners and the Commonwealth in evaluating the GMP to determine if the plan is cost effective, technically feasible and practical.

FEMA is also reviewing the work described in the GMP based on eligibility criteria of the Public Assistance Program and criteria contained within the BBA. The BBA provides more flexibility to repair the disaster-damaged critical facilities in Puerto Rico and FEMA and the Commonwealth share a mutual understanding of how the flexibilities of the BBA impact the GMP.

The draft report contained four recommendations, including three for FEMA with which the Department concurs. Attached find our detailed response to each recommendation that was specific to FEMA. Technical comments have been previously provided under separate cover.

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

Sincerely,

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

Attachment

2

Attachment: Management Response to Recommendations Contained in GAO-19-642

GAO recommended that the Administrator of FEMA should:

Recommendation 1: Develop and provide clear written information in the form of policy, guidance, or regulations, as appropriate, to COR3 [Puerto Rico's Central Office for Recovery, Reconstruction and Resiliency] and PREPA [Puerto Rico Electricity Power Authority] that clarifies how FEMA will implement new authorities for the electricity grid recovery in Puerto Rico, including guidance on industry standards and defining resilience.

Response: Concur. FEMA's Recovery Directorate is developing an updated version of FEMA Recovery Policy FP-104-009-5 "Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program" to provide clarification and additional guidance for implementing the authorities provided under the BBA. This updated version will include direction on determining the applicability of industry standards and eligibility under the BBA. It will also incorporate the additional guidance contained within Section 601 of the Additional Supplemental Appropriations for the Disaster Relief Act, 2019.[1] The supplemental authority of Section 601 directs FEMA to consider certain additional factors when FEMA calculates the repair versus replacement percentage pursuant to 44 CFR § 206.226(f).

The BBA provides broad authority, to a greater extent than the DRRA provision, to rebuild and address pre-existing conditions affecting the power grid. The DRRA resilience provision will not affect the assistance provided for the power grid and guidance on the definition of resilience will not provide additional assistance or clarity to COR3 and PREPA with regard to electricity grid recovery. Therefore, FEMA will not define resilience as part of this additional guidance. Estimated Completion Date (ECD): September 30, 2019.

Recommendation 3: In coordination with DOE [U.S. Department of Energy], HUD [Department of Housing and Urban Development], and other federal and local entities, establish a mechanism for coordination among the multiple local and federal entities involved in grid recovery that facilitates decisionmaking and information sharing among local and federal agencies.

Response: Concur. FEMA's Energy Sector in the Puerto Rico Joint Recovery Office (JRO) leads the coordination of federal and territorial entities involved in grid recovery.

[1] Additional Supplemental Appropriations for Disaster Relief Act, 2019, Pub. L. No. 116-20, §601, 133 Stat. 871 (2019).

3

To promote coordination, the Energy Sector hosts meetings with PREPA, territorial energy grid stakeholders, COR3, and other federal stakeholders.

During the first year of the response, the JRO's Energy Sector interfaced with the Infrastructure Systems Recovery Support Function Field Coordinators from the United States Army Corp of Engernieers and subject matter experts (SMEs) from DOE headquarters, the DOE national laboratories, and other primary and supporting agencies, such as the U.S. Department of Agriculture's Rural Utilities Service (USDA-RUS), and the Department of Transportation.

Since the introduction of the Energy Sector, a component of the Agency's sector-based approach, FEMA, DOE, and USDA-RUS power system SMEs meet on a weekly basis with COR3 and PREPA. They discuss PREPA's goals for the recovery of the electricity grid, the impact of FEMA policy and new legal authorities on these goals, and potential alternative funding sources.

FEMA will chronicle the purpose and function of the JRO Energy Sector and its Unified Solutions Group in writing to COR3, PREPA, DOE and other stakeholders, to ensure the best use of expertise as eligibility decisions (that will impact how the GMP will be implemented) are made. ECD: November 30, 2019.

Recommendation 4: In coordination with DOE, establish an interagency agreement to define roles and responsibilities to clarify how FEMA will consult with DOE in grid recovery planning, implementation, and decisionmaking.

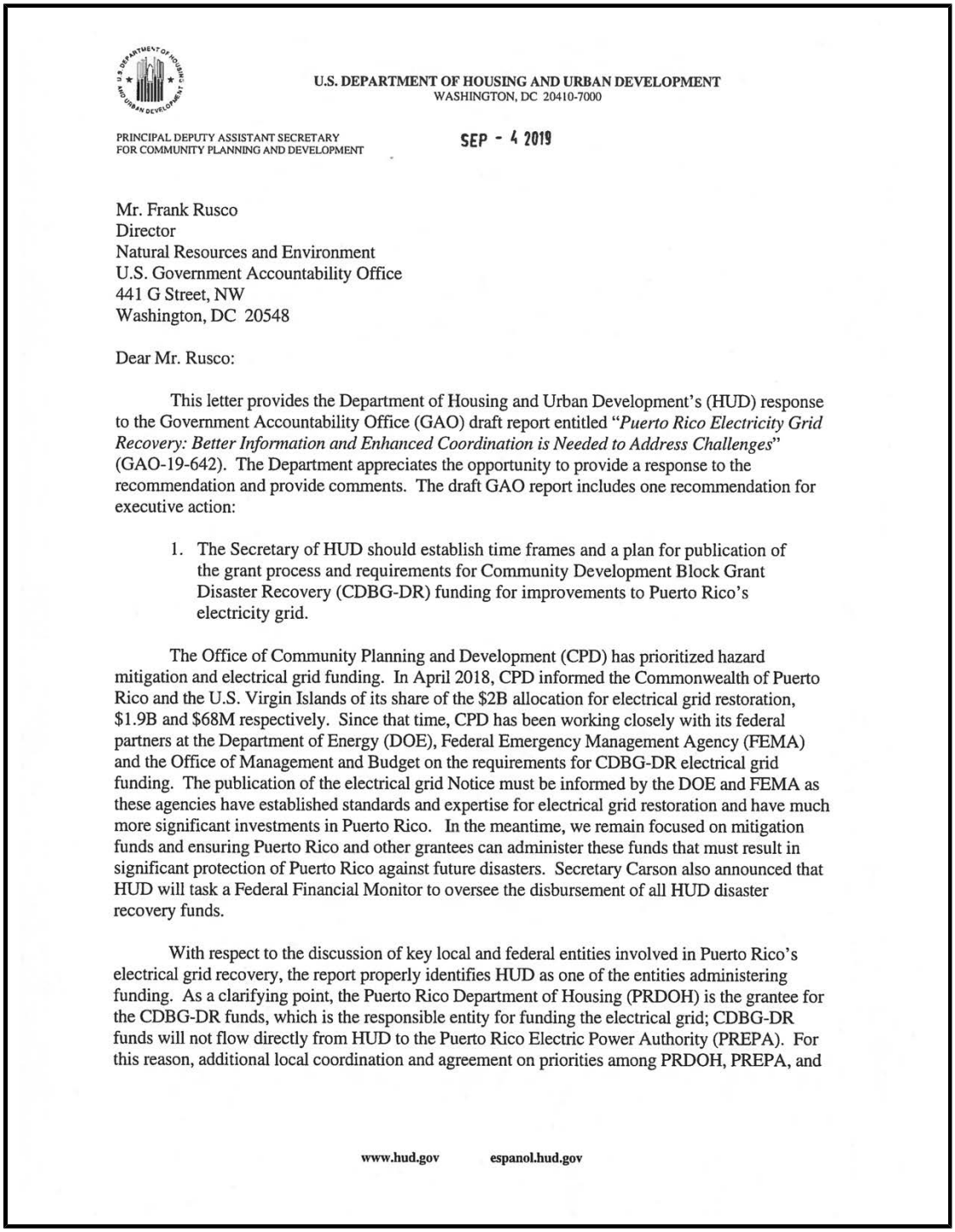
Response: Concur. DOE leadership are active participants in the Recovery Support Function Leadership Group (RSFLG) and RSFLG Puerto Rico Energy Subgroup meetings and continue to provide invaluable substantive input into administration policy, planning and decisionmaking to support Puerto Rico in rebuilding its electricity grid.

SMEs from DOE (at the Puerto Rico JRO pursuant to mission assignments from FEMA) have been an essential part of the Puerto Rico JRO Energy Sector's Unified Solutions Group – conducting impact assessments, providing technical assistance in emergency power restoration and contributing to the development of the courses of action in the Commonwealth's recovery plan and the COR3 GMP for Puerto Rico. DOE Office of Electricity and National Labs also contributed to these plans through significant analytical work.

The DOE staff, FEMA Energy Sector staff, and FEMA field leadership are in the process of preparing an interagency agreement to clarify how FEMA will leverage DOE expertise (in grid recovery planning, implementation and decisionmaking) going forward. ECD: January 31, 2020.

4

Appendix II: Comments from the Department of Housing and Urban Development



U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
WASHINGTON, DC 20410-7000

PRINCIPAL DEPUTY ASSISTANT SECRETARY
FOR COMMUNITY PLANNING AND DEVELOPMENT

SEP - 4 2019

Mr. Frank Rusco
Director
Natural Resources and Environment
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Mr. Rusco:

This letter provides the Department of Housing and Urban Development's (HUD) response to the Government Accountability Office (GAO) draft report entitled "*Puerto Rico Electricity Grid Recovery: Better Information and Enhanced Coordination is Needed to Address Challenges*" (GAO-19-642). The Department appreciates the opportunity to provide a response to the recommendation and provide comments. The draft GAO report includes one recommendation for executive action:

1. The Secretary of HUD should establish time frames and a plan for publication of the grant process and requirements for Community Development Block Grant Disaster Recovery (CDBG-DR) funding for improvements to Puerto Rico's electricity grid.

The Office of Community Planning and Development (CPD) has prioritized hazard mitigation and electrical grid funding. In April 2018, CPD informed the Commonwealth of Puerto Rico and the U.S. Virgin Islands of its share of the $2B allocation for electrical grid restoration, $1.9B and $68M respectively. Since that time, CPD has been working closely with its federal partners at the Department of Energy (DOE), Federal Emergency Management Agency (FEMA) and the Office of Management and Budget on the requirements for CDBG-DR electrical grid funding. The publication of the electrical grid Notice must be informed by the DOE and FEMA as these agencies have established standards and expertise for electrical grid restoration and have much more significant investments in Puerto Rico. In the meantime, we remain focused on mitigation funds and ensuring Puerto Rico and other grantees can administer these funds that must result in significant protection of Puerto Rico against future disasters. Secretary Carson also announced that HUD will task a Federal Financial Monitor to oversee the disbursement of all HUD disaster recovery funds.

With respect to the discussion of key local and federal entities involved in Puerto Rico's electrical grid recovery, the report properly identifies HUD as one of the entities administering funding. As a clarifying point, the Puerto Rico Department of Housing (PRDOH) is the grantee for the CDBG-DR funds, which is the responsible entity for funding the electrical grid; CDBG-DR funds will not flow directly from HUD to the Puerto Rico Electric Power Authority (PREPA). For this reason, additional local coordination and agreement on priorities among PRDOH, PREPA, and

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the Central Office for Recovery, Reconstruction, and Resilience is important for successfully rebuilding the electrical grid.

The Department thanks GAO for its recommendation. If you have any questions regarding this response, please contact Jessie Handforth Kome, Acting Director, Office of Block Grant Assistance, at 202-708-3587.

Sincerely,

David C. Woll, Jr.
Principal Deputy Assistant Secretary
for Community Planning and Development

Appendix III: Comments from the Commonwealth of Puerto Rico

GOVERNMENT OF PUERTO RICO
Central Recovery and Reconstruction Office of Puerto Rico

September 16, 2019

Frank Rusco
Director, Natural Resources and Environment
U.S. Government Accountability Office
441 G. Street, NW
Washington, DC 20548

Re: Draft Report GAO-19-642, "PUERTO RICO ELECTRICITY GRID RECOVERY: Better Information and Enhanced Coordination is Needed to Address Challenges"

Dear Mr. Rusco,

Thank you for the opportunity to review and comment on this draft report. The Commonwealth of Puerto Rico ("Puerto Rico") appreciates the Government Accountability Office's ("GAO") work in planning and conducting its review and issuing this report. GAO accurately described the complex web of agencies and program requirements that make reconstruction planning and funding extremely difficult –and has led to an unacceptable result for recovery from Hurricane Maria: Two years after Hurricane Maria devastated Puerto Rico, no permanent recovery funds have been made available to fund actual reconstruction or improvement of the Puerto Rico electricity grid. This is a call to action.

Puerto Rico welcomes and agrees with GAO's recommendations: (1) that Federal Emergency Management Agency ("FEMA") provide clear policy, guidance, and/or regulations to clarify how FEMA will implement new authority to aid Puerto Rico's recovery; (2) that the Department of Housing and Urban Development ("HUD") establish time frames for publications of its funding requirements; (3) for FEMA to lead coordination among local and federal entities, to re-institute mechanisms for timely cross-agency coordination, and to include mechanisms to clearly capture the decision points and agreed courses of action; and (4) for FEMA to better coordinate with the Department of Energy ("DOE") for consultation on grid recovery planning, implementation, and decision-making.

In addition to the draft report's recommendations, Puerto Rico urges FEMA to continue looking forward and to actively engage with the reconstruction effort to ensure that recovery processes are not further delayed while new rules and processes are developed. In particular, Puerto Rico makes the following additional recommendations: (1) FEMA and HUD establish a date by which the two agencies will publish critical guidance, recognizing that further delays in providing guidance on standards and grant requirements will only extend the date by which the Puerto Rico Electric Power Authority ("PREPA") and Puerto Rico can file applications and proceed with

reconstruction; (2) FEMA allow flexible use of HUD CDBG funds to provide the 10% cost share funding in a manner which minimizes the number of projects which must satisfy multiple departmental approval processes and requirements;[1] (3) FEMA extend the October 2019 deadline for permanent work fixed costs estimates under Section 428 of the Stafford Act following the publication of all necessary guidance[2]; and (5) FEMA approve project worksheets and related submissions (e.g., damage assessments and management costs) that have already been submitted to FEMA, or to provide expeditiously clear instructions on additional information that is needed.

It is necessary for Puerto Rico and PREPA to have confidence in relying on federal agency guidance to secure and deploy federal funding, and for federal agency decision-making to be made promptly and without undue delay in order to move forward with recovery plans. In addition to the above recommendations, Puerto Rico makes the following comments:

Grid Recovery and Enhancement are Critical Components of Every Economic and Humanitarian Initiative in Puerto Rico

After Hurricanes Irma and Maria devastated Puerto Rico's already fragile electrical grid, Puerto Rico embarked on a historic effort to transform the island's electricity system. Years of underinvestment and mismanagement compounded the damage caused by the hurricanes, leaving the entire electrical system inoperable and requiring extensive repairs to significant portions of Puerto Rico's generation, transmission, and distribution infrastructure. The damage was felt by all Puerto Ricans, harming the economy and encouraging migration to the mainland United States. Timely receipt of federal funding identified in the draft report is fundamental to Puerto Rico's ability to make permanent repairs, rebuild and modernize its electrical grid, and revitalize the Island's economy, including encouraging the return of residents. Furthermore, many, if not all, of the recovery construction projects require reliable power in order to be completed; making the PREPA reconstruction the linchpin of Puerto Rico's recovery.

PREPA has Made Significant Progress Towards Recovery and Better Coordination

To date, PREPA has made significant progress in completing emergency (and temporary) repairs to Puerto Rico's electrical grid. PREPA restored power to 100% of Puerto Rico, reestablishing customers' access to electricity and PREPA's ability to collect payments for services rendered. PREPA achieved neutral cash flow in the first quarter of 2019 and repaid a $300 million loan from Puerto Rico in March 2019. In addition, PREPA has taken steps to improve resiliency in anticipation of the coming hurricane season through a comprehensive vegetation management initiative and the strategic placement of mobile generation.

For nearly the past two years, PREPA and Puerto Rico have been working to recover from the devastating effects of the 2017 hurricanes. During the most exigent phase of restoration, PREPA

[1] COR3 requested this flexible use of HUD CDBG-DR matching funds and demonstrated that it was consistent with FEMA's authority under Section 428 of the Stafford Act, in a letter to FEMA dated June 7, 2019.
[2] As discussed in more detail below, necessary guidance includes (1) standards acceptable to FEMA and DOE for grid resilience, (2) specifics regarding the administration of the DRRA and the BBA and requirements for funding thereunder, and (3) grant process and requirements for electrical grid funding under CDBG-DR.

collaborated almost daily, and in-person, with representatives from the Central Office for Recovery, Reconstruction and Resilience ("COR3") and FEMA. Since the end of the "emergency period" approximately one year ago, however, that level of critical coordination from FEMA has diminished. Moreover, and unfortunately, the level of formal and timely responses from FEMA and HUD on pressing issues related to permanent reconstruction efforts has also diminished. While there are certainly several underlying factors for this, the current fiscal situation and PROMESA have placed unique constraints on Puerto Rico's recovery.

Regarding GAO's comments on PREPA's "Capacity Constraints, Management, and Oversight," Puerto Rico acknowledges the challenges PREPA has and continues to face. However, we stress that PREPA is working closely with financial, legal, technical, and disaster recovery experts to address these challenges. Puerto Rico and PREPA are committed to developing executable, best-value plans for recovery with local and federal partners in compliance with Puerto Rican and federal laws and regulations. To do so, however, Puerto Rico and PREPA require the full commitment of FEMA and HUD to make available the guidelines and framework in which to develop these plans.

Moreover, in response to staffing difficulties and increased reliance on federal funding, PREPA has taken steps to better coordinate with COR3 to ensure an effective recovery. PREPA and COR3 established the Disaster Funding Management Office in March 2019 to effectively plan for and manage federal investments. In doing so, PREPA and COR3 formalized an Assistance Agreement under which COR3 will provide services and support needed for or requested by PREPA in connection with grid recovery projects. Through this agreement, COR3's know-how and dedicated resources can assist and complement PREPA's own resources to provide the necessary grounding for PREPA to build and execute grid recovery projects.

Federal Interagency Coordination and Clear Guidance are Necessary for an Effective Recovery

Following recommendations in the draft report, Puerto Rico encourages FEMA to implement a meaningful interagency coordination process consistent with the National Disaster Recovery Framework ("NDRF") that is inclusive of PREPA, COR3, HUD, DOE, the U.S. Army Corps of Engineers ("USACE") and other stakeholders. FEMA should provide clear policy guidance on all applicable Stafford Act authorities, provide clarity regarding its capability to implement its authorities, and subrecipient/recipient actions necessary for FEMA to execute its Stafford Act authorities.

GAO discussed the need for FEMA to clearly define its use of the terms such as "industry standards" and "resilience" as used in new sources of authority for FEMA on pages 29 and 30 of draft report. Puerto Rico agrees with this recommendation and has been waiting on this guidance since the Disaster Recovery Reform Act ("DRRA") passed in October 2018. PREPA and COR3 have requested FEMA approve Design Criteria Documents ("DCDs") submitted to FEMA as being the applicable industry standards for implementation of the Bipartisan Budget Act ("BBA") and the "consensus codes" as required under Section 1235b of the DRRA. The DCDs submitted

to FEMA are based on nationally accepted building codes and reference materials, including those from the Rural Utility Service ("RUS"), National Electric Safety Code ("NESC") promulgated by the Institute of Electrical and Electronics Engineers ("IEEE"), the American Society of Civil Engineers ("ASCE"), and the American National Standards Institute ("ANSI"). FEMA's approval of the DCDs submitted by PREPA and COR3 will allow grid recovery projects to go forward.

Puerto Rico also notes that the draft report does not fully discuss the new Public Assistance 50% Rule as authorized under Section 601 of the Additional Supplemental Appropriations for Disaster Relief Act of 2019, and how this new law drives FEMA funding eligibility and increases the need for expeditious additional guidance from FEMA.

Extending the Deadline for Permanent Work Fixed Cost Estimates is Necessary

Because of the delays in providing guidance necessary to formulate projects under Section 428 of the Stafford Act, Puerto Rico (again) requests that the deadline for establishing fixed cost estimates under Section 428 alternative procedures be extended following the date of publication of (1) standards acceptable to FEMA and DOE for grid resilience, (2) specifics regarding the administration of the BBA and requirements for funding thereunder, and (3) grant process and requirements for electrical grid funding under CDBG-DR. All three of these are inter-related and required before Puerto Rico, PREPA, and FEMA can agree upon cost estimates for eligible work. And while Section 428 allows PREPA to use FEMA funds for virtually any grid restoration plan, regardless of the relationship of new facilities to disaster damaged facilities, a grid restoration under Section 428 still requires PREPA and COR3 to know how much FEMA funding is available.

Project Approvals from FEMA are Necessary to Continue Recovery Progress

As highlighted on page 20 of the draft report, as of July 2019, no permanent work grid recovery projects have been approved for funding by FEMA. A critical first step in the approval of federal funding is for FEMA to approve assessments of damage to Puerto Rico's electrical grid submitted by COR3. PREPA began discussions with FEMA on this issue in the Fall of 2018, and as noted in page 32 of the draft report, PREPA submitted a request through COR3 for approval by FEMA in February 2019. Puerto Rico requests that FEMA respond favorably to COR3's proposal for a streamlined approach to assessment and resolve this open item in a timely manner.

To date, PREPA has submitted to FEMA a total of eight permanent work projects with an aggregate estimated cost of more than $3.25 billion. These projects include: (i) the "Pharmaceutical Corridor," Puerto Rico's economic backbone; (ii) the Humacao district, home to a number of critical loads and among the regions hardest hit by Hurricane María; (iii) the islands of Vieques and Culebra, including one project for transmission and distribution and a second project for generation; (iv) LMM Airport; (v) Priority Substations that includes the 17 most heavily damaged and/or flooded locations; (vi) SJ Medical Center; and, (vii) Mayaguez Generation. PREPA is working on an additional 13 projects to be submitted to COR3 and FEMA before the October deadline. Although FEMA has obligated $111.5 million related to the architectural and engineering project worksheet, no other project worksheets have been created for any of the

submitted projects, and PREPA has not received any funding for such projects to date. Indeed, an additional issue is the decoupling and delay in receiving the management costs associated with the architectural and engineering funding, the immediate obligation of which would allow PREPA to better coordinate with COR3 through the Disaster Funding Management Office without delay. Without prompt approvals and disbursement of federal funding intended for such purposes, costs will increase as contractors are forced to finance work for extended periods while awaiting payment. Delays to these power restoration projects will reverberate throughout the Puerto Rican economy and slow the broader recovery effort dependent on power. FEMA should prioritize project approvals for the PREPA projects and in the alternative, communicate with PREPA the additional information that is needed for approval.

***

Puerto Rico encourages FEMA and HUD to comply with the recommendations in this draft report, as well as the additional recommendations in this letter, while ensuring that recovery efforts in Puerto Rico are not delayed as a result.

Again, thank you for the opportunity to review and comment on this report.

Sincerely:

Ottmar J. Chavez Pinero
Executive Director
Governor's Authorized Representative

C.c. Jennifer Storipan, Executive Director PRFAA
Franco Quindi, GAO
Marya K. Link, GAO
Shylene Mata, GAO
West, Jarrod K. West, GAO
Fernando Padilla, PREPA
José Ortiz, PREPA
Antonio R. Pavía-Vidal, Deputy Director COR3

Appendix IV: GAO Contact and Staff Acknowledgments

GAO Contact

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Staff Acknowledgments

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