



November 2020

PUERTO RICO ELECTRICITY

FEMA and HUD Have
Not Approved Long-
Term Projects and Need
to Implement
Recommendations to
Address Uncertainties
and Enhance Resilience

GAO Highlights

Highlights of [GAO-21-54](#), 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. Since electricity service has been restored, local entities have undertaken the longer-term task of more fully repairing and rebuilding the grid. GAO reported in 2019 on challenges hindering progress in rebuilding the grid and recommended that FEMA and HUD take actions to address these challenges.

This report examines the status of efforts to support long-term grid recovery in Puerto Rico, including actions taken by FEMA and HUD to implement GAO's 2019 recommendations. For this report, GAO assessed agency actions; reviewed relevant reports, regulations, policies, and documents; and interviewed federal and local officials.

What GAO Recommends

GAO previously made three recommendations to FEMA and one to HUD to provide needed information and improve coordination to support grid recovery. Both agencies disagreed with GAO's characterization of their progress made addressing these prior recommendations. GAO continues to believe additional actions are needed to fully implement these recommendations.

View [GAO-21-54](#). For more information, contact Frank Rusco at (202) 512-3841 or ruscof@gao.gov.

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PUERTO RICO ELECTRICITY

FEMA and HUD Have Not Approved Long-Term Projects and Need to Implement Recommendations to Address Uncertainties and Enhance Resilience

What GAO Found

As of October 2020, 3 years since the hurricanes destroyed much of Puerto Rico's electricity grid, neither the Federal Emergency Management Agency (FEMA) nor the Department of Housing and Urban Development (HUD) had approved long-term grid recovery projects in Puerto Rico. In 2019, GAO made four recommendations to FEMA and HUD to address identified challenges in rebuilding the electricity grid in Puerto Rico. As of October 2020, FEMA had fully implemented one recommendation and partially implemented two others, while HUD had not implemented its recommendation. Specifically, FEMA established an interagency agreement with the Department of Energy (DOE) to clarify how the agencies would consult on recovery efforts. FEMA had taken actions to partially implement recommendations on improving coordination among federal and local agencies and providing information on industry standards. However, further steps are needed, including finalizing guidance on FEMA's process for approving funding for projects. Regarding HUD, it has not addressed GAO's recommendation to establish time frames and requirements for available funding.

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



Source: Federal Emergency Management Agency. | GAO-21-54

Until HUD and FEMA implement GAO's recommendations, uncertainty will linger about how and when federal funding for long-term grid recovery will proceed. In particular, it is uncertain how available funding sources will support measures to enhance grid resilience to hurricanes, such as smart grid technology. FEMA officials told GAO that additional funding sources could be used for resilience measures but that this would not be determined until specific projects are submitted to FEMA for approval. Moreover, although FEMA finalized a \$10 billion cost estimate for grid repairs in September 2020, several steps remain before FEMA approves funding for projects—a process officials said they were drafting. HUD funding could supplement FEMA funding but, as discussed above, HUD has yet to establish conditions for using these funds and has not established time frames and a plan for issuing this information. According to HUD officials, they plan to publish requirements in the first quarter of fiscal year 2021, but this depends on other factors, such as input from other federal agencies. Further delays in publishing the conditions could contribute to delays in Puerto Rico's ability to initiate grid recovery projects.

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Abbreviations List

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
DRRA	Disaster Recovery Reform Act of 2018
FEMA	Federal Emergency Management Agency
FOMB	Financial Oversight Management Board
HUD	Department of Housing and Urban Development
PA	Public Assistance
PREB	Puerto Rico Energy Bureau
PREPA	Puerto Rico Electric Power Authority

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November 17, 2020

Congressional Requesters

In September 2017, Hurricanes Irma and Maria destroyed much of Puerto Rico’s electricity grid, resulting in the longest blackout in U.S. history. These hurricanes left Puerto Rico’s entire electricity grid inoperable, and it took roughly 11 months for power to be restored to all customers in structures deemed safe for power restoration. According to a report by the Puerto Rico Energy Resiliency Working Group, the extensive and unprecedented damage to the electricity grid will require a significant portion of the generation, transmission, and distribution system to be rebuilt.¹ As we reported in October 2019, federal agencies provided about \$3.9 billion to help restore electricity service in the aftermath of the hurricanes, including temporary or partial repairs, such as attaching electricity lines to damaged poles.² In July 2019, Puerto Rico submitted its Grid Modernization Plan that included about \$20.3 billion in potential investments to rebuild the grid and modernize the energy sector.³

Hurricanes are a significant cause of major power outages and will continue to threaten the electricity grid in coastal areas of the United States. Improving the grid’s resilience so that it is better able to withstand and rapidly recover from hurricanes would help mitigate the economic, fiscal, and social impacts of future storms. The federal government plays a significant role in supporting grid resilience and has appropriated billions in disaster relief funding. The federal government has also enacted legislation that provides additional authorities for the Federal Emergency Management Agency (FEMA)—the federal entity leading the

¹Puerto Rico Energy Resiliency Working Group and Navigant Consulting, Inc., *Build Back Better: Reimagining and Strengthening the Power Grid of Puerto Rico* (Dec. 11, 2017).

²GAO, *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).

³Puerto Rico’s Central Office for Recovery, Reconstruction, and Resiliency (COR3), Puerto Rico Electric Power Authority (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, *Governor’s Recovery Plan: Transformation and Innovation in the Wake of Devastation* (August 2018)). Cost estimates for rebuilding Puerto Rico’s grid range from \$2 billion to \$30 billion; these estimates vary greatly, depending on many technical; financial; and other assumptions, such as the level of deployment of renewable generation.

recovery in Puerto Rico—to enhance resilience when replacing or restoring disaster-damaged facilities in Puerto Rico, including electricity grid infrastructure. FEMA and the Department of Housing and Urban Development (HUD) are the primary sources of federal funding for grid recovery in Puerto Rico.⁴ In addition, FEMA is responsible for coordinating federal actions to support and expedite recovery. The Department of Energy (DOE) provides technical assistance to local and federal entities to support grid recovery efforts. In October 2019, we identified several challenges that have hindered grid recovery efforts in Puerto Rico and made several recommendations, including that FEMA take steps to enhance coordination among local and federal entities.⁵

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 examines the status of efforts to support long-term grid recovery in Puerto Rico, including actions taken by FEMA and HUD to implement our 2019 recommendations.

To address our objective, we analyzed documents, reports, and studies to summarize views from local, federal, and other entities. We also reviewed congressional testimony, Puerto Rico recovery planning documents, FEMA guidance, and relevant Puerto Rico Electric Power Authority (PREPA) plans and reports. In addition, we reviewed over 20 reports and studies relevant to grid recovery plans and efforts in Puerto Rico from the Congressional Research Service; DOE; and nongovernmental organizations, such as nonprofits and research institutes. Additionally, we reviewed prior GAO reports describing the federal role in grid recovery and enhancing grid resilience and funding sources and our prior recommendations to address challenges hindering grid recovery. We analyzed FEMA policy, planning, and guidance documents and *Standards for Internal Control in the Federal Government* to determine

⁴When 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-19-296](#).

⁵GAO, *Puerto Rico Electricity Grid Recovery: Better Information and Enhanced Coordination Is Needed to Address Challenges*, [GAO-20-141](#) (Washington, D.C.: Oct. 8, 2019).

the extent to which federal efforts to support grid recovery addressed our prior recommendations and aligned with existing policies and standards.⁶

In addition, we interviewed representatives of federal and local government agencies involved in Puerto Rico's grid recovery as well as industry groups and other organizations involved in grid recovery in Puerto Rico. We identified these stakeholders by reviewing documents and obtaining recommendations during our interviews about others knowledgeable about grid recovery efforts in Puerto Rico.⁷ We interviewed officials from federal agencies, including DOE, FEMA, and HUD. We also interviewed officials from local government agencies, including the Puerto Rico Central Office for Recovery, Reconstruction, and Resiliency (COR3), PREPA, and the Puerto Rico Energy Bureau. In addition, we interviewed officials from the Financial Oversight Management Board (FOMB), a board established in the Puerto Rico Oversight, Management, and Economic Stability Act, that has broad budgetary and financial control over Puerto Rico.⁸ We also conducted a site visit in Puerto Rico to interview representatives of local and federal agencies.

We conducted this performance audit from October 2019 to October 2020, 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.

⁶GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: September 2014).

⁷Stakeholder views are not generalizable but provide a range of views relevant to our analysis.

⁸The Puerto Rico Oversight, Management, and Economic Stability Act established 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 was also responsible for certifying Puerto Rico's economic and disaster recovery plan, released on August 8, 2018.

Background

Local Entities and Puerto Rico's Electricity Grid Recovery Plan

There are several local entities that have a role in supporting efforts to restore the electricity grid in Puerto Rico.

Puerto Rico Electric Power Authority. PREPA is a public electric utility owned by the Commonwealth of Puerto Rico that 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.⁹ With limited financial resources of its own, PREPA is heavily reliant on federal funding for grid recovery. In addition, as we reported in April 2019, Puerto Rico's electricity grid was in poor condition prior to the hurricanes, largely because of PREPA's underinvestment and poor maintenance practices.¹⁰ Moreover, as we reported in October 2019, PREPA's financial condition and workforce difficulties, among other things, posed challenges for grid recovery efforts. Furthermore, federal officials and other stakeholders have expressed concerns about PREPA's ability to effectively plan for and manage federal investments and to operate and maintain the grid. To address PREPA's financial and management challenges, the government of Puerto Rico plans to restructure PREPA. In June 2020, local officials announced that a consortium of private companies would operate PREPA's transmission and distribution systems while PREPA retains ownership of the infrastructure.¹¹ In addition, PREPA and this new private operator will participate in grid recovery planning moving forward, according to federal

⁹Before being hit by the hurricanes in 2017, Puerto Rico's economy had been in decline for over a decade, and the government of Puerto Rico had amassed large amounts of debt. 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. Puerto Rico's prospects for debt repayment depend on several factors, including outcomes of the current debt restructuring process. For additional information on Puerto Rico's debt and the restructuring process, see GAO, *Puerto Rico: Factors Contributing to the Debt Crisis and Potential Federal Actions to Address Them*, [GAO-18-387](#) (Washington, D.C.: May 9, 2018); *U.S. Territories: Public Debt Outlook*, [GAO-18-160](#) (Washington, D.C.: Oct. 2, 2017); and *U.S. Territories: Public Debt Outlook—2019*, [GAO-19-525](#) (Washington, D.C.: June 28, 2019).

¹⁰[GAO-19-296](#).

¹¹This consortium, called LUMA, includes Canadian firm ATCO Ltd. and U.S.-based companies Quanta Services, Inc., and Innovative Emergency Management, Inc.

and local officials. As of July 2020, this operator had begun attending meetings with local officials as part of its transition period.

Puerto Rico Energy Bureau (PREB). 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 that PREPA provides. In August 2020, PREB finished its review of PREPA's draft integrated resource plan—a planning process used to determine which facilities should be built to meet future power demand.¹²

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. In that capacity, COR3 administers federal funding for electricity grid projects to repair or replace damaged electricity grid infrastructure.

Grid Modernization Plan for Puerto Rico

To guide recovery planning, COR3 and PREPA developed a Grid Modernization Plan for Puerto Rico that identifies \$20.3 billion in potential investments to modernize the Puerto Rico electricity grid.¹³ According to the plan, COR3 and PREPA incorporated 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. 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;

¹²The 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.

¹³COR3, PREPA, and their consultants prepared the draft *Grid Modernization Plan for Puerto Rico*. 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, *Governor's Recovery Plan*.)

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- 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.

Federal Support for Puerto Rico's Grid Recovery

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.¹⁴

FEMA Public Assistance (PA) Program. FEMA's PA Program provides 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 is administered through a partnership between FEMA and the recipient for Puerto Rico, COR3, which in turn provides funding to local entities who are the subrecipients of a PA grant award (e.g., PREPA).¹⁵

¹⁴In 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.

¹⁵FEMA'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*.

Through its PA Program, FEMA provides funds to support recovery, including¹⁶

- 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.¹⁷

FEMA PA funding is subject to a 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. In November 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.

Funding for hazard mitigation measures under FEMA's PA Program covers those measures designed to reduce the potential of repeated damage resulting from disasters. FEMA evaluates proposed mitigation measures for cost-effectiveness and technical feasibility, among other

¹⁶PA 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 other FEMA funding, such as Hazard Mitigation Grant Program funding. We are not referring to emergency work, which is generally a part of the initial response phase to a disaster.

¹⁷On October 5, 2018, the Disaster Recovery Reform Act of 2018 (DRRA) 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. 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 August 1, 2017, through October 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.

things.¹⁸ FEMA may also require cost-effective hazard mitigation measures not required by applicable standards when approving grant assistance for restoring facilities. FEMA will reimburse the cost of any hazard mitigation measures that it requires beyond applicable standards at the set federal cost share.

Under the standard PA Program, FEMA reimburses the actual cost of a project. In contrast, under PA Program alternative procedures, FEMA funds large permanent work projects based on fixed-cost estimates to provide financial incentives for the timely and cost-effective completion of work.¹⁹ 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. 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.

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

¹⁸FEMA 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.

¹⁹In November 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 PA permanent work through alternative procedures. The alternative procedures, which FEMA implemented due to the large scale of Puerto Rico's hurricane-related damage as well as Puerto Rico's difficult financial position, also include stated goals of reducing costs to the federal government, increasing flexibility in the administration of the PA Program, and expediting the provision of assistance under the program.

authority to FEMA to provide assistance for critical services, including the electricity grid when using the PA alternative procedures in Puerto Rico and the U.S. Virgin Islands in response to Hurricanes Irma and Maria. Specifically, FEMA is authorized to fund resilience improvements, including the replacement or restoration of

1. a facility or system to industry standard without regard to predisaster 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.²⁰

In addition, the Disaster Recovery Reform Act of 2018 (DRRA) provides that FEMA is to fund PA 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.²¹ 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.

HUD’s Community Development Block Grant Disaster Recovery (CDBG-DR) funds. 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 October 2020, HUD had

²⁰Pub. L. No. 115-123, § 20601, 132 Stat. 64, 85 (2018). Further, 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 predisaster 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).

²¹Pub. L. No. 115-254, § 1235(b), 132 Stat. 3186 (2018).

awarded approximately \$19.9 billion in CDBG-DR funds to Puerto Rico to support recovery from the 2017 hurricanes. However, the agency had not yet specified the requirements and process for the \$1.9 billion for enhancing or improving the electrical power systems in Puerto Rico.

DOE funding and technical assistance. 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.²² DOE provides subject matter expertise and assistance to FEMA and HUD as they implement PA and CDBG-DR funding in Puerto Rico. 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. Further, as we reported in October 2019, DOE has provided support for how to improve grid resilience in Puerto Rico through technical assistance in developing an energy assurance plan, recommendations, and reports that could inform investments in resilience, as well as National Laboratory support to PREPA on modeling system operations.

Recommendations to Address Challenges Hindering Progress on Puerto Rico’s Grid Recovery

As we reported in October 2019, several challenges hindered progress on grid recovery efforts in Puerto Rico, including

- uncertainty about eligibility for federal funding sources (i.e., FEMA PA and HUD CDBG-DR);
- PREPA’s capacity constraints and management;
- assessing grid damage; and
- a need for coordination.²³

In October 2019, we reported that limited progress had been made in addressing priority recovery projects that local entities had identified soon after the hurricanes hit.²⁴ Those included priority projects to address outstanding grid vulnerabilities and projects to improve the generation,

²²DOE provides energy-related expertise to FEMA, interagency partners, and the administration under Presidential Policy Directive 21. White House, *Presidential Policy Directive/PPD-21: Critical Infrastructure Security and Resilience* (Washington, D.C.: Feb. 12, 2013).

²³[GAO-20-141](#).

²⁴In this report, we refer to COR3 and PREPA as local entities.

transmission, and distribution infrastructure. In addition, we found that local entities did not have sufficient information to implement grid recovery plans and determine what type of projects would be eligible for funding. Specifically, we found that progress on grid recovery efforts in Puerto Rico was hindered in part because (1) FEMA had not provided clear written information on which technologies and approaches are eligible for funding, and (2) HUD had not established time frames or a plan for publication of the process and requirements for its CDBG-DR funds. Moreover, we found that, given local challenges and the complexity of federal funding, enhanced coordination was needed to help implement grid recovery plans and create a more resilient system. We made four recommendations in October 2019 to address challenges hindering progress on grid recovery efforts in Puerto Rico:

- 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.
- 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.
- 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.
- 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.

FEMA and HUD Have Not Approved Long-Term Grid Recovery Projects and Need to Implement Recommendations to Address Funding Uncertainties

As of October 2020, 3 years since the hurricanes destroyed much of Puerto Rico's grid, neither FEMA nor HUD have approved any long-term grid recovery projects, and both agencies need to implement recommendations to address funding uncertainties. FEMA has taken some steps that partially address our October 2019 recommendations to address identified challenges in rebuilding the electricity grid in Puerto Rico. Specifically, FEMA established an interagency agreement with DOE to clarify how the agencies would consult on recovery efforts. In addition, FEMA has taken actions to partially implement recommendations on improving coordination among federal and local agencies and providing information on industry standards. These steps have supported some progress on grid recovery. In particular, FEMA and local entities completed a damage assessment that helped them to develop a cost estimate for permanent work that addresses what projects are eligible for FEMA funding. Nevertheless, further steps are needed, as uncertainty remains about how grid recovery projects will proceed now that the fixed-cost estimate was finalized on September 23, 2020. In particular, it is uncertain how other available funding sources will support measures to enhance grid resilience, such as smart grid technology, which are not eligible for PA funding associated with the cost estimate. Further, while the fixed-cost estimate has been finalized, FEMA officials told us that several steps remain before it could approve projects, a process FEMA officials said they were drafting. Moreover, HUD has not provided key information to local entities on the conditions for using CDBG-DR funds for grid recovery and has not established time frames and a plan for issuing this information, as we recommended in October 2019. Local and federal officials have deemed these funds critical to supporting grid recovery projects, given PREPA's financial challenges. Until HUD and FEMA implement our recommendations, uncertainty will linger about how and when long-term grid recovery will proceed.

Neither FEMA nor HUD Has Approved Any Long-Term Grid Recovery Projects, but FEMA and Local Entities Finalized a Cost Estimate for Grid Repairs

As of October 2020, 3 years since the hurricanes destroyed much of Puerto Rico's grid, neither FEMA nor HUD has approved long-term grid recovery projects. FEMA and local entities have completed a damage assessment, finalized a cost estimate for permanent work projects eligible for PA funding, and obligated a total of about \$10 billion for Puerto Rico's grid repairs. For grid recovery projects to proceed, however, COR3 and PREPA must still obtain FEMA approval of individual projects.

The process of developing the fixed-cost estimate was originally scheduled to be completed in October 2019; however, according to FEMA and local officials, changes in the strategy to assess damage to

the grid resulted in significant delays.²⁵ Specifically, in the summer of 2019, FEMA was pursuing an island-wide sampling approach to damage assessment (i.e., sampling selected portions of the grid to develop an estimate of overall damage). However, FEMA officials in Puerto Rico changed to a site-by-site approach in September 2019; this involved individually evaluating each asset or grid component damaged by the hurricane, according to FEMA officials. FEMA officials in Puerto Rico told us that, after this site-by-site approach proved to be less efficient, FEMA headquarters directed that they return to an island-wide sampling approach in early 2020, with a focus on sampling across seven key categories.²⁶ On September 23, 2020, FEMA finalized the fixed-cost estimate, which divides the approximately \$10 billion among seven asset categories, as shown in Table 1.

Table 1: Federal Emergency Management Agency (FEMA) Estimated Cost to Repair Puerto Rico’s Grid by Asset Category

Asset Category	Asset Examples	Total Asset Costs
Buildings	<ul style="list-style-type: none"> • Commercial Buildings • Technical Buildings • Construction and Improvement Buildings 	\$125,088,362.54
Substations	<ul style="list-style-type: none"> • Substations • Mobile Substations 	\$781,890,093.70
Distribution	<ul style="list-style-type: none"> • Distribution Lines • Streetlights 	\$5,499,837,404.90
Transmission	<ul style="list-style-type: none"> • Transmission Lines • Soil Stabilization 	\$2,642,131,654.47
Telecommunications	<ul style="list-style-type: none"> • Various components that enable communication across PREPA assets 	\$685,928,720.98
Generation	<ul style="list-style-type: none"> • Generation Plants 	\$108,927,715.08

²⁵As we reported in October 2019, given the extent of the grid damage, assessing disaster-related damage presented a challenge to developing projects to repair the grid. 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.

²⁶FEMA used a statistical sampling approach to complete this assessment. For example, in assessing damage to its substations, FEMA identified a suitable sample (81 out of 392, or about 21 percent of substations) to determine a representative average cost to repairing substations across six categories designated by PREPA. FEMA and PREPA also determined the average eligible amount of PA funding for each of the six categories. The average cost was multiplied by the total number of substations in that category to estimate a total cost for the asset.

Asset Category	Asset Examples	Total Asset Costs
Water	<ul style="list-style-type: none"> • Dams • Reservoirs (Sediment Removal) • Hydroelectric Power Plants • Irrigation Channels • Water Conveyance Systems 	\$860,926,275.87
Total Estimated Project Asset Costs		\$10,704,730,227.54
Insurance Reduction ^a		(\$193,746,436.00)
Total Estimated Project Costs		\$10,510,983,791.54
Federal Share (90 Percent) ^b		\$9,459,885,412.39

Source: Federal Emergency Management Agency | GAO-21-54

^aPer 44 C.F.R. §§ 206.252(c) and 253(a), FEMA must reduce eligible costs by the amount of any insurance proceeds related to those costs. PREPA allocated \$193,746,436 of its anticipated insurance proceeds toward these grid recovery costs. Therefore, FEMA reduced costs by this amount.

^bTo receive Public Assistance funding for long-term grid recovery projects, Puerto Rico must contribute a 10-percent cost share, which may come from other sources such as HUD CDBG-DR.

The fixed-cost estimate provides information needed to select and initiate long-term grid recovery projects.²⁷ However, FEMA officials also explained that after the fixed-cost estimate is established, PREPA will not be able to fund construction using PA funding until the scopes of work for individual projects are approved for funding by FEMA. According to FEMA officials, the cost estimate of about \$10 billion covers potentially hundreds of projects for which FEMA will need to review and make approval decisions.²⁸ For COR3 and PREPA to obtain FEMA approval of individual projects, FEMA and recipients will still need to meet various requirements, such as completing environmental reviews. According to federal and local officials, PREPA began working with FEMA to develop these projects and conduct these reviews prior to FEMA finalizing the fixed-cost estimate.

As we reported in October 2019, several challenges have hindered progress toward grid recovery in Puerto Rico. Moreover, since Hurricanes

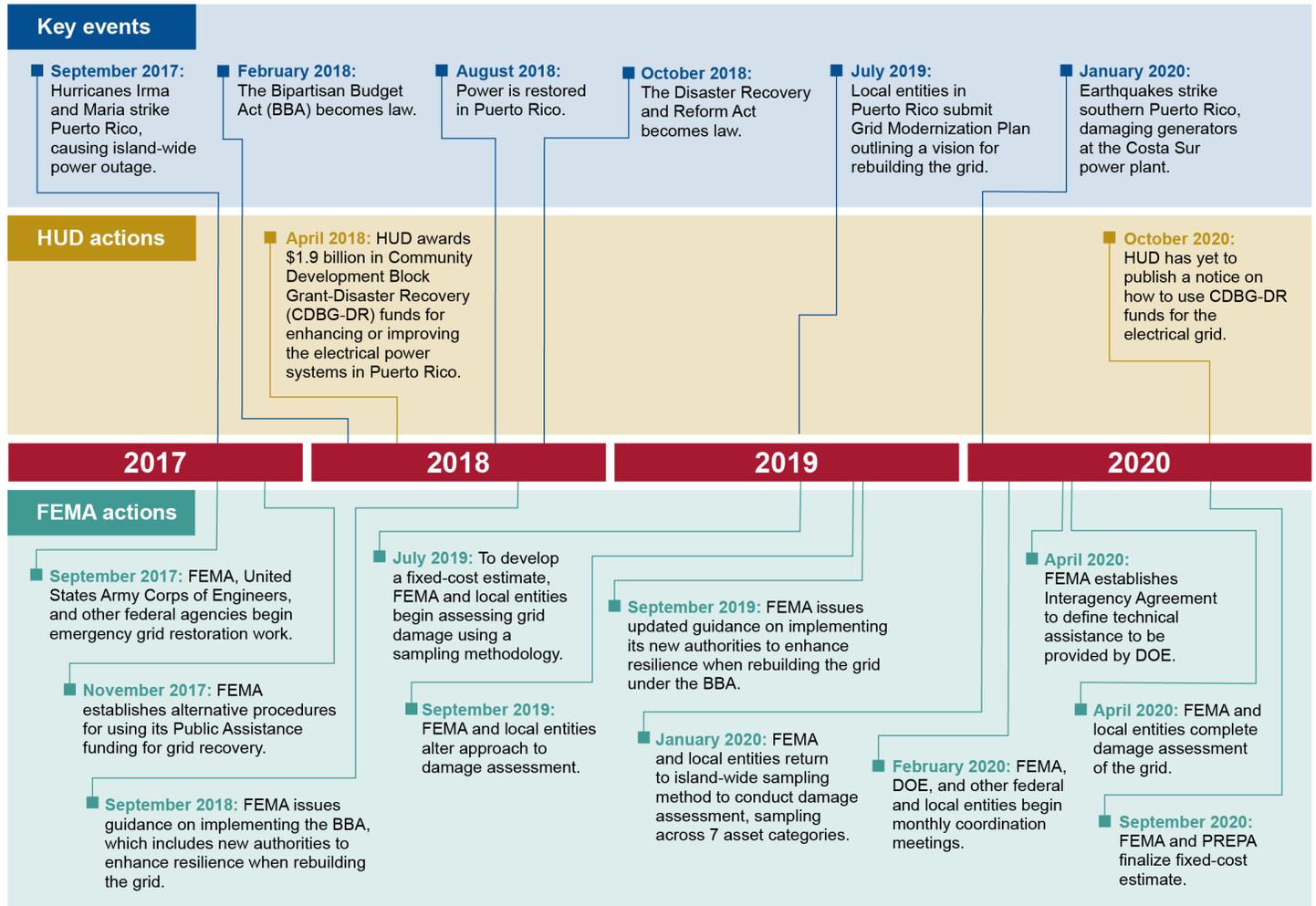
²⁷FEMA officials we interviewed told us that finalizing this estimate required a variety of additional steps, including for PREPA to conduct an independent expert panel, a review of insurance, and a review by the Office of Management and Budget. Ultimately, the estimates must be defensible and therefore require significant documentation, which can take time, according to FEMA officials.

²⁸FEMA officials anticipate roughly 250 to 300 consolidated projects, but this number is subject to change, depending on what is feasible while operating the grid.

Irma and Maria struck the island, FEMA's efforts to support grid recovery have involved almost a year of funding emergency work alongside other federal agencies to help PREPA restore power, developing guidance to implement new authorities for the use of PA funding, and changing strategies for assessing extensive grid damage. Furthermore, recent earthquakes have caused additional damage to the grid and pose additional challenges to progress on grid recovery.²⁹ See figure 1 for a time line of key events and federal actions on Puerto Rico's grid recovery.

²⁹According to FEMA officials, FEMA and local entities were able to complete the damage assessment of the grid prior to the onset of Coronavirus Disease 2019 (COVID-19). Subsequent work to develop the fixed-cost estimate was conducted virtually and generally was not hindered by restrictions related to the pandemic.

Figure 1: Time Line of Key Events and Federal Actions on Puerto Rico’s Grid Recovery since Hurricane Maria (September 2017)



Source: GAO analysis of information from Department of Energy (DOE), Federal Emergency Management Administration (FEMA), U.S. Department of Housing and Urban Development (HUD), Puerto Rico Electric Power Authority (PREPA), and the Office of the Governor of Puerto Rico. | GAO-21-54

FEMA and DOE Have Taken Steps to Implement Recommendations to Enhance Interagency Coordination, but the Effect of These Efforts Remains Uncertain

FEMA and DOE have enhanced coordination efforts between their respective agencies and with local entities involved in long-term grid recovery, consistent with our recommendations, but the extent to which these efforts will enhance progress toward grid recovery that improves grid resilience is uncertain. In October 2019, we found that FEMA did not have a mechanism to facilitate communication and coordination among local and federal entities to support Puerto Rico’s grid recovery planning efforts. As we reported, 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. In addition, as outlined in our *Disaster Resilience Framework*, federal efforts could promote and facilitate disaster resilience by connecting decision makers with information on how to identify and combine funding sources to maximize disaster risk-reduction opportunities.³⁰ Federal efforts can also facilitate disaster resilience by combining funding streams, which may be particularly important for smaller, low-income, and historically disadvantaged jurisdictions. FEMA’s recent efforts partially address our October 2019 recommendation that federal agencies establish a coordination mechanism or improve upon existing mechanisms. Specifically, FEMA has done the following:

- FEMA has taken steps to improve coordination with local entities through conducting a damage assessment of the grid and developing the fixed-cost estimate, as discussed above. According to FEMA and local entities, these groups held more frequent meetings than in the previous year and had regular communication regarding the estimate and the projects that would be eligible for PA funding. PREPA officials told us in July 2020 that this close coordination has helped the entities make progress more quickly toward finalizing the fixed-cost estimate and to pave the way toward beginning grid recovery projects.
- FEMA and DOE led the establishment of the Energy Technical Coordination Team in early 2020, consisting of federal agencies, including FEMA, DOE, and HUD, as well as local entities, including COR3, PREPA, FOMB, and PREB. The Coordination Team provides monthly updates, addresses technical and coordination challenges,

³⁰GAO, *Disaster Resilience Framework: Principles for Analyzing Federal Efforts to Facilitate and Promote Resilience to Natural Disasters*, [GAO-20-100SP](#) (Washington, D.C.: Oct. 23, 2019). The term “disaster resilience” refers to the ability to prepare for anticipated hazards, adapt to changing conditions, and withstand and rapidly recover from disruptions. The principles of this framework are designed primarily to support consideration of how the federal government can help itself and nonfederal entities take action to reduce risk from natural hazards.

and discusses upcoming milestones. As part of the effort, the Team includes three working groups to manage (1) fiscal issues (including working with PREPA to help them access federal funds to support grid recovery), (2) federal review and permitting, and (3) the recovery and reconstruction of the grid on the islands of Vieques and Culebra. Early efforts within the working groups included planning for potential permitting challenges for long-term grid recovery projects across Puerto Rico and establishing a framework for pursuing project development on Vieques and Culebra.

FEMA and local entities participating in the Energy Technical Coordination Team have been focused on the massive task of assessing damage to develop cost estimates needed to inform final approval of projects for PA funding. The team's working group on fiscal issues was established to serve as a mechanism to support grid recovery projects by helping to identify and map different potential funding sources, as well as to advise on how to address potential challenges related to funding projects. However, the working group has begun some preliminary planning but has not initiated these efforts because they had been waiting until the fixed-cost estimate was finalized and grid recovery projects can be funded. As mentioned above, FEMA finalized the cost estimate on September 23, 2020. As such, it remains to be seen the extent to which this working group and the Energy Technical Coordination Team will be well positioned to ensure the grid recovery process can fully leverage other federal resources to support a grid recovery that enhances resilience.

In addition, DOE and FEMA have implemented our recommendation that they establish an interagency agreement. Specifically, in April 2020, FEMA and DOE finalized an interagency agreement that, among other things, defines the technical assistance that DOE is to provide to FEMA and local entities involved in long-term grid recovery. We believe that such an agreement can help FEMA leverage DOE's expertise to support grid recovery and maximize opportunities to enhance grid resilience.

FEMA Provided Additional Guidance on Funding Eligibility for Grid Recovery Projects in Response to Our Recommendation, but Uncertainty about Available Funding Remains

As of October 2020, 3 years since the hurricanes struck Puerto Rico, FEMA has made progress working with local entities, including providing guidance on funding eligibility for projects, as we recommended in October 2019, but uncertainty about project planning and available funding remains. As noted above, FEMA was granted new authorities related to grid restoration and resilience in 2018. We reported in October 2019 that FEMA did not provide adequate information to local entities about how to implement its new authorities under BBA and DRRRA, resulting in uncertainty among these entities as to what types of projects were likely to be approved for PA funding.³¹ To address this uncertainty, we recommended that FEMA develop and provide clear written information in the form of policy, guidance, or regulations, as appropriate, including guidance on industry standards and defining resilience.

FEMA's recent efforts partially address our October 2019 recommendation that FEMA provide better information on project eligibility. Specifically, in September 2019, FEMA updated its BBA guidance and has provided information to local entities on project eligibility and the industry standards it would accept for restoring the grid. In addition, in January 2020, FEMA also provided training to FEMA regional, COR3, and PREPA officials about how to implement BBA provisions, including when the BBA applies. According to officials we interviewed from FEMA, PREPA, and COR3, these entities have held regular meetings since January 2020, during which they have collaborated on developing a fixed-cost estimate, and FEMA has provided guidance on what projects would be eligible for PA funding. Furthermore, PREPA officials told us, in July 2020, that they were finishing revisions to their 2-Year Project Plan—a plan that outlines preliminary priorities for funding in the first 2 years—based on FEMA's input on what projects would be eligible for PA funding, and that they anticipated the fixed-cost estimate would reflect the costs of projects in this plan. In addition, PREPA officials stated in September 2020 that they were working to produce a work plan within the next 90 days. This work plan will provide a basis for the projects that will move forward, now that the fixed-cost estimate is final and funds were obligated.

³¹Specifically, we found that FEMA's BBA guidance, first issued in 2018, lacked specificity on what industry standards it would use to determine project eligibility and did not clearly define resilience. In 2019, COR3 and PREPA officials we interviewed told us that they were unclear on what types of projects would be eligible, and they expressed concern that projects to modernize and enhance the resilience of the grid to future disasters, such as smart grid technology, would not be eligible for funding.

According to FEMA and local officials, early projects will include repairing substations that have sustained damage, such as damage to components, surrounding fencing, or other minor damage to the equipment. As we reported in October 2019, 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. However, those substations that sustained more significant damage and may need to be moved or replaced are planned for completion later in the initial 2-year time frame, because these repairs or replacements require more significant project design and environmental and permitting reviews.

Even as FEMA has clarified eligibility for PA funds, it is uncertain how other available funding sources will support measures to enhance grid resilience, such as smart grid technology, which are not eligible for PA funding associated with the fixed-cost estimate. This estimate totals about \$10 billion and could cover about half of the \$20.3 billion identified in Puerto Rico's Grid Modernization Plan as necessary to repair the grid and make it more resilient. To fully implement the resilience improvements identified in that plan, Puerto Rico will need to identify additional funding sources beyond PA funds associated with the fixed-cost estimate. In addition, although PREPA has developed a 2-Year Project Plan based on FEMA's guidance on PA funding eligibility, FEMA officials we interviewed told us that PA funding may not fully fund these projects. Specifically, according to FEMA officials, projects that restore infrastructure to comply with industry standards will be eligible for PA funding, but resilience improvements that may improve grid performance—but go beyond these industry standards—will not be covered. For example, FEMA officials said that PA funding under the fixed-cost estimate will cover restoration of distribution lines to align with approved industry standards, including components of power lines that were not damaged by the storm but whose condition affects the performance of the rest of the line. However, adding smart grid technology that could provide enhanced visibility of storm-related outages (e.g., Advanced Metering Infrastructure, a key technology identified in Puerto Rico's Grid Modernization Plan) but was not in place prior to the hurricanes would not be eligible for PA funding under the fixed-cost estimate, according to FEMA officials. Rather, officials said that funding for these types of technologies could be covered by hazard mitigation funding under the PA program, and PREPA will need to apply for this funding for individual projects after the fixed-cost estimate has been finalized.

FEMA officials told us that they were attempting to maximize the flexibility under the BBA and include as many projects as possible under the fixed-cost estimate to maximize that funding stream and reduce the administrative burden on the local entities applying for this funding. FEMA officials could not provide information on how much hazard mitigation funding would be available or the extent to which it would be sufficient to fill in gaps left by PA funding associated with the fixed-cost estimate. FEMA officials we interviewed told us that remaining gaps could be filled by other federal funding sources, such as CDBG-DR funding or philanthropy. Ultimately, local entities are responsible for deciding what improvements they want to make to the system, but in PREPA's case, these decisions may be constrained by the availability of federal funding. Consequently, due to PREPA's own financial challenges, it remains uncertain which technologies and approaches will be feasible for PREPA to implement as part of its grid recovery.

In addition to funding uncertainty, it remains unclear whether local entities have sufficient information, such as in the form of written guidance, to adequately plan grid recovery projects using PA and other federal funding now that they have finalized the fixed-cost estimate. As mentioned above, FEMA officials we interviewed said that finalizing this estimate is a critical step toward obligating funds for specific grid recovery projects. FEMA officials told us that after finalizing the fixed-cost estimate, several steps remain before COR3 and PREPA can receive final approval for individual projects. FEMA has provided some written guidance, as we recommended in October 2019, and has provided ongoing input on project eligibility through the process of finalizing the fixed-cost estimate. FEMA officials told us they have developed draft guidance documenting how project development will proceed after the fixed-cost estimate is finalized and funds are obligated. They told us that the first long-term projects that will go forward, such as those on Vieques and Culebra islands, will serve as a proving ground for how individual projects will be implemented on the ground. While FEMA has not yet finalized its guidance and formally documented this process, the agency provided the draft guidance to COR3 in early August, according to FEMA officials we interviewed. As of October 2020, this guidance was still in draft form, and FEMA officials could not tell us when it was expected to be finalized.

We continue to believe that without clear written information, local entities may continue to face challenges developing and initiating projects, consistent with recommendations we made in October 2019. Meanwhile, such challenges may contribute to further delays in rebuilding the grid, leaving it vulnerable to future severe weather events. In addition, local

entities risk spending resources for consultants to develop and design projects that ultimately may not be eligible for funding, or where project cost may exceed available funding. For example, while FEMA obligated \$111 million for architectural and engineering design services for electricity grid recovery projects, COR3 has not drawn down these funds because of PREPA's uncertainty ahead of the fixed-cost estimate being finalized. Furthermore, *Standards for Internal Control in the Federal Government* state that documenting these policies and procedures is necessary to ensure that an entity operates effectively. Given that both federal and local entities have experienced staff turnover in recent years, clearly documenting policies and procedures could ensure grid recovery projects proceed as planned. We will continue to monitor FEMA's efforts to support grid recovery in Puerto Rico.

HUD Has yet to Establish Conditions for Using CDBG-DR Funds and Has Not Addressed Our Recommendation to Establish Time Frames and a Plan for Issuing This Information

As of October 2020, HUD has not established conditions for using CDBG-DR funds for grid recovery nor has it addressed our recommendation to establish time frames and a plan for issuing this information. Moreover, FEMA and local officials deemed these funds critical to funding grid improvements, given PREPA's financial challenges.³² After Hurricane Maria, HUD awarded approximately \$19.9 billion in CDBG-DR funds to Puerto Rico, including about \$1.9 billion for enhancing or improving the electrical power systems in Puerto Rico. HUD provides CDBG-DR funds to address needs not met by other disaster recovery programs. In particular, CDBG-DR funds could be used to cover the costs beyond those FEMA's PA funding covers to rebuild the electricity grid. Typically, once HUD receives CDBG-DR appropriations, the agency 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 funds.

However, as of October 2020—over 2 years after these funds were appropriated and 3 years after the 2017 hurricanes—HUD has not published the notice outlining the grant process and requirements for CDBG-DR funding available for improvements to Puerto Rico's electricity grid. In October 2019, we recommended that HUD establish time frames

³²Although FEMA's PA funding will be available to cover some grid improvements, this funding requires up to a 10-percent cost share, which will be Puerto Rico's responsibility to cover. This cost share could come from CDBG-DR funds.

and a plan for issuing this notice.³³ As of October 2020, the time frame for publishing this notice remains uncertain. HUD officials we interviewed said that they had developed a draft of this notice, on which they had coordinated closely with DOE, FEMA, and other agencies through regular meetings and other reviews. These officials told us that they hoped to publish this notice in the first quarter of fiscal year 2021, but they said that this was an ambitious time frame and that meeting this deadline would be dependent upon other factors, such as input from other federal agencies.

Puerto Rico will be responsible for a share of the grid recovery costs that FEMA's PA funding will cover. This local cost share could come from CDBG-DR funds, and further delays in publishing the conditions could contribute to delays in PREPA's ability to fund and initiate grid recovery projects. Moreover, we continue to believe that without information on the requirements for these funds, local entities lack complete information on available funding. As a result, local entities may spend time and other limited resources developing projects that ultimately may not be eligible for federal funding. We will continue to monitor HUD's efforts to support grid recovery in Puerto Rico.

Agency Comments and Our Evaluation

We provided a draft of this report to 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 and HUD. These comments are reprinted in appendixes I and II and summarized below. DOE and Puerto Rico provided technical comments which we incorporated as appropriate.

In its written comments, reproduced in appendix I, FEMA stated that it appreciated our acknowledgement of their progress on finalizing the fixed-cost estimate, but disagreed with the implication that PREPA could not move forward with permanent work until FEMA clarified certain policies and procedures. FEMA also described steps it had taken in conjunction with our October 2019 report, including updating its guidance on implementing the BBA and launching the Energy Technical Coordination Team to promote coordination among stakeholders. The agency added that additional funding opportunities may be available to

³³In February 2020, 10 Members of Congress requested that HUD's Inspector General open an inquiry into whether this delay in releasing emergency relief funds that Congress appropriated for Puerto Rico violated the Impoundment Control Act of 1974. The Impoundment Control Act operates on the premise that when Congress appropriates money to the executive branch, the President is required to obligate the funds. The act does authorize the President to impound, or withhold the obligation of funds, in certain circumstances, but the President must notify Congress of a proposed impoundment.

PREPA but also acknowledged the uncertainty of whether it will raise such additional funding. FEMA noted, however, that it is ultimately PREPA's responsibility to decide what projects it plans to pursue.

We acknowledge FEMA's actions to support Puerto Rico's grid recovery but, as discussed in our report, we believe that providing additional guidance could help address lingering uncertainty about the process for initiating and determining funding sources for long-term grid recovery projects. As we note in our report, FEMA officials told us they have developed draft guidance documenting how project development will proceed after the fixed-cost estimate is finalized and funds are obligated. However, FEMA has not yet finalized this guidance. Without clear written information from FEMA, local entities may continue to face challenges that will further delay the development of projects. 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.

In its written comments, reproduced in appendix II, HUD stated that in order to move forward with its requirements for the use of CDBG-DR funds, it was necessary for FEMA to substantially complete the PA funding process before HUD could finalize the corresponding *Federal Register* Notice for its complementary funding. In addition, HUD stated that PREPA continues to present significant financial and operational risks that must be acknowledged, mitigated, and monitored to ensure proper stewardship of the unprecedented level of federal funding to be provided. HUD also noted its efforts to consult with other federal agencies and grantees, and that it continues to work towards publication of the relevant *Federal Register* Notice.

As discussed in our report, we acknowledge HUD's efforts to coordinate with federal agencies, but after speaking with federal and local officials, we determined that there is insufficient evidence to indicate that HUD was prevented from establishing CDBG-DR requirements because it was waiting for FEMA. 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. In addition, we acknowledge HUD's assertion that PREPA's financial challenges pose additional risks that must be managed. However, we disagree that this is sufficient reason to have prevented HUD from taking action on our recommendation. Rather, establishing CDBG-DR requirements would enable PREPA to better plan its grid recovery projects and provide additional transparency to the

project planning process. Without clear written information from HUD, PREPA may continue to face challenges that will further delay the development of projects. 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.

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, and the government of Puerto Rico for review and comment.

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 III.

A handwritten signature in black ink that reads "Frank Rusco". The signature is written in a cursive style and extends to the right with a long, thin horizontal stroke.

Frank Rusco
Director, Natural Resources and Environment

List of Requesters

The Honorable Michael B. 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 Carolyn B. Maloney
Chairwoman
The Honorable James Comer
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 Emanuel Cleaver, II
House of Representatives

The Honorable Jim Jordan
House of Representatives

The Honorable Michael McCaul
House of Representatives

The Honorable Gary Palmer
House of Representatives

The Honorable Ann Wagner
House of Representatives

Appendix I: Comments from the Department of Homeland Security

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



**Homeland
Security**

October 27, 2020

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-21-54, "PUERTO RICO ELECTRICITY: FEMA and HUD Have Not Approved Long Term Projects and Need to Implement Recommendations to Address Uncertainties and Enhance Resilience"

Dear Mr. Rusco:

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

The Department is pleased to note GAO's recognition of the Federal Emergency Management Agency's (FEMA) obligation on September 23, 2020 of a \$10.5 billion fixed cost estimate (FCE) for permanent work grant in Puerto Rico, which is the largest Public Assistance grant in FEMA history. FEMA, however, disagrees with the implication that the Puerto Rico Electric Power Authority (PREPA) cannot move forward with their permanent work until FEMA clarifies certain policies and procedures. It is important to note that GAO's draft report does not contain any recommendations for this or other action(s).

More specifically, in conjunction with the issuance of GAO-20-141, "PUERTO RICO ELECTRICITY GRID RECOVERY: Better Information and Enhanced Coordination is Needed to Address Challenges," in October 2019, FEMA took immediate actions to: 1) issue Version 2 of FEMA's Policy FP-1-4-009-5, "Implementing Section 20601 of the 2018 Bipartisan Budget Act (BBA) through the Public Assistance Program" on September 11, 2019; 2) launch the Puerto Rico Energy Solutions Based Team meetings on February 13, 2020, to promote coordination among stakeholders; and, 3) sign an interagency agreement between the Department of Energy and FEMA field leadership in

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

early 2020. These actions improved communication, facilitated a collaborative working environment, and paved the way for the successful agreement and obligation of the permanent work grant.

The FCE for PREPA includes funding for the repair of components in seven asset categories: 1) buildings; 2) substations; (3) distribution; (4) transmission; (5) telecommunications; (6) generation; and (7) water. FCE development took into consideration improving resilience for eligible repairs for functionally dependent components using the flexibilities allowed through the BBA. Furthermore, additional funding opportunities may be available through Section 406 of the November 1988 “Robert T. Stafford Disaster Relief and Emergency Assistance Act” (Stafford Act) covering Hazard Mitigation measures, should PREPA choose to apply for it. The obligated FCE is what FEMA determined as the total dollar amount for eligible repairs to the electricity grid. Under Stafford Act Section 428, “Public Assistance Alternative Procedures,” PREPA then has the flexibility to propose different scopes of work for projects within the grant.

The Grid Modernization Plan (now referred to as the Energy Grid Modernization Plan [EGM]) issued in July 2019 included \$20.3 billion in potential investments to rebuild the grid and modernize the energy sector. If PREPA chooses to proceed with these ideas, FEMA acknowledges the uncertainty of whether PREPA will raise additional funding. While the plan includes cutting-edge technologies and operational plans, PREPA and its stakeholders, such as the Puerto Rico Electric Board, need to determine the economic viability and feasibility of some proposed measures, such as microgrids.

As PREPA develops its full project outlook, opportunities exist for the utility to structure its projects to align with and directly support the transformational operational goals and objectives described in the EGM and the PREPA Integrated Resource Plan. It is important to note, however, that implementing long-term recovery projects for the electricity grid is a challenging, large, and complex endeavor that entails decision-making and coordination among several entities in the Commonwealth of Puerto Rico. Any utility faces difficult decisions when engaged in planning that impacts the fundamental operation of its electricity delivery system. PREPA’s debt and the current restructuring of PREPA further complicates this process, which includes the transfer of transmission and distribution system operations to private companies.

FEMA Energy Sector Staff in the Puerto Rico Joint Recovery Office and the Energy Technical Coordination Team continue to support PREPA’s project development. However, it is ultimately PREPA’s responsibility to identify the actual repair plans to be implemented. FEMA remains committed to supporting the Commonwealth of Puerto Rico as they recover from the devastating effects of Hurricane Maria in the coming months and years.

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

The draft report did not contain any recommendations. DHS previously submitted technical comments under a separate cover for GAO's consideration.

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

Sincerely,

**JIM H
CRUMPACKER**

Digitally signed by JIM H
CRUMPACKER
Date: 2020.10.27 10:43:54
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JIM H. CRUMPACKER, CIA, CFE
Director
Departmental GAO-OIG Liaison Office

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



ASSISTANT SECRETARY FOR
COMMUNITY PLANNING AND DEVELOPMENT

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

October 16, 2020

Mr. Frank Rusco
U.S. Government Accountability Office
441 G Street NW
Washington, DC 20548

Dear Mr. Rusco:

The Government Accountability Office draft report, “Post-Hurricane Electricity Grid Recovery and Resilience (103872)” presents an incomplete understanding of the Department’s efforts on multiple fronts to address the electrical system and related energy needs of Puerto Rico and the U.S. Virgin Islands (USVI). Although the draft recognizes that Federal Emergency Management Agency (FEMA) is the lead federal agency and will be providing the bulk of the funding through its Public Assistance (PA) program for electrical grid improvements, the report does not explicitly link FEMA’s role in this regard with HUD’s role in providing Community Development Block Grant Disaster Recovery (CDBG-DR) assistance.

HUD’s CDBG-DR funds will be “gap” funding for these improvements (e.g. for improvements that are not eligible for PA, for PA match or where no further PA funding is available for a particular activity). Therefore, in order for HUD to move forward with its requirements for the use of CDBG-DR funds appropriated specifically for grid improvements, it was necessary for FEMA to substantially complete the PA funding process in order to identify the improvements and funding that FEMA would fund, before HUD could finalize the corresponding *Federal Register* Notice for its complementary funding. The scope and complexity of the grid improvements and the scale of FEMA PA funding dedicated to this investment is reflected in the substantial amount of time that FEMA, Puerto Rico and the USVI have dedicated to arriving at an agreed upon level of funding and improvements. On September 18, 2020, FEMA announced an agreement to provide \$9.6 billion of PA funds for Puerto Rico grid improvements. With this framework now in place, HUD is now positioned to move forward with implementing the CDBG-DR funds appropriated for grid improvements.

While the FEMA PA agreement represents a critical milestone in moving forward with HUD grid improvements, the draft report gives only passing attention to another significant “funding uncertainty” that confronts FEMA, HUD and its grantees and that must be addressed. Specifically, Puerto Rico’s utility, PREPA and the USVI’s utility, WAPA, continue to present significant financial and operational risks that must be acknowledged, mitigated, and monitored to ensure proper stewardship of the unprecedented level of federal funding to be provided. Through its prior allocation of CDBG-DR funds to Puerto Rico and the USVI for recovery, HUD has established a process for inter-agency consultation centered around grid improvements that is designed to account for these risks, but which is largely ignored in the draft report.

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

2

The draft report's conclusion and its discussion of federal agency grid activity contends that neither FEMA nor HUD have "funded long-term grid recovery projects in Puerto Rico." However, in the HUD grant agreements that govern the second allocation of CDBG-DR funds for Hurricane Maria recovery, HUD established the following grant condition for both grantees, which allows for the use of those funds and provides an additional path forward for electrical and other energy improvements. The condition provides:

"The grantee will not use CDBG-DR funds for activities to enhance or improve electric power systems (including as a match for federal programs) until after HUD consults and coordinates with its Federal partners on other Federally-funded investments for this purpose..."

This consultation process has occurred under the auspices of the Recovery Support Federal Leadership Group (RSFLG). The RSFLG is the primary vehicle for Federal consultations regarding Federally funded electrical grid and other energy improvements in Puerto Rico and the USVI.

The purpose of the grant condition is to establish a process of ongoing consultation in order to provide a Federal lens into those planned CDBG-DR activities that would enhance or improve the electric power system and is directly attributable to work undertaken by the grantee's respective utilities, in light of the separate CDBG-DR funding allocation specifically for electrical grid improvements. Both grantees have actively engaged in this consultation process through the RSFLG and have secured Federal guidance to move forward with a range of energy related CDBG-DR activities. This process has also allowed the federal agencies to address specific risks posed by planned improvements.

For example, the USVI recently requested that non-electrical grid CDBG-DR funding be used to fund some improvements to one of WAPA's power plants. Based on the financial condition of WAPA, HUD with concurrence of the other federal partners established grant conditions for USVI/WAPA that are intended to put WAPA on a path to a better financial condition and to better position the utility to implement larger scale HUD-funded improvements next year. The draft GAO report does not recognize this ongoing federal process to move forward with system improvements nor does it acknowledge HUD's and FEMA's efforts to mitigate the risks posed by the nature of the funded activities and by the issues that continue both grantees' utilities.

Finally, with respect to the guidance specific to the allocation of CDBG-DR funds for electrical system improvements, HUD continues to work towards publication of the relevant *Federal Register* Notice. As noted previously to GAO, HUD must rely on FEMA and the U.S. Department of Energy, as well as other agencies of the RSFLG for technical guidance related to electric grid improvements. HUD has been working with its federal partners to finalize a draft and is continuing to conduct meetings with federal partners on a number of items on which the agencies must reach agreement, with a goal of resolving the outstanding issues and publishing the Notice in the first quarter of FY 2021 (October-November timeframe). HUD requests that the current time frame referenced in the report of August 2020 be revised accordingly.

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

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The Department appreciates this opportunity to comment on the draft report. If you have additional questions regarding these comments, please contact Janet M. Golrick, Acting Deputy Assistant Secretary for Grant Programs, at (202) 402-3998 or by email, at janet.m.golrick@hud.gov.

Sincerely,


Digitally signed
by JOHN GIBBS
Date:
2020.10.16
15:28:40 -04'00'

John Gibbs
Assistant Secretary

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

Frank Rusco, (202) 512-3841 or ruscof@gao.gov

Staff Acknowledgments

In addition to the contact named above, Janice Ceperich (Assistant Director), Jarrod West (Analyst-in-Charge), Joel Aldape, Danny Baez, Antoinette Capaccio, John Delicath, Cindy Gilbert, Philip Farah, Rachel Pittenger, Danny Royer, and Sheryl Stein made key contributions to this report.

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