United States Senate
WASHINGTON, DC 20510

March 14, 2018

Administrator Brock Long
Federal Emergency Management Agency
500 C Street N.W.
Washington, D.C. 20472

Lieutenant General Todd T. Semonite
U.S. Army Corps of Engineers
441 G Street N.W.
Washington, D.C. 20314

Dear Administrator Long and General Semonite,

We are writing today to request an update on federal efforts to restore the electric grid in Puerto Rico, five and a half months after Hurricane Maria devastated the territory. We hope to gain a better understanding of the status of and challenges to restoration efforts and to obtain information about the reliability of the service that has been restored.

According to official figures, the joint efforts of the Federal Emergency Management Association (FEMA), the U.S. Army Corps of Engineers (Army Corps), the Department of Energy (DOE), the Puerto Rico Electric Power Authority (PREPA), and affiliated contractors have restored power to over 1.3 million customers,[1] representing around 92% of PREPA customers.[2] The Army Corps, which was "given a mission to restore power on Puerto Rico, writ large...full stop,"[3] has been described as "the most important actor" in these power restoration efforts. Working with PREPA, the Army Corps has focused on installing emergency, temporary generators across the island; improving the island's power generation capacity; restoring the island's electric transmission system; and rebuilding the island's power distribution system.[4] The federal and territory agencies hope to restore electricity to up to 95% of customers by March 31.[5]

---

[1] Frances Robles, "Contractors Are Leaving Puerto Rico, Where Many Still Lack Power," *New York Times* (February 26, 2018) (online at https://www.nytimes.com/2018/02/26/us/puerto-rico-power-contractor.html); tweet by U.S. Army Corps of Engineers Headquarters (March 12, 2018) (online at https://twitter.com/USACEHQ/status/973242320391897089).
[2] *See* www.status.pr.
[3] Peter Behr, Rod Kuckro, and David Ferris, "Trump admin takes over Puerto Rico grid recovery," *E&E News* (September 29, 2017) (online at https://www.eenews.net/stories/1060062123).
[4] Carlos L. Yordán, "U.S. Army Corps of Engineers' Power Restoration Strategy for Puerto Rico Post-Maria," *Center for Puerto Rican Studies* (February 20, 2018) (online at https://centropr.hunter.cuny.edu/centrovoices/current-affairs/us-army-corps-engineers%E2%80%99-power-restoration-strategy-puerto-rico-post).
[5] Tweet by U.S. Army Corps of Engineers Headquarters (February 27, 2018) (online at https://twitter.com/USACEHQ/status/968545762228555777).

However, over 130,000 customers remain without power,[6] and the island continues to experience significant electricity-related challenges. Federal and local responders have struggled to provide relief to citizens living in the mountainous, more sparely-populated regions of central Puerto Rico, where transporting supplies and vehicles is more difficult than in coastal towns.[7] Without power, hard-to-reach areas have struggled to access clean water and preserve food, leading some areas and schools to disconnect from the PREPA grid entirely.[8]

In spite of the challenges still facing power restoration efforts, over 2,000 workers from federal contractors—including employees from two large Army Corps contractors—have left Puerto Rico in recent weeks, causing "indignation" amongst Puerto Rican towns that still lack power.[9] Those involved in power restoration efforts and in local government have reportedly been "disappointed" by the contractors' work, which they feel has been "slow."[10] The Army Corps has described its workforce reduction as "a natural progression of any emergency response" and argues that "the delivery of materials (poles, wire, and transformers)," rather than "the number of workers," has been "the primary limiting factor to…progress."[11] It acknowledges, however, that "achieving 95% [power] restoration in areas with challenging terrain like Arecibo and Caguas, will take until mid-April and late-May, respectively."[12]

Furthermore, news reports suggest that PREPA, facing significant financial challenges,[13] continues to struggle to minimize and prevent power outages—even in areas more readily accessible by recovery workers. Nearly half of Puerto Rico's 1,240 intersections, for example, do

---

[6] Tweet by U.S. Army Corps of Engineers Headquarters (February 27, 2018) (online at https://twitter.com/USACEHQ/status/968548810690572288).

[7] Gloria Ruiz Kuilan, "Aseguran que van a reforzar trabajos para energizar el centro de la isla," *El Nuevo Día* (March 1, 2018) (online at https://www.elnuevodia.com/noticias/locales/nota/aseguranquevanareforzartrabajosparaenergizarelcentrodelaisla-2402949/); Hugh Bronstein, "In the mountains of Puerto Rico, hurricane recovery is slower," *Reuters* (October 10, 2017) (online at https://www.reuters.com/article/us-usa-puertorico-recovery/in-the-mountains-of-puerto-rico-hurricane-recovery-is-slower-idUSKBN1CF32L).

[8] Chris Martin, "After Months Without Power, Puerto Rico School Ditches Grid," *Bloomberg* (February 15, 2018) (online at https://www.bloomberg.com/news/articles/2018-02-15/after-months-without-power-one-puerto-rico-school-ditches-grid).

[9] Frances Robles, "Contractors Are Leaving Puerto Rico, Where Many Still Lack Power," *New York Times* (February 26, 2018) (online at https://www.nytimes.com/2018/02/26/us/puerto-rico-power-contractor.html); tweet from U.S. Army Corps of Engineers Headquarters (February 16, 2018) (online at https://twitter.com/USACEHQ/status/964568830734426113); tweet from U.S. Army Corps of Engineers Headquarters (March 12, 2018) (online at https://twitter.com/USACEHQ/status/973247272103415809).

[10] Frances Robles, "Contractors Are Leaving Puerto Rico, Where Many Still Lack Power," *New York Times* (February 26, 2018) (online at https://www.nytimes.com/2018/02/26/us/puerto-rico-power-contractor.html).

[11] Tweet by U.S. Army Corps of Engineers Headquarters (February 27, 2018) (online at https://twitter.com/USACEHQ/status/968545767924338689).

[12] Tweet by U.S. Army Corps of Engineers Headquarters (February 27, 2018) (online at https://twitter.com/USACEHQ/status/968545763671330817).

[13] Tom Corrigan and Andrew Scurria, "Federal Judge Approves $300 Million Loan for Puerto Rico Utility," *Wall Street Journal* (February 19, 2018) (online at https://www.wsj.com/articles/federal-judge-approves-300-million-loan-for-puerto-rico-utility-1519085812).

not have functioning traffic lights, including at least 424 that are ready to be energized by PREPA—reportedly causing chaos on the streets.[14]

In addition, recurring power outages in areas where power has been previously restored raise significant questions about the reliability of service. In mid-February, a PREPA power station exploded, causing the island to lose at least 400 megawatts of power generation and causing parts of San Juan and northern Puerto Rico "that had regained power in the aftermath of the September storm [to be] plunged into darkness again."[15] Another blackout on March 1 affected almost one million residents in San Juan and nearby areas, and came "amid warnings from officials that [PREPA] is struggling to remain operational."[16] While there are numerous anecdotal reports of new power outages, there is little systematic information on these events. And according to a recent DOE report, just 71% of PREPA's 56 transmission centers are operational.[17]

In January 2018, the Commander of Puerto Rico's Power Restoration Task Force reaffirmed that "USACE is committed to the restoration of power for the people of Puerto Rico and...will continue to press forward until the mission is complete."[18] To help us better understand the current status the federal government's efforts to restore power to Puerto Rico, as well as the challenges facing FEMA, the Army Corps, and its partners in power restoration efforts, we request a response to the following no later than March 28, 2018. In addition, we request a staff briefing on the response no later than March 30, 2018.

1. Please provide an overview of how FEMA, the Army Corps, and other federal agencies plan to restore power to up to 95% of Puerto Rico by March 31, 2018. How many workers, including federal workers and contractors, are required for these power restoration efforts? What types of materials, and in what quantities, are required for these power restoration efforts?

2. Please provide an overview of how FEMA, the Army Corps, and other federal agencies plan to restore power to 90-95% of Puerto Ricans living in less accessible, mountainous, and sparsely-populated regions—including a description of the challenges facing restoration workers that are unique to these regions. How many workers, including federal workers and contractors, do the agencies anticipate will be required for these

---

[14] Javier Colón Dávila, "Los semáforos dañados estarán reparados para verano," *El Nuevo Día* (February 22, 2018) (online at https://www.elnuevodia.com/noticias/locales/nota/lossemaforosdanadosestaranreparadosparaverano-2400904/).

[15] Chantal Da Silva, "Puerto Rico Hit With New Blackout After Explosion at Power Plan," *Newsweek* (February 12, 2018) (online at http://www.newsweek.com/puerto-rico-hit-blackout-after-explosion-power-plant-802847).

[16] Danica Coto, "Blackout hits Puerto Rico after 2 power plants shut down," Associated Press (March 1, 2018) (online at https://www.washingtonpost.com/world/the_americas/blackout-hits-puerto-rico-after-2-power-plants-shut-down/2018/03/01/b04cd78c-1d92-11e8-98f5-cecefa8741b6_story.html).

[17] U.S. Department of Energy, "Hurricanes Maria & Irma: March 7 Event Summary (Report #94)" (online at https://www.energy.gov/sites/prod/files/2018/03/f49/Hurricanes%20Maria%20%20Irma%20Event%20Summary%20March%207%2C%202018.pdf).

[18] Luciano Vera , "Army Corps of Engineers announces power restored to over 1 million Puerto Rico customers," *U.S. Army* (January 24, 2018) (online at https://www.army.mil/article/199469/army_corps_of_engineers_announces_power_restored_to_over_1_million_puerto_rico_customers).

restoration efforts? What types of materials, and in what quantities, are required for these power restoration efforts?

3. Please provide a list of the contractors that FEMA and the Army Corps have hired to help restore power to Puerto Rico. In addition, please provide a description of the projects included in each contract, the monetary value of each contract, the dates of each contract, and the number of workers used to fulfill each contract.

4. The Army Corps has described the "primary limiting factor" to power restoration as "the delivery of materials." Please describe the difficulties that FEMA, the Army Corps, and other federal agencies have faced in delivering materials to Puerto Rico—including any challenges specific to mountains and sparsely-populated regions. Are there any federal or local fixes that could reduce these difficulties moving forward?

5. The Army Corps is slated to finish its mission in Puerto Rico at the end of March 2018, unless its mission is extended by FEMA.[19] Does FEMA anticipate extending the Army Corps' mission past March 31, 2018?

6. Please describe the working relationship between FEMA, the Army Corps, PREPA, and the Puerto Rican government, including any division of responsibility or regions among the organizations.

7. What challenges have PREPA's financial difficulties posed for federal power restoration efforts? What challenges do those difficulties continue to pose?

8. How reliable are the electrical lines and power plants that have been restored?

    a. Please provide a list of all blackouts and power outages in previously restored areas, including the date of the outage, the duration, the cause (if known), the location, and the number of customers affected.

    b. When power is restored, to what extend is it meeting power quality standards? Specifically, what percentage of customers are routinely receiving power that maintains voltage levels within specified limits? How does this compare to pre-hurricane performance?

    c. For areas where power has been restored, please provide the System Average Interruption Frequency Index (SAIFI) since the date of restoration. How does this compare to pre-hurricane performance?

    d. For areas where power has been restored, please provide the System Average Interruption Duration Index (SAIDI)[20] since the date of restoration. How does this compare to pre-hurricane performance?

---

[19] Lizzie O'Leary, "Meet the man bringing power back to Puerto Rico," *Marketplace* (December 1, 2017) (online at https://www.marketplace.org/2017/12/01/world/pr-power-and-army-corps-engineers).

[20] From IEEE manual (sent by CRS representative).

e. For areas where power has been restored, please provide the Customer Average Interruption Duration Index (CAIDI) since the date of restoration. How does this compare to pre-hurricane performance?

9. The 2018 hurricane season will run from June 1, 2018, to November 30, 2018. The Department of Energy defines electrical system resilience as "the ability to withstand and recover rapidly from disruptions," including "naturally occurring" disruptions.[21] Do you believe that the Puerto Rican electrical grid will be capable of withstanding and rapidly recovering from a Category 4 or Category 5 hurricane during the 2018 hurricane season?

Please do not hesitate to contact Alex Blenkinsopp of Senator Warren's staff at 202-224-4543, Zachary Radford of Senator Blumenthal's staff at 202-224-2823, Jordan Warner of Senator Cortez Masto's staff at 202-224-3542, Jeremy D'Aloisio of Senator Markey's staff at 202-224-2742, or Katie Thomas of Senator Sanders' staff at 202-224-5141 with any questions or concerns. We look forward to your prompt response.

Sincerely,

Elizabeth Warren
United States Senator

Richard Blumenthal
United States Senator

Bernard Sanders
United States Senator

Catherine Cortez Masto
United States Senator

Edward J. Markey
United States Senator

[21] https://www.energy.gov/sites/prod/files/2017/02/f34/Chapter%20IV--Ensuring%20Electricity%20System%20Reliability%2C%20Security%2C%20and%20Resilience.pdf