

island's aged and fragile electric power grid. PRTC takes this opportunity to shed additional light on these issues.

I. Puerto Rico's Electric Power Grid

The Puerto Rico Electric Power Authority ("PREPA") is the public corporation that supplies substantially all the electricity consumed in Puerto Rico and owns all transmission and distribution facilities and most of the generating facilities that constitute Puerto Rico's electric power grid. On July 2, 2017, the Financial Oversight and Management Board for Puerto Rico ("Oversight Board"), on behalf of PREPA, filed a voluntary petition for relief pursuant to the Puerto Rico Oversight, Management, and Economic Stability Act of 2016 ("PROMESA").² The PREPA Bankruptcy Petition indicates the corporation has over \$10 billion in debt.³

PREPA's power lines, transformers, and generators have suffered from years of neglect, making it one of the most expensive⁴ and least reliable electricity grids in the United States. PREPA has lost as many as 4,000 key employees (including linemen, power plant operators and mechanics), most of them leaving for better jobs in the mainland. PREPA's petition for bankruptcy outlines other challenges that make Puerto Rico's electric power grid uniquely unprepared to deal with the hurricanes:

The challenges include: a prolonged recession leading to a significant drop in energy sales; legal requirements to provide power to certain customers at subsidized rates; relatively high levels of theft and non-technical losses; inadequate reinvestments leading to an old, inefficient and unreliable transmission, distribution and generation facilities and outdated information and technology systems; a high dependence on fuel oil and an inability to diversify its fuel mix; a lack of a strategic environmental compliance plan; a disorganized

² *In re The Financial Oversight and Management Board for Puerto Rico, as representative of Puerto Rico Electric Power Authority, Debtor*, 17-BK-04780-LTS, (July 2, 2017) (D.P.R.) ("*PREPA Bankruptcy Petition*").

³ *PREPA Bankruptcy Petition*, Statement of Oversight Board Regarding PREPA's Title III Case, at 6-8.

⁴ "Currently, the price of electricity for residential customers in Puerto Rico is higher than the price of electricity in any of the 48 contiguous states, roughly the same as the price in Alaska, and lower than the price in Hawaii (27.45 cents per kilowatt hour in August 2016)." Congressional Task Force on Economic Growth in Puerto Rico, 114th Cong., at 38 (2016) ("*Task Force Report*").

and ineffective customer service infrastructure; material operating liabilities; and a significant debt burden leading to a debt crisis PREPA's chronic underinvestment and inconsistent management have led PREPA's facilities and business practices to fall significantly behind industry standards. This condition has been aggravated by the fact that PREPA operates an isolated system in a challenging terrain subject to frequent storms and other natural atmospheric events. PREPA's aging infrastructure is evidenced by a median plant age of 44 years, compared to an industry average age of 18 years. In addition, PREPA's generation facilities face significant forced outages at a rate more than 50% higher than U.S. historical averages. [...] PREPA's underinvestment in its infrastructure, its substandard policies, and labor issues have led to a safety system and safety record dramatically below industry standards. [...] PREPA's current debt crisis has resulted from PREPA funding deficits from bond proceeds, leading to underfunded infrastructure and an unsustainable debt structure.⁵

A 2015 report noted that Puerto Rico's electricity was "produced and distributed by an inefficient and overstaffed public enterprise" that uses "technologies decades out of date."⁶ A 2016 report by the Congressional Task Force on Economic Growth in Puerto Rico ("Task Force Report") described PREPA as a "public corporation in deep financial distress."⁷ Citing the "high cost and low reliability of electric power in Puerto Rico" as "one of the most serious challenges confronting households and businesses," and a service record by PREPA that "...has not inspired confidence among its customer base in Puerto Rico...", the Task Force Report recommended operational reforms at PREPA with the goal of making electric power more reliable and affordable.⁸ This was the state of Puerto Rico's electric power grid prior to the 2017 hurricane season.

II. Hurricanes Irma and Maria

On September 7, 2017, the eye of Hurricane Irma passed north of San Juan, Puerto Rico. The Category 5 hurricane, which reached sustained winds of 185 mph winds for 37 hours, is the

⁵ *PREPA Bankruptcy Petition*, Statement of Oversight Board Regarding PREPA's Title III Case, at 3.

⁶ Anne O. Krueger, Ranjit Teja and Andrew Wolfe, *PUERTO RICO – A WAY FORWARD*, June 2015, at p. 7, available at <http://www.bgfpr.com/documents/PuertoRicoAWayForward.pdf> (last visited Jan. 16, 2018).

⁷ *Task Force Report* at 38-39.

⁸ *Id.* at 37, 39.

most powerful storm ever on record in the Atlantic outside of the Caribbean and Gulf of Mexico, and the longest-lasting powerful hurricane or typhoon ever recorded worldwide.⁹ Although Puerto Rico avoided taking a direct hit, the damage was significant: widespread flooding, thousands of people forced into shelters, more than half of Puerto Rico without power, and nearly 50,000 residents without water.¹⁰ After Hurricane Irma, officials warned that the island's already fragile electrical grid "could be shut down for months in some areas."¹¹ On September 6, 2017, the Commission activated the Disaster Information Reporting System ("DIRS") to receive information on the status of communications equipment in Puerto Rico and the U.S. Virgin Islands.¹² On September 10, 2017, the President issued a disaster declaration for Puerto Rico.¹³

On September 20, 2017, just ten days after Puerto Rico was declared a major disaster area due to Hurricane Irma, Category 4 Hurricane Maria directly hit the territory with sustained winds of 155 mph. Hurricane Maria was the strongest storm to make landfall in Puerto Rico in 85 years. The hurricane left 3.4 million people without power, most residents without water, destroyed homes, businesses, roads and bridges. In terms of communications infrastructure, the storm placed

⁹ Patrick Scott, "Hurricane Irma in numbers: All the records the storm has blown away," The Telegraph, Sept. 11, 2017, available at <http://www.telegraph.co.uk/news/2017/09/11/hurricane-irma-numbers-records-storm-has-blown-away/> (last visited Jan. 16, 2018); "Hurricane Irma Blasts Into The Record Books With Lasting Intensity," National Public Radio, Sept. 12, 2017, available at <https://www.npr.org/sections/thetwo-way/2017/09/12/550188154/hurricane-irma-blasts-into-the-record-books-with-lasting-intensity> (last visited Jan. 16, 2018).

¹⁰ Nick Allen, Harriet Alexander, Danny Boyle, *et al.*, "First 24 hours of destruction as Hurricane Irma tears through Atlantic," The Telegraph, Sept. 7, 2017, available at <http://www.telegraph.co.uk/news/2017/09/06/hurricane-irma-latest-live-news-strongest-ever-atlantic-storm/> (last visited Jan. 16, 2018).

¹¹ "The Storm Reaches Puerto Rico: 'There Is Nothing Like This,'" The New York Times, Sept. 6, 2017, available at <https://www.nytimes.com/2017/09/06/world/americas/hurricane-irma-update.html> (last visited Jan. 16, 2018).

¹² Public Notice, *FCC Activates Disaster Information Reporting for Hurricane Irma*, DA-17-850 (Public Safety and Homeland Security Bur. Rel. Sept. 6, 2017).

¹³ President Donald J. Trump Approves Puerto Rico Disaster Declaration, (September 10, 2017), available at <https://www.whitehouse.gov/briefings-statements/president-donald-j-trump-approves-puerto-rico-disaster-declaration/> (last visited Jan. 16, 2018).

more than 95 percent of the territory's cell sites out of service.¹⁴ Although the official number of deaths to date remains at 64, independent studies of various media raise the number to hundreds.¹⁵ On September 21, 2017, once again, the President declared that a major disaster existed in Puerto Rico.¹⁶ Current losses and damages are estimated in the hundreds of billions of dollars, though the full extent of destruction is unknown.¹⁷

III. Impacts to Communications Infrastructure

As the largest telecommunications carrier in Puerto Rico, PRTC experienced catastrophic damage to its telecommunications infrastructure. The majority of PRTC's central offices, remote central offices and cell sites located throughout the island became non-operational due to structural or network damage and/or loss of power. As of December 31, 2017 (116 days since Hurricane Irma and 103 days since Hurricane Maria), a considerable amount of PRTC's cell sites remained down due to structural or network damage from the hurricanes. More than a dozen of PRTC's cell sites are unable to operate due to disabled transport backbone services. Of PRTC's nearly 800 cell sites that are currently operational, more than 60 percent of them rely exclusively on backup generator power to sustain operations which, as explained in further detail below, has created additional challenges. PRTC's wireline network suffered extensive damage as well. To provide

¹⁴ Federal Communications Commission, *Communications Status Report for Areas Impacted by Hurricane Maria*, rel. Sept. 21, 2017.

¹⁵ For instance, The New York Times found that in the 42 days after Hurricane Maria made landfall on September 20, 1,052 more people than usual died across the island. Frances Robles, Kenan Davis, Sheri Fink, *et al.*, "Official Toll in Puerto Rico: 64. Actual Deaths May Be 1,052," The New York Times (Dec. 9, 2017), available at <https://www.nytimes.com/interactive/2017/12/08/us/puerto-rico-hurricane-maria-death-toll.html> (last visited Jan. 16, 2018).

¹⁶ The White House, Statements and Releases, *President Donald J. Trump Approves Puerto Rico Disaster Declaration*, Sept. 21, 2017, available at <https://www.whitehouse.gov/the-press-office/2017/09/21/president-donald-j-trump-approves-puerto-rico-disaster-declaration> (last visited Jan. 16, 2018).

¹⁷ Jill Disis, "Hurricane Maria Could Be a \$95 Billion Storm for Puerto Rico," CNN, Sept. 28, 2017, available at <http://money.cnn.com/2017/09/28/news/economy/puerto-rico-hurricane-maria-damage-estimate/index.html> (last visited Jan. 16, 2018).

a different perspective, PRTC facilities built with Connect America Fund support, which totaled about \$31.5 million in 2013, to provide broadband services to unserved areas have been almost completely destroyed.¹⁸

IV. Communications Service Provider Experience

The Public Notice seeks comment on the obstacles to rapidly restoring communications systems, and to what extent those impediments impact and/or extend the duration of outages.¹⁹ By far, the most significant factor impeding progress towards full restoration of service is the fragile and unreliable nature of Puerto Rico's electric power grid. As of late December 2017, restoration of electricity generation in Puerto Rico had reached only 55 percent of the territory's customers.²⁰ The lack of electricity forced PRTC and virtually everyone else to rely on gasoline-powered generators which, as explained below, has its own set of challenges.

Immediately after Hurricane Maria, PRTC activated power generators at its central offices, remote central offices and cell sites. Generators are designed to serve as a temporary source of power while utility-supplied electric power is restored. The delays in restoring power in Puerto Rico, as well as the unreliable nature of such service once restored, have forced PRTC to keep the power generators running continuously until they break down. As generators break down – which is becoming more and more frequent – PRTC replaces the broken generators with new (or at least newer) generators to keep running its operations.

¹⁸ See Petition of Puerto Rico Telephone Company, Inc. for the Creation of an Emergency Universal Service Fund, WC Docket No. 10-90, filed Jan. 19, 2018.

¹⁹ *Public Notice* at p. 6.

²⁰ Ralph Ellis and Leyla Santiago, "Puerto Rico: Power Restored to 55% of Customers, Governor's Office Says," CNN, Dec. 29, 2017, available at <http://www.cnn.com/2017/12/29/us/puerto-rico-power-update/index.html> (last visited Jan. 16, 2018).

The unprecedented scope and duration of power generator use quickly led to a shortage of generators and fuel in the entire island. This caused PRTC to experience the theft of generators at some of its central offices and cell sites which, in turn, led to occasional service disruptions. The trespass of unauthorized and untrained persons at PRTC sites to steal equipment also raised safety concerns. To address this situation, PRTC was required to employ additional security personnel at many sites at a cost of millions of dollars.²¹

Even when power is restored in dense urban areas, it is not reliable because the electric system cannot support the demand for energy. Prior to the 2017 hurricane season, PRTC would experience an average of 10 daily outages at its cell sites of which more than 50 percent were due to power outages. It is for this reason that, even before Hurricanes Irma and Maria, PRTC had a relatively extensive supply of backup generators. After the hurricanes, PRTC has been experiencing between 70 and 100 daily outages throughout its cell sites. Although PRTC does not have precise data, it feels confident that electric power failures are responsible for the vast majority of these outages.

Segments of PRTC-owned fiber optic cables attached to utility poles were damaged and knocked down by the hurricanes.²² While fiber optic cables are very effective, they are highly sensitive and often lose connectivity when they fall to the ground. Even though PRTC managed to restore this part of the network within a few weeks, the company has experienced recurring outages due to accidental damage done by third-party recovery and cleaning brigades as well as

²¹ See e.g., “Puerto Rico’s horrendous cell site outages complicated by generator/fuel theft concerns,” Wireless Estimator, Sept. 25, 2017, available at <http://wirelessestimator.com/articles/2017/puerto-ricos-horrendous-cell-site-outages-complicated-by-generatorfuel-theft-concerns/> (last visited Jan. 16, 2018).

²² Hurricane Maria knocked down 80 percent of the island’s utility poles and all transmission lines. Alexia Fernández Campbell, “5 things to know about Puerto Rico 100 days after Hurricane Maria,” Vox, Dec. 29, 2017, available at <https://www.vox.com/2017/12/23/16795342/puerto-rico-maria-christmas> (last visited Jan. 16, 2018).

acts of vandalism, all of which significantly affected the services. Copper theft has been at an all-time high since the storms, which has compounded the problem.

V. The Commission's Response

The Public Notice seeks comment on the Commission's response in the aftermath of the hurricanes, including the support and coordination it provides to industry.²³ First, PRTC is grateful for the Commission's decision to advance up to seven months of current Universal Service funding for the restoration efforts.²⁴ Second, PRTC commends staff in the Public Safety and Homeland Security Bureau for gathering critical information from PRTC and other carriers in Puerto Rico – notably about the industry's fuel needs for generators – and assisting in relaying that information to relevant Federal agencies. Third, PRTC commends the Commission and its Bureaus for devoting resources to ensure that petitions and waiver requests precipitated by the hurricanes were given priority. The Bureaus were also proactive in waiving, on their own motion, a variety of deadlines and requirements.²⁵ This was very useful because it permitted industry to focus on restoration efforts. Lastly, the amount of information provided by the Commission, and its dedicated webpages on the hurricanes, was helpful and it will continue to be helpful as industry and government examine the response to the 2017 hurricane season to develop recommendations going forward.

²³ *Public Notice* at p. 4.

²⁴ *In the Matter of Connect America Fund*, Order, WC Docket No. 10-90, FCC 17-129, 32 FCC Rcd 7981 ¶¶ 1, 7 (rel. Oct. 4, 2017).

²⁵ *E.g.*, Pubic Notice, *Wireless Telecommunications Bureau and Public Safety and Homeland Security Bureau Extend Filing and Regulatory Deadlines and Streamline Environmental Notification Process for Areas Affected by Hurricane Maria*, DA 17-983 (Wireless Telecommunications Bur. and Public Safety and Homeland Security Bur. rel. Oct. 6, 2017).

The Public Notice asks if there were problems or issues in reporting outage information into the Disaster Information Reporting System (“DIRS”).²⁶ PRTC appreciates the importance of keeping the public informed of the recovery process through DIRS. However, the amount of network status information and the format required to submit the information requires resources that carriers may not have available at a time when they are implementing contingency plans to restore service as quickly as possible. PRTC recommends that the Commission consider streamlining the information requested by DIRS to take into account the state of emergency that carriers face immediately after a natural disaster, including the fact that commercial power and Internet may be adversely affected. The Commission should also explore the feasibility of a DIRS hotline that would give carriers without power and/or Internet an alternative for the reporting of network status information in a streamlined fashion.

VI. Conclusion

PRTC appreciates the opportunity to share its experience during the 2017 hurricane season. PRTC and other carriers have worked – and continue to work – very hard to restore and maintain telecommunications services as soon as possible. The Commission, too, has devoted significant resources to assist industry and the public in the recovery efforts. Unfortunately, the resiliency of the communications infrastructure in Puerto Rico, as well as the industry’s ability to respond to natural disasters such as storms and hurricanes, is severely handicapped by the massive problems with the island’s outdated and fragile electric power grid that are beyond any single entity’s control.

²⁶ *Public Notice* at p. 6.

Respectfully submitted,

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