

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of

The Uniendo a Puerto Rico Fund and the
Connect USVI Fund

WC Docket No. 18-143

COMMENTS OF LOON LLC

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INTRODUCTION AND SUMMARY

Loon LLC applauds the Commission for establishing the Uniendo a Puerto Rico Fund and the Connect USVI Fund to rebuild, improve, and expand communications networks on those islands.¹

In 2017, Hurricane Maria damaged over 90 percent of telecommunications infrastructure in Puerto Rico at an estimated cost of \$1.2 billion.² The U.S. Virgin Islands suffered similar devastation. In the aftermath, eligible telecommunications companies leveraged innovative technologies to reconnect their subscriber base, ranging from cells-on-wheels, to cells-on-UAVs, to Loon balloons. In Puerto Rico, Loon partnered with AT&T and T-Mobile, and worked with the Chief Information Officer, this Commission, other federal agencies, and holders of FCC spectrum licenses to secure special temporary authority to deploy ground infrastructure, integrate networks, and navigate stratospheric balloons to reconnect more than 250,000 people.

From this and other experiences, Loon has seen that connectivity matters most in the moments after a disaster: to contact emergency personnel, access information, and reach out to loved ones. Among Loon's ongoing business goals is to partner with mobile network operators, governments, and regulators to bring internet connectivity to disaster-affected populations where and when needed.

¹ *In the Matter of The Uniendo a Puerto Rico Fund and the Connect USVI Fund, et al.*, Order and Notice of Proposed Rulemaking, WC Docket No. 18-143, et al. (rel. May 29, 2018) (Order & NPRM).

² GSMA, *The 2017 Atlantic Hurricane Season: Mobile Industry Impact and Response in the Caribbean*, at 22 (Mar. 30, 2018) at <https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2018/04/Mobile-Industry-Impact-and-Response-in-the-Caribbean.pdf>.

Carriers should be incentivized to pursue the best available approaches to expand resilience and coverage. Accordingly, when awarding Universal Service Fund (USF) support to eligible telecommunications companies in Puerto Rico and the U.S. Virgin Islands, the FCC should clear a path for the use of cutting-edge technologies, including those employed by Loon, which provide new ways to improve the resilience of mobile systems.

DISCUSSION

I. Hurricane Maria

In September 2017, Hurricane Maria made landfall on Puerto Rico. About three weeks later, “90 percent of Puerto Rico’s telecommunications infrastructure was damaged, costing an estimated \$1.2 billion.”³ Of the 1,600 cell sites on the island, at least 1,300 (81 percent) were knocked out.⁴ Although telecom providers made every effort to restore service as quickly as possible, inaccessible roads, broken towers and antennas, widespread flooding, and a damaged power grid coupled with high demand for diesel fuel led to extended service outages, particularly in remote areas. A month after the hurricane, nearly half of the island’s cell sites were still out of service.⁵ To restore connectivity, eligible telecommunications companies made use of innovative technologies, ranging from satellite-equipped cells mounted on light trucks, to radio transceivers mounted on UAVs, and balloons provided by Loon.

³ *Id.*

⁴ Adam Rogers, *In Puerto Rico, No Power Links Means No Telecommunications*, WIRED, Oct. 10, 2017, <https://www.wired.com/story/in-puerto-rico-no-power-means-no-telecommunications/>.

⁵ FCC, *Communications Status Report for Areas Impacted by Hurricane Maria*, (rel. Nov. 6, 2017), <https://www.fcc.gov/document/hurricane-maria-communications-status-report-nov-6>.

II. Loon Service in Puerto Rico

In Puerto Rico, Loon worked with the Chief Information Officer of Puerto Rico, the FCC and FCC spectrum licensees, the Federal Aviation Administration, and the Federal Emergency Management Agency, to integrate with the mobile networks of AT&T and T-Mobile to secure special temporary authority to deploy ground infrastructure and dispatch balloons as part of the disaster relief effort.

Each Loon balloon can cover a ground area of over 5,000 km², and by navigating the winds and clustering balloons in teams, Loon supplied an extended LTE network to our telecom operator partners. Figure 1 shows an example of five Loon balloons simultaneously serving LTE and covering most of Puerto Rico while focusing on the mountainous interior of the island, which included some of the most difficult areas to restore with conventional terrestrial infrastructure.

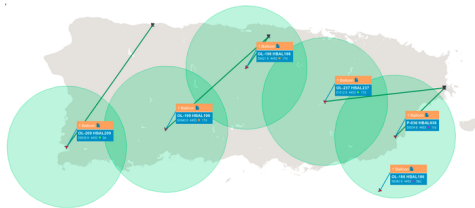


Figure 1: Five Loon balloons simultaneously providing broad coverage across Puerto Rico

In partnership with AT&T and T-Mobile, Loon was able to reach nearly the entire geography of Puerto Rico, connect over 250,000 unique users with LTE phones, and supply sufficient data for the equivalent of 350 million WhatsApp messages.

III. Supporting Alternate Recovery Services

The NPRM seeks comment on how “to target high-cost support to rebuild, improve, harden, and expand mobile services in Puerto Rico and the U.S. Virgin Islands”⁶ and “on other alternatives.”⁷ Loon is one such innovative alternative, offering eligible telecommunications carriers a way to expand the resilience and scope of their existing networks and to prepare for future disruptions.

Loon’s unique features make it particularly agile and well-adapted to disaster recovery. Our network connects directly to 4G smartphones, with each balloon covering a 5,000 km² area, regardless of the terrain. Loon’s fleet can respond quickly, potentially within hours of a disaster, inasmuch as our solar-powered balloons can be pre-positioned at 60,000 feet in the stratosphere (above ground weather systems) and require minimal ground support. These features make Loon a critical and complementary part of mobile network operators’ disaster recovery portfolio, alongside technologies such as cells-on-wheels and satellites.

Expenses incurred by eligible telecommunications carriers to restore supported services are for the “provision, maintenance, and upgrading of facilities and services for which the support is intended,” and accordingly are reimbursable from the High Cost Fund.⁸ We urge the FCC to be forward-looking and clear in its application of the rules

⁶ Order & NPRM ¶ 80.

⁷ *Id.* ¶ 96.

⁸ 47 C.F.R. § 54.7(a); *see In the Matter of Connect America Fund, et al*, Report and Order, Third Order on Reconsideration, and Notice of Proposed Rulemaking, WC Docket No. 10-90, et al., ¶ 16 (rel. Mar. 23, 2018) (“We find that section 254(e) provides that carriers can recover those expenses from high-cost support to the extent those expenses are used only for, directly related to, and incurred for the sole purpose of the provision, maintenance, and upgrading of facilities and services for which the support is intended, i.e., supported voice and broadband.”).

so that carriers will not be discouraged from using new technologies to repair, replace, and restore damaged telecommunications infrastructure, and for “storm-hardening” projects that are designed to make supported facilities more capable and resilient. We encourage the FCC specifically to endorse eligible telecommunications carriers’ investigation of innovative solutions such as those provided by Loon to establish disaster-resistant networks and restore disrupted services.

CONCLUSION

Loon LLC strongly supports the FCC’s efforts to ensure that service in Puerto Rico and the U.S. Virgin Islands is “rebuilt quickly and efficiently, while improving networks where feasible and protecting critical communications networks against future natural disasters.”⁹ Loon would welcome the opportunity to be a part of the solution and we encourage the FCC to clarify that USF resources can be used by mobile carriers to support Loon and other new solutions that expand the preparedness and resilience of the communications networks.

Respectfully submitted,



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⁹ Order & NPRM ¶ 33.