



“Satellite [telecommunications] ... maintain command and control functions during an emergency when existing communications networks are not functioning.”

U.S. Department of Homeland Security,
System Assessment and Validation for
Emergency Responders (SAVER), 2015

— Caribbean Preparedness & Response;

a proposal to provide
resilient emergency
communications in the
aftermath of natural
disasters in Puerto Rico
and US Virgin Islands,
American Caribbean.





Summary

This is a proposal to build a community-supported and satellite-based emergency communications network in the American Caribbean. The concept would approach this emergency telecommunications and broadband connectivity in two approaches:

- 1) by allowing telecommunications carriers to utilize a satellite teleport facility in Puerto Rico to provide this connectivity in times of crisis and when other options are disrupted, and
- 2) building an innovative, resilient, and rural broadband emergency network. This community-based system will use diverse technologies mainly focusing on existing local facilities-based satellite infrastructure. Satellite technology was critical in the restoration of Puerto Rico and should be part of any future preparedness plans for the American Caribbean.



Background

The U.S. Commonwealth of Puerto Rico and the U.S. Virgin Islands are geographically located in the most active hurricane corridor of the Atlantic Ocean. Hurricane season runs in this region for more than six months each year, from June through the end of October and in many cases, hurricanes have occurred well into December. The increasing regularity of extreme weather, including multiple 100-year events per decade, require a serious assessment of emergency preparedness and substantial investments into building a resilient systems and infrastructure in the region.

In 2017, Hurricane Maria caused approximately \$1.5 billion in damage to Puerto Rico's telecommunications infrastructure. Hurricane Maria downed 1,360 of Puerto Rico's 1,600 cell phone towers and 85% of above-ground telephone and internet cables.¹ To fill the resulting communications gap, FEMA deployed satellite VSAT equipment to Puerto Rico for stop-gap communications restoration.

¹ PBS NOVA, "After Hurricane Maria, Puerto Rico's Internet Problems Go from Bad to Worse" by Nick Thieme, October 23, 2018. <https://www.pbs.org/wgbh/nova/article/puerto-rico-hurricane-maria-internet/>

After the hurricanes we saw the full extent of the damage to the telecommunications infrastructure, which was extensive and resulted in most parts of the island being cut off from the world. The only systems that worked during those critical months were emergency satellite units. We also learned after the hurricanes the number of stakeholders with a desperate need for emergency communications infrastructure – such as local governments – including local law enforcement and public works crews, hospitals, first responders, banks, pharmacies and churches.

In the absence of consistent power, hospitals could not communicate with emergency personnel to evacuate patients, banks were unable to open, and people stood for hours in line to withdraw very limited amounts of cash from the few ATMs that were functioning. Pharmacies were unable to process claims and dispense prescriptions, while vendors of all types were unable to process POS – 'point of sale' electronic transactions at a time when consumers had limited access to their banks to withdraw cash and had to rely on credit and debit cards.

— What we need

The Coalition to Fund CPR and those supporting the request urge for the following:

- 1) Stage one funding of the FCC's "Uniendo a Puerto Rico Fund" is too narrowly focused. It excludes locally based satellite facilities. It should be expanded.
- 2) New local entrants with satellite technology were inadvertently excluded. The commission should provide funding to include them as a stop-gap option that can withstand extreme weather and natural disasters.
- 3) Stage one funding will be used to enable delivery of connectivity to rural areas that are currently not served by any communications services and will be available to any communications service providers who want satellite-based restoration of services during disasters.
- 4) Stage two and later rounds of funding must be available to new entrants, including entrants with satellite facilities in Puerto Rico.
- 5) Funding must allow for innovative, independent community-based and multi-sector emergency telecommunications networks to be established. Networks like the Centros de Preparación y Respuesta. (CPR)



Costs associated with proposal

In addition to being more reliable, satellite broadband is also more affordable in an emergency. It costs more than \$22,000 per mile to install telephone poles and restring fiber. Satellite offers immediate cost-effective accessibility to even the most remote locations.

Teleport Facility

CRG Inc. has developed a preliminary estimate of \$5) million for a two year restoration project and upgrade the only satellite teleport facility in the island. This will allow for terrestrial and wireless telecommunications firms to connect to the facility for backhaul VSAT support during emergencies and restoration of cellular and text services.

Centers for Preparedness & Response

The Coalition to Fund CPR is a non-profit 501(c)3* incorporated in Puerto Rico. The goal of the organization is to deploy 500 CPR centers throughout Puerto Rico, the U.S. Virgin Islands and at U.S. mainland entities engaged in disaster assistance projects in the Caribbean. The Coalition requests \$25 million in federal share to carry out this two year project. This project will also be self-sustaining after the second year.

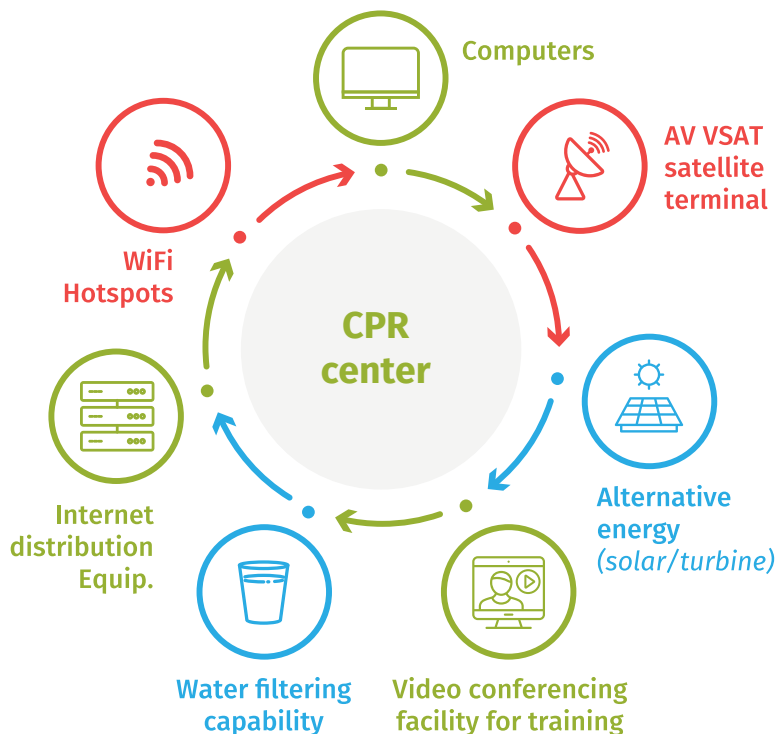


Description of CPR Centers

Our goal is to facilitate the goal of creating many CPR sites at locations that are remote and geographically dispersed throughout the island. Each collaborating member facility will be trained with protocols and procedures for various types of emergencies and will be outfitted with satellite equipment for emergency communications. The facilities will also be trained on installation of the equipment to ensure its rapid deployment after an emergency. As a private-public partnership the federal share of costs for this two year program are contained to \$30 million, and the CPR project is designed to become self-sustaining for future years.

We have developed a sustainability plan for the following years.

Each center will be equipped with:



Key institutions to benefit from the CPR centers and network:

Government

- Town Halls
- Municipal Emergency Centers
- Shelters
- Police & Fire Stations

Business

- Financial Centers
- Hospitals & Clinics
- Pharmacies
- Agricultural Centers

Consumer Markets

- Restaurants
- Supermarkets
- Gas Stations
- Hardware stores

Community

- Community Centers
- Food Distribution Centers
- Senior Centers
- Schools & Churches



— Bridging an existing digital divide

A year after Hurricanes Maria and Irma, telecommunications infrastructure problems persist. Phone calls drop and power sometimes vanishes completely. Internet speeds have yet to fully recover, leaving hundreds of thousands of people with speeds 10 times slower than the average on the continental United States.²

The Commission has sought to narrow the digital divide that exists in the U.S. Caribbean, but the sad reality remains that because high-speed Internet is inaccessible to many Puerto Ricans. The cost and quality of high-speed Internet being provided by terrestrial carriers remain an area with ongoing investments and positive trends. An analysis of more than 250,000 internet speed tests in Puerto Rico from 2009 to the present confirmed what people in Puerto Rico have known implicitly for a long time: Hurricane Maria hit an island whose Internet speeds had recently started improving.³

In June 2018, the 25% of users with the fastest service saw speeds of nearly 10 Mbps, an average speed in the continental U.S. Meanwhile, the 25% of users with the slowest service saw speeds below 1.5 Mbps—half the recommended speed for SD video on Netflix.

Given the high-speed of broadband available with today's satellite technologies, with download speeds averaging 25 Mbps and 3 Mbps upstream, it is unreasonable to think that the public should be denied reasonable federal investments from their USF fees to fill gaps in their voice and high-speed broadband services with a satellite option, especially when it is the only option available for connectivity.

² Measurement Lab, A partnership between New America's Open Technology Institute, Google Inc., Princeton University's PlanteLab, and other supporting partners.
<https://www.measurementlab.net/>

³ Measurement Lab...



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