

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

In the Matter of	)	
	)	
Inquiry Concerning Deployment of Advanced	)	GN Docket No. 18-238
Telecommunications Capability to All	)	
Americans in a Reasonable and Timely	)	
Fashion	)	
	)	
The Uniendo a Puerto Rico Fund and the	)	WC Docket No. 18-143
Connect USVI Fund	)	
	)	
Response Efforts Undertaken During 2017	)	PS Docket No. 17-344
Hurricane Season	)	
	)	
Bridging the Digital Divide for Low-Income	)	WC Docket No. 17-287
Consumers	)	
	)	
Connect America Fund	)	WC Docket No. 10-90

**COMMENTS OF FREE PRESS**

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## EXECUTIVE SUMMARY

Free Press takes opportunity of the *Fourteenth Broadband Deployment NOI* comment period to focus on the questions that NOI poses regarding the impact of the 2017 Atlantic Hurricane season on communications infrastructure in Puerto Rico and the U.S. Virgin Islands (“USVI”). We urge the Commission to conduct a deep and thorough analysis of its current policies, reports and proposed rulemaking proceedings as a means to address the resiliency of communications networks.

First, the FCC’s *Fourteenth Broadband Deployment Report* should include data from Puerto Rico and USVI, as well as other areas impacted by natural disasters; it is through this type of data-driven analysis that the Commission can begin to form an accurate picture of the state of broadband in these impacted areas, and determine recovery needs. Second, in the *FCC Hurricane Response Report*, the Commission failed to address how its own proposals undermine and continue to impact hurricane recovery efforts. The report attempts to address the long-recognized and pressing need to provide critical information in languages other than English, particularly during emergencies, but its proposed solution falls far short of adequately addressing that need. Appointing an independent commission or panel and reopening the 2017 Hurricane Season docket would help determine best practices and also make recommendations that could guide disbursements from the Uniendo Fund.

Finally, the Commission must abandon its proposals to gut Lifeline and instead expand the program to ensure that low-income individuals have access to affordable communications. Puerto Rico has 506,025 households subscribed to Lifeline, which represents nearly a 60 percent participation rate based on the eligible population. The Commission’s proposed ban on non-facilities-based providers could potentially disconnect 75 percent of Lifeline recipients on the

island, or a total of 379,519 households. This would bring certain hardship to those still struggling to return to normalcy.

Recovering from the scale of destruction to Puerto Rico's communications infrastructure requires a much more rigorous information gathering effort. Rebuilding a more resilient system will require coordinated action by the Commission, informed by a thorough and critical investigation by an independent panel. The Commission has a tremendous opportunity to rebuild and strengthen Puerto Rico, but only if acts now to ensure it possesses the most accurate broadband deployment and connectivity data to address its Uniendo Fund; to reopen or reexamine the hurricane response docket under an independent panel; and to give up its ill-advised Lifeline proceeding which could jeopardize Puerto Ricans' efforts towards making ends meet since Maria.

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**COMMENTS OF FREE PRESS**

**INTRODUCTION**

Free Press respectfully submits these comments in the above referenced proceedings to analyze the Federal Communication Commission’s (“FCC” or “Commission”) response to the impact of the 2017 Atlantic Hurricane season on communications infrastructure in Puerto Rico and the U.S. Virgin Islands (“USVI”). We take the opportunity of the *Broadband Deployment NOI*<sup>1</sup> comment period to focus on the questions that NOI poses regarding these vital issues, but submit in the other related dockets as well because of the interrelated nature of these proceedings.

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<sup>1</sup> See *Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, Fourteenth Broadband Deployment Report Notice of Inquiry, GN Docket No. 18-238, FCC 18-119 ¶¶ 15, 22 (Aug. 9, 2018) (“*Broadband Deployment NOI*”).

In the *Broadband Deployment NOI*, the Commission states that the information gathered will help ensure that “broadband policies are well-informed and backed by sound data analysis.”<sup>2</sup> Section 706 of the Telecommunications Act of 1996 requires the Commission to conduct an annual inquiry and issue an annual report on “whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion.”<sup>3</sup> This comment seeks to inform the Commission’s *Broadband Deployment NOI* with respect to Puerto Rico, where it is essential to understand (1) the state of broadband deployment and connectivity post-Hurricane Maria; (2) how the Commission’s hurricane report<sup>4</sup> and inadequate recommendations will further exacerbate the communications crisis in Puerto Rico; and (3) the impact of the open Lifeline proceeding<sup>5</sup> that includes a series of proposals that would disproportionately harm and immediately disconnect over two-thirds of current Lifeline recipients.

## DISCUSSION

### **I. BROADBAND DEPLOYMENT REPORT MUST INCLUDE DATA FROM PUERTO RICO, USVI, AND OTHER AREAS IMPACTED BY NATURAL DISASTERS, AND FURTHER SUPPLEMENTED AS NEEDED, IN ORDER TO GET AN ACCURATE PICTURE OF THE STATE OF BROADBAND AND RECOVERY NEEDS.**

In response to its *Broadband Deployment NOI*, the Commission must take into account the localized phenomenon of these storms and address the effects of natural disasters on broadband

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<sup>2</sup> *Id.* ¶ 2.

<sup>3</sup> 47 U.S.C. § 1302(b).

<sup>4</sup> See *2017 Atlantic Hurricane Season Impact on Communications Report and Recommendations*, Public Safety Docket No. 17-344, A Report of the Public Safety and Homeland Security Bureau, Federal Communications Commission (Aug. 24, 2018) (“*FCC Hurricane Response Report*”).

<sup>5</sup> See *Bridging the Digital Divide for Low-Income Consumers; Lifeline and Link Up Reform and Modernization; Telecommunications Carriers Eligible for Universal Service Support*, WC Docket Nos. 17-287, 11-42, 09-197, Fourth Report and Order, Order on Reconsideration, Memorandum Opinion and Order, Notice of Proposed Rulemaking, and Notice of Inquiry, 32 FCC Rcd (2017) (“*2017 Lifeline NPRM*”).

deployment. That means collecting data of the type that the *Broadband Deployment NOI* typically gathers and more. It should continue to be collected and supplemented, as needed, in the context of the unique circumstances of each disaster. We need more data, not less, and the Commission can create allowances for imperfect data as necessary rather than relieve carriers of any obligation owing to incomplete information or difficulty in compiling a full picture of the storms' devastation. As the Commission pointedly notes in the NOI, "natural disasters can dramatically reduce levels of broadband deployment in affected areas."<sup>6</sup> Acknowledging the approximately \$1.5 billion of damage caused by Hurricanes Irma and Maria, the Commission requests "comment on how to address natural disasters in reporting on the progress of deploying broadband"<sup>7</sup> and how to "take into account efforts by the Commission and other parties to restore networks in the wake of a natural disaster."<sup>8</sup>

It is essential that the Commission unflinchingly incorporate into its final report the state of broadband deployment in Puerto Rico and other U.S. Territories, because accurate data will increase accountability for payments from the Commission's *Uniendo a Puerto Rico Fund* and the *Connect USVI Fund* ("Uniendo Fund").<sup>9</sup> As the Commission notes, "the 2018 Report's deployment figures for the United States as a whole excluded data from the U.S. Territories, because the 2016 data did not account for damage to infrastructure caused by hurricanes in 2017 and thus may have significantly overstated current deployment in Puerto Rico and the U.S. Virgin

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<sup>6</sup> See *Broadband Deployment NOI* ¶ 15.

<sup>7</sup> *Id.*

<sup>8</sup> *Id.* The Commission also asks, "Are there other particular factors we should take into consideration in natural disaster-affected areas when evaluating deployment progress, such as the recognition that funding will largely support operations rather than deployment soon after the disaster? How should we take into consideration such things as storm hardening when conducting our inquiry?" *Id.*

<sup>9</sup> *The Uniendo a Puerto Rico Fund and the Connect USVI Fund*, Order and NPRM, WC Docket Nos. 18-143, 10-90, 14-58, FCC 18-57, ¶¶ 13-27 (May 29, 2018) (*PR-USVI Fund Order*).

Islands.”<sup>10</sup> Rather than exclude it again, and risk overstating deployment while underplaying accountability, this next report should include data from Puerto Rico in a way that explicitly addresses the unique situation there and in other disaster-impacted areas.<sup>11</sup> Free Press, along with National Hispanic Media Coalition (“NHMC”) submitted Joint Comments<sup>12</sup> earlier this year that included an analysis of Form 477 deployment data to determine the state of fixed-terrestrial broadband deployment in Puerto Rico.<sup>13</sup> Puerto Rico’s fixed broadband access market in many ways mirrors what we observe at the national level: a cable-telco duopoly that covers most of the urban population, but a large proportion of the rural population with notable gaps in coverage. Puerto Rico’s telephone company ISP Claro (formerly known as Puerto Rico Telephone Company) – like all other telephone company ISPs – continues to lag behind its cable company competitor (in Puerto Rico, Liberty) in terms of transmission speeds, but is slowly narrowing the gap. This gap is due to the far higher costs of upgrading telephone company networks compared to cable networks. We expect that it will continue to narrow in urban areas, though at an uncertain pace. While the Commission does not collect pricing data, other research indicates that weak-duopoly competition results in artificially high prices and other suboptimal outcomes in customer service and innovation.

The Commission should incorporate Form 477 data and more granular data for Puerto Rico in its broadband deployment report and its assessments of recovery efforts. While subsequent datasets

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<sup>10</sup> *Broadband Deployment NOI* ¶ 22.

<sup>11</sup> *Id.* (requesting “comment on whether we should exclude in our next report the U.S. Territories from our deployment figures for the U.S. as a whole and only report data from the territories separately as was done in the last report.”).

<sup>12</sup> See Joint Comments of the National Hispanic Media Coalition and Free Press, PS Docket No. 17-344 and WC Docket No. 17-287 (filed Apr. 17, 2018) (“Joint Comments of NHMC and Free Press”).

<sup>13</sup> See *id.* App. B.



will necessarily capture reconstruction instead of deployment, the Commission can still draw useful insights from comparing recent Form 477 to the snapshot our Joint Comments included earlier this year.<sup>14</sup> Particularly, the Commission and other commenters could examine disparities to determine what effect the 2017 hurricanes season had on gaps in coverage.

Additionally, the deployment report should be supplemented with a comprehensive survey of all communications service providers and network operators in the affected areas in Puerto Rico and other storm-damaged areas, including the location and the type of damage to their assets and infrastructure. This is precisely the kind of information that could be aggregated by an independent panel, of the type we recommend in Part II below, charged with tracking the recovery efforts on an ongoing basis as well as making specific recommendations to improve resiliency. We still do not know with great enough certainty where and how telecommunications infrastructure was damaged in Puerto Rico, such as whether infrastructure on the windward side of the island was affected the same as on the lee side; or whether towers were undamaged but simply unpowered. Mapping this information and providing it to various stakeholders would allow the Commission to optimize its distributions of the Uniendo Fund. For example, the Commission could more closely partner with existing resiliency efforts<sup>15</sup> to determine whether it needs to modify Stage 2 funding or provide advice to such efforts on how to secure its funding.

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<sup>14</sup> The Uniendo Fund will use the June 2017 dataset as one baseline from which to measure progress towards meeting and exceeding pre-hurricane deployment, but this dataset was only recently released. The Commission must plan to update this information and compare it against new measurements to track progress, not turn away from such data.

<sup>15</sup> See, e.g., Resilient P.R. Advisory Comm’n, Reimagina Puerto Rico Report 55 (2018) (recommending the development of “Resilient Community Centers” in key locations across the island to improve the provision of services during emergencies and disaster relief and discussing potential partnerships with the Commission’s Public Safety and Homeland Security Bureau, and Public Safety Support Center in support of these Centers as well as funding from the Commission and providers).

We commend the Commission for its proposal to require Disaster Information Reporting System (“DIRS”) use for carriers participating in the Uniendo Fund.<sup>16</sup> The Commission should use a modified DIRS reporting program to assess Fund disbursements by collecting more granular and recent data than Form 477 reporting allows, then use that additional information in conjunction with Form 477 data. Given the unprecedented length that DIRS was activated in the aftermath of the 2017 hurricane season, affected providers are familiar with using it and should have improved their ability to share this information with the Commission.<sup>17</sup> Mobile carriers should provide coverage maps, signal strength, antenna alignment, and throughput in DIRS; and the Commission should require coverage maps at a more granular boundary value, such as -98 dBm, on an amended schedule, similar to the amended reporting requirements in November 2017.<sup>18</sup>

## **II. THE FCC HURRICANE RESPONSE REPORT FAILS TO ADDRESS THE COMMISSION’S OWN PROPOSALS AND PRACTICES THAT UNDERMINED AND CONTINUE TO IMPACT HURRICANE RECOVERY EFFORTS.**

In August 2018, the Commission’s Public Safety and Homeland Security Bureau (“PSHSB”) released a report titled *2017 Atlantic Hurricane Season Impact on Communications Report and Recommendations* (“FCC Hurricane Response Report”)<sup>19</sup> which summarized the Commission’s efforts during the 2017 hurricane seasons. The Commission plays a vital role in obtaining information on and then executing disaster plans intended to ensure the “maximum effectiveness from the use of radio and wire communications in connection with safety of life

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<sup>16</sup> See *PR-USVI Fund Order* ¶ 92.

<sup>17</sup> See, e.g., *FCC’s Public Safety & Homeland Security Bureau Announces Amended Schedule for Filing Hurricane Maria Reports in the Disaster Information Reporting System*, Public Notice, DA 17-1122 (Nov. 17, 2017).

<sup>18</sup> See *id.*

<sup>19</sup> See generally *FCC Hurricane Response Report*.

and property,”<sup>20</sup> which includes studying the “best methods of . . . cooperation and coordination.”<sup>21</sup> Therefore, it is necessary to test the Commission’s recovery efforts, current proposals, allocation of resources, and disbursement of Universal Service funds to ensure the most efficient and beneficial restoration of communications in Puerto Rico. After the release of FEMA’s critical report on its ineffective response, we eagerly awaited a similarly searching review in the *FCC’s Hurricane Response Report* to provide a clearer picture of the communications blackout in Puerto Rico.<sup>22</sup> However, much to our dismay, the report failed to provide the kind of comprehensive examination that is needed following such a historic tragedy in Puerto Rico, and it failed to provide or much information beyond what was already publicly available, relying instead on underwhelming (and, once again, already publicly available) including the self-serving assurances from carriers.<sup>23</sup> The Joint Comments of NHMC and Free Press,<sup>24</sup> submitted in response to the *PSHSB Public Notice* released in December 2017,<sup>25</sup> raised many concerns that were ignored by PSHSB in the final *FCC Hurricane Response Report*.

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<sup>20</sup> *Public Safety and Homeland Security Bureau Seeks Comment on Response Efforts Undertaken During 2017 Hurricane Season*, PS Docket No. 17-344, Public Notice, 32 FCC Rcd 10245, at 1 (Dec. 7, 2017) (“*PSHSB Public Notice*”).

<sup>21</sup> *Id.*

<sup>22</sup> See 2017 Atlantic Hurricane Season Impact on Communications Report and Recommendations, PS Docket No. 17-344, Report (rel. Aug. 24, 2018).

<sup>23</sup> See *FCC Hurricane Response Report*, Statement Of Commissioner Jessica Rosenworcel in Response to FCC’s 2017 Atlantic Hurricane Season Report (Aug. 24, 2018) (stating that the “slim and long-overdue [report] fails to capture the gravity of these storms”).

<sup>24</sup> See generally Joint Comments of NHMC and Free Press.

<sup>25</sup> *PSHSB Public Notice* at 1.

**A. The Commission failed to conduct proper outreach in disaster-torn areas and also repeatedly failed to conduct proper outreach in Spanish.**

Ironically, the *FCC Hurricane Response Report* accepts the long-awaited suggestion made by the joint comments and others to produce more non-English materials,<sup>26</sup> yet the Commission released the report only in English. The report attempts to address the long-recognized and pressing need to provide critical information in languages other than English, particularly during emergencies, but its proposed solution falls far short of adequately addressing that need. In a section entitled “Public Engagement” the report outlines several steps the Commission took, such as (1) maintaining a webpage of storm-related orders and public notices, communications status reports, and other related documents;<sup>27</sup> (2) publishing the Public Notice seeking comment on communications resiliency;<sup>28</sup> and (3) conducting a PSHSB workshop of “government and consumer stakeholders to identify critical information needs during disasters and to facilitate access to such information in support of preparedness and response activities.”<sup>29</sup>

The Federal Emergency Management Agency (“FEMA”) report acknowledged the lack of bilingual federal employees : “[a]ccording to FEMA’s Region II Hurricane Annex, information in Puerto Rico must be conveyed in Spanish—which is the main spoken and written language. However, in the aftermath of Hurricane Maria, FEMA did not have enough bilingual employees to communicate with local residents or translate documents.”<sup>30</sup> The lack of properly trained staff “resulted in further delays,” especially since officials in Puerto Rico also needed to “conduct more

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<sup>26</sup> See *FCC Hurricane Response Report* ¶ 61.

<sup>27</sup> *Id.* ¶ 49.

<sup>28</sup> *Id.* ¶ 50.

<sup>29</sup> *Id.* ¶ 51.

<sup>30</sup> Fed. Emergency Mgmt. Agency, *2017 Hurricane Season FEMA After-Action Report*, 36-37 (2018) (*FEMA After-Action Report*).

door-to-door visits to reach disaster survivors and conduct assessments” than in the continental United States.<sup>31</sup> As we stressed in our Joint Comments submitted even before the issuance of this FEMA report, 95.3 percent of households in Puerto Rico speak Spanish, making it the dominant and predominant language on the island.<sup>32</sup> The Commission must do far better at providing information and outreach in Spanish and be adequately staffed to support non-English speakers at all times, particularly in times of disaster.

The *FCC Hurricane Response Report* fails to acknowledge that the Commission did not conduct targeted outreach to the people of Puerto Rico or the USVI, and that the Commission did not readily and adequately translate outreach documents. The Commission’s report eventually acknowledges that emergency information in other languages is “critical to allowing a great number of consumers an opportunity to make lifesaving decisions for themselves and their families,” and that there is “an opportunity and need to expand languages in which this information is available and to increase the type and format of information that is available in languages other than English.”<sup>33</sup> Nonetheless, the report’s proposed solution does not adequately address the Commission’s lack of outreach to those most impacted by the storms, nor its failure to include inclusion those individuals in workshops. The PSHSB stated it would “lead internal outreach to FCC staff to leverage the non-English languages skills of FCC personnel. We expect this will lead to the creation of a database where FCC staff volunteers would be able to self-identify non-English language skills . . . and willingness to assist in outreach as a component of the FCC’s emergency response.”<sup>34</sup> Given the continual need for the Commission to engage with

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<sup>31</sup> *Id.*

<sup>32</sup> Joint Comments of NHMC and Free Press at 9.

<sup>33</sup> *FCC Hurricane Response Report* ¶ 64.

<sup>34</sup> *Id.* ¶ 65.

non-English speakers, it would be more prudent to hire or contract with trained, full-time translators to avoid critical communications gaps in future emergency situations, not depend on current Commission staff happening to have language skills (or not) and then their ability to volunteer those skills.

**B. The Commission Must Reopen the 2017 Hurricane Season Docket and Appoint an Independent Commission or Panel, Both to Determine Whether Best Practices were Followed in the Aftermath of These Storms and to Make Recommendations to Guide the Uniendo Fund.**

The ability to communicate is a life and death issue, especially following a disaster on the order of magnitude experienced by Puerto Rico. After the release of FEMA’s critical report on its ineffective response, we eagerly awaited a similarly searching review in the *FCC’s Hurricane Response Report* to provide a clearer picture of the communications blackout in Puerto Rico. However, there is still much we do not know about the response of telecom companies and our government from the onset of the crisis. And there is also much we do not know about the policies and investment decisions made through the years that resulted in a communications network so lacking in the resiliency to withstand hurricanes.

The lack of resilient communications infrastructure in Puerto Rico apparently contributed significantly to the death toll by leaving people on the islands unable to call for help.<sup>35</sup> Recent

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<sup>35</sup> See Nidhi Prakash, “A New Study Says Nearly 6,000 Died In Puerto Rico After Hurricane Maria. The Government Still Says 64 People Died,” BuzzFeed News (May 29, 2018) (noting that the collapse of the cell networks “prevented many people from seeking help if they were unwell,” and those “who relied on home oxygen and dialysis machines or refrigeration for diabetes medication were left vulnerable, cut off from medical professionals and unable to call for help”) (emphasis added); see also Danica Coto, “Puerto Rico unveils new emergency preparations after Maria,” Associated Press (Sept. 11, 2018) (noting the recent installation of direct emergency lines to nursing homes to address the fact that many of the people who died as a result of Maria were elderly).

reports by Federal Emergency Management Agency and the Government Accountability Office further confirm the devastating impact that this immediate and extended loss of communications services had on the recovery and rescue efforts.<sup>36</sup> However, those reports do not provide an in-depth review of the telecommunications challenges facing Puerto Rico, or potential solutions. That is an analysis that the Commission should have provided, and that we now call upon an independent panel to provide. Additionally, there is scant information in the FEMA, GAO, and FCC reports indicating an affirmative or coordinated effort to maximize the impact of the Uniendo Fund and FEMA's recovery assets.<sup>37</sup> To further aid its work, the Commission should proceed with a Further Notice of Proposed Rulemaking in the Uniendo Fund docket to ensure that any independent panel's recommendations, as well as input from a broader slate of stakeholders, are effectively incorporated.

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<sup>36</sup> See *FEMA After-Action Report* at 33-34); U.S. Gov't Accountability Office, GAO-18-472, 2017 Hurricanes and Wildfires: Initial Observations on the Federal Response and Key Recovery Challenges, 32 (2018) ("*GAO Report*"); cf. *PR-USVI Fund Order* ¶ 20 (naming FEMA only once, and then only with regard to limiting eligibility of funds to FEMA-declared disaster areas, and vaguely mentioning other sources of federal funding and agencies throughout).

<sup>37</sup> See *FEMA After-Action Report* at 7-8. As the FEMA report explains, under recently expanded powers in Section 428 of the Stafford Act, "FEMA can provide assistance for critical services to replace or restore components of the facility or system that are not damaged by the disaster when those repairs are necessary to fully effectuate the replacement or restoration of disaster-damaged components to restore the function of the facility or system to industry standards. These provisions will improve the resilience of . . . communications[.]").

**1. Recent Reports Show How the Near-Total Loss of Communications in Puerto Rico Increased Mortality and Frustrated Relief and Recovery Efforts, Demonstrating the Urgency of Reexamining How the Commission Might Better Coordinate Future Resiliency Efforts.**

Two of the most recent studies found that somewhere between 3,000 and 5,000 people died as a result of Hurricane Maria.<sup>38</sup> The total loss of telecommunications was a contributing factor to the massive loss of life. And while that communications blackout was related, in part, to other factors beyond the control of carriers and the Commission, such as inaccessible roads and the loss of electrical service, the totality of the communications blackout across nearly every sector warrants greater urgency of action from the Commission. That almost no systems could disseminate life-saving information to the public, or enable first-responders to maximize the effectiveness of their response, is underscored by the fact that FEMA was wholly unprepared to respond to Maria. This is not what resiliency looks like and seems to represent an iteration of the same tragedy that occurred in the 9th Ward following Katrina. Were lessons from Katrina effectively incorporated into the design of telecommunications infrastructure and the Commission's response to disasters? What lessons can the public learn for the next hurricane or other disaster? Finding the answer to those related questions is even more reason to revisit this hurricane, and compare its damage and recovery efforts to previous ones, like Hurricanes Katrina and Sandy.

The FEMA report released in July examined the agency's response to Hurricane Maria and found that its plans did not "sufficiently anticipate situations in which state or territory government officials would be unable to meet their responsibilities to manage operational or resource

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<sup>38</sup> See Milken Inst. Sch. of Pub. Health, George Washington Univ., *Ascertainment of the Estimated Excess Mortality from Hurricane Maria in Puerto Rico* (2018) ("*George Washington University Mortality Report*"); Nishant Kishore *et al.*, "Mortality in Puerto Rico after Hurricane Maria," 379 *New Eng. J. Med.* 162, 162-170 (2018).



requirements due to a lack of communications[.]”<sup>39</sup> While this report did not assess the actions of other federal agencies, such as the Commission, it highlights the critical role communications had in exacerbating the ill-prepared response by FEMA. The report found that due to communications outages, FEMA “struggled to gain situational awareness and assess the status of critical infrastructure.”<sup>40</sup> For the first 72 hours after landfall, FEMA possessed “little information about the status of infrastructure, including hospitals, roads, and water facilities” and “communications challenges inhibited reporting of road outage assessments.”<sup>41</sup> Even a week after landfall, “FEMA knew more, but still lacked key information about critical infrastructure. For example, Agency partners did not have information on the status of 24 of 52 waste water treatment plants or 37 of 69 hospitals.”<sup>42</sup>

The FEMA report recommended revision of the National Response Framework to emphasize stabilization of critical lifelines and coordination across critical infrastructure sectors, including greater investment “in redundant assets to maintain communications and supply temporary power”<sup>43</sup> and to “[e]ncourage critical infrastructure owners and operators, and state and local governments, to invest in more resilient infrastructure.”<sup>44</sup> The report went on to recommend “continuity and resilient all-hazards communications capabilities in plans and guidance.”<sup>45</sup> The GAO’s report further scrutinized FEMA’s role and found that the “crippled the power grid, communication systems, and transportation infrastructure throughout both territories, hinder[ed]

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<sup>39</sup> *FEMA After-Action Report* at 10.

<sup>40</sup> *Id.* at 33.

<sup>41</sup> *Id.*

<sup>42</sup> *Id.*

<sup>43</sup> *Id.* at 38.

<sup>44</sup> *Id.*

<sup>45</sup> *Id.*

communication and delay[ed] emergency response activities.”<sup>46</sup> Both reports accept that the lack of communications hindered recovery efforts, yet fail to provide detailed actionable assessments of the widespread loss of communications and solutions to prevent a future catastrophic loss of communications.

In our Joint Comments from April 2018, we shared with the Commission stories collected from Puerto Rico, displaced persons and the Puerto Rican diaspora, to ensure that their voices were heard.<sup>47</sup> We demanded public hearings in affected areas so the Commission could hear from the public first-hand the effects of a lack of resilient communications following a disaster. This call to be heard was not merely an exercise in catharsis. With the loss of communications, the ability of the Puerto Rican people to tell their own stories and advocate for themselves was stolen away at a time when they needed it most. While other core issues, particularly colonialism and racism,<sup>48</sup> played a role in disparate media coverage for the different hurricanes occurring in the same season, these differences were further exacerbated by loss of communication that directly affected not just the government’s ability to disseminate accurate information throughout Puerto Rico, but Puerto Ricans’ ability to seek out and share information as their own advocates. The outages also hindered the media’s ability to transmit news coverage to the mainland. Raising awareness of the truth on the ground might have served to enable more effective advocacy by Puerto Ricans seeking greater assistance with recovery efforts.

Further, the loss of telecommunications directly contributed to the cascading public information issues in Puerto Rico. Unable to communicate, government officials could not

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<sup>46</sup> *GAO Report* at 32.

<sup>47</sup> *See* Joint Comments of NHMC and Free Press at 1.

<sup>48</sup> *See* Carrie Gibson, “How colonialism and racism explain the inept US response to Hurricane Maria,” *Vox* (Oct. 7, 2017).

determine how many people died, effectively prioritize needs to prevent further deaths, or counteract misinformation being circulated on social media.<sup>49</sup> Shaking people’s confidence in their government in the midst of an emergency (even if such confidence is not always well deserved) sends those people to alternate sources. Journalists—despite valiant efforts by some—could not satisfy the voracious information and news demands and shifting attention of the public and policy makers.<sup>50</sup> With the lack of information, the inability either to share the full scope of the disaster with the mainland or combat the spread of misinformation diminished the recovery in countless ways. This recently manifested in the ugliest possible way when a sitting U.S. president advanced a conspiracy theory that denies the massive loss of life in Puerto Rico.

## **2. The *FCC Hurricane Response Report* Does Not Provide the Level of Information That an Independent Panel Could Provide Then Analyze.**

The *FCC Hurricane Response Report* is an uncritical self-assessment—especially when juxtaposed with the FEMA and GAO reports.<sup>51</sup> The Commission’s myopic focus on deregulation

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<sup>49</sup> See *George Washington University Mortality Report* at iv (explaining that “[d]espite the potential for information gaps to increase the risk of the propagation of misinformation and rumors, the Government of Puerto Rico did not systematically monitor and address misinformation or rumors in news outlets and on social media platforms. . . . Efforts undertaken by outside groups to fill information gaps and identify hurricane-related deaths added to conflicting mortality reports in the information environment”).

<sup>50</sup> See Paul Farhi, “Lost in the storm? Puerto Rico is devastated but coverage has been spotty.” *Wash. Post* (Sept. 25, 2017) (describing challenges for journalists with limited-to-nonexistent cell service, which left reporters “out of contact for hours, and sometimes for several days in remote locations”); see also Alvin Chang, “How the media ignored Puerto Rico, in one chart,” *Vox* (June 1, 2018) (studying airtime the major cable news networks devoted to Puerto Rico and finding that after the first month, coverage was virtually nonexistent); Dhruvil Mehta, “The Media Really Has Neglected Puerto Rico,” *FiveThirtyEight* (Sept. 28, 2017).

<sup>51</sup> Compare *FCC Hurricane Response Report* at 31 (“Agencies tasked with supporting the National Response Framework (NRF) should maintain a sufficient cadre of trained responders; successful response requires trained and knowledgeable surge capacity forces”); with *GAO Report* at 90 (“[A]t the height of workforce deployments in mid-October 2017, 54 percent of staff were serving in a capacity in which they did not hold the title of ‘Qualified’”).

and the number of waivers it issued instead of a critical analysis of the industry it regulates permeates the FCC report. The Commission sits in the ideal role to leverage its authority and relationships to bring every telecommunications infrastructure stakeholder to the table. Yet, it accepted the assurances of the carriers at face value. Its suggestion of such timid recommendations, in matters of life and death and public safety, are wholly incongruous to the magnitude of the disaster in Puerto Rico. Furthermore, the lack of curiosity to learn how the Commission, its federal partners, and its regulated carriers can and should do better is astounding.

On April 13, 2018, the Commission hosted a workshop to “identify critical information needs during disasters and to facilitate access to such information in support of preparedness and response activities.”<sup>52</sup> Conspicuously, not a single provider—from the mainland or from Puerto Rico—participated in the workshop, which was inexplicably limited to government and consumer stakeholders.<sup>53</sup> While the FCC’s final report issued last month accurately characterizes several requests made to the Commission that day, it omitted one bold pronouncement by Jarrett Devine, Regional Emergency Communications Coordinator for FEMA Region I. He announced that:

[W]e’ve heard a lot of things today. Folks saying “voluntary.” Folks saying “trend analysis” . . . [.] This is life-safety equipment. We have to do better. Post-disaster, we have an extremely fragile environment with a vulnerable population. This “voluntary” word needs to go away. We have commercial entities selling themselves as public safety grade. If you are going to make a profit saying you are serving the community with public safety grade communications, then you need to be able to prepare an answer and response as to where your communications are available. Specifically post disaster response events (emphasis added).<sup>54</sup>

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<sup>52</sup> See *Public Safety and Homeland Security Bureau Announces Workshop to Identify Critical Information Needs to Improve Communications During Disasters*, Public Notice, DA 18-292 (rel. Mar. 23, 2018).

<sup>53</sup> *FCC’s Public Safety and Homeland Security Bureau announces the agenda for the April 13, 2018, public workshop to identify critical communications information needs to improve communications during disasters*, Public Notice, DA 18-357 (rel. Apr. 10, 2018).

<sup>54</sup> See *id.*

We agree that issues of life and safety should require more than voluntary action by providers, especially when functionality during emergencies is already a requirement for eligible telecommunications carriers and Uniendo Fund recipients.<sup>55</sup> The *FCC Hurricane Response Report*, on the other hand, simply notes that the Commission was asked to “encourage[ ] more service providers to participate in the voluntary DIRS program.”<sup>56</sup> Then, later in the report, it recognizes that “the Commission lacked a mechanism to independently verify information on the availability of commercial wireless services that providers voluntarily submitted into DIRS.”<sup>57</sup> We agree that the Commission needs to independently verify potentially life-saving information on communications availability and outages, though the *FCC Hurricane Response Report* does not go nearly far enough to ensure that it will. Simply relying on a crowdsourced RF application, the only proposed verification method, to verify this sensitive information is a mismatch considering the Commission’s authority and ability to do more.<sup>58</sup>

Additionally, the Commission only recommends that service providers, network operators, and others “should ensure they have reviewed, and are implementing where practicable, best practices issued by the Communications Security, Reliability, and Interoperability Council (CSRIC) and applicable standards bodies.”<sup>59</sup> One such practice, for instance, recommends “placing all power and network equipment in a location, (such as higher ground) to increase reliability in case of

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<sup>55</sup> See 47 CFR § 54.202 (requiring any common carrier to show “its ability to remain functional in emergency situations, including a demonstration that it has a reasonable amount of back-up power to ensure functionality without an external power source, is able to reroute traffic around damaged facilities, and is capable of managing traffic spikes resulting from emergency situations”).

<sup>56</sup> *FCC Hurricane Response Report* ¶ 51.

<sup>57</sup> *Id.* ¶ 60.

<sup>58</sup> We do not suggest that such an application would not be useful, but that it does not address the greater need for independent verification of data submitted by the providers.

<sup>59</sup> *Id.*

disaster (e.g., floods, broken water mains, fuel spillage); in storm surge areas, placing all power related equipment above the highest predicted or recorded storm surge levels[.]<sup>60</sup>

Did all providers even implement this best practice before the hurricane?<sup>61</sup> If so, how did they fare when tested in the real-world? In highlighting this practice within its report, did the Commission find that these practices were not sufficiently implemented and thus required repeating? Or was this merely a reminder to the providers of what they should already know? We do not know the answer and it is this kind of critical assessment, neutral and detached, which is desperately needed to inform the recovery and resiliency work. The current *FCC Hurricane Response Report* further notes that it appears that those providers who implemented CSRIC practices fared better than those who did not.<sup>62</sup> However, this comment did not consider Puerto Rico specifically, as it considered the extent of the damage there so extreme that it warranted only a short paragraph about such practices.

Thus, as it relates to Puerto Rico, we are left with generalizations, little actionable data, and insufficient analysis for one of the deadliest hurricanes in U.S. history. Therefore, the people on the island are ill-equipped to determine whether Puerto Rico is currently more or less prepared for another incident of similar magnitude and whether they need to pressure their government to do something about it.

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<sup>60</sup> *Id.* (citing CSRIC Best Practice No: 9-7-5214).

<sup>61</sup> *See, e.g.*, Doug Madory, “Puerto Rico’s Slow Internet Recovery,” Dyn Research (Dec. 7, 2017) (noting a cable landing station serving an undersea cable powered down due to flooding, affecting traffic in multiple South American countries).

<sup>62</sup> *See FCC Hurricane Response Report* ¶ 66 n.91 (citing Motorola Reply Comments).

**3. Under an Independent Panel’s Leadership and With Broader Inclusion of Stakeholders, the Commission Would Be Better Able to Leverage the More Robust Information Sharing and Relationships for A Coordinated Recovery.**

We do not seek to relieve FEMA, or local government authorities, of their ultimate responsibility to prepare for the contingency of a total telecommunications collapse.<sup>63</sup> The GAO report cited above outlines how “FEMA response efforts were complicated by factors specific to Puerto Rico and the U.S. Virgin Islands,”<sup>64</sup> mainly:

- 100 percent of Puerto Rico Electrical Power Agency (PREPA) clients without electrical power service
- 80 percent of all PREPA infrastructure destroyed
- 80 percent of Puerto Rico Aqueduct and Sewer Authority clients without water service
- 80 to 85 percent of communications towers not operational
- Large numbers of roads with landslides and several dozen bridges collapsed
- Maritime ports and airports closed for at least 5 days after Maria hit Puerto Rico
- Satellite phones not working
- Emergency Operations Plan not built for catastrophic levels nor 100 percent loss of communications
- Ample fuel but not enough personnel and fuel tankers for transportation throughout the island.

Thus, we do not seek to lay blame for other agencies’ failures on the Commission, as its immediate role in disaster response is limited to its participation in the Emergency Support Function #2. FEMA, and not the Commission, bears significant responsibility for ensuring it has the correct communications equipment and requests additional staff or resources, and FEMA seemed to fail during 2017 in Puerto Rico in these tasks.

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<sup>63</sup> *GAO Report* at 29 (identifying major factors that affected response to Hurricanes Irma and Maria and noting that FEMA’s Emergency Operations Plan were not devised to address 100 percent loss of communications).

<sup>64</sup> *Id.*

Yet if hurricanes are a regular occurrence in the Caribbean, and are projected to increase in intensity and destructive potential due to climate change,<sup>65</sup> the Commission does a great disservice if it does not learn from the past and lead the communications sector in a serious, coordinated resiliency effort.

The Commission can set requirements and coordinate between local governments, across all sectors and, most importantly, among competitors, to ensure this level of communications disruption never happens again. The Commission is able to determine some integrated coordination between broadcast, cell service, wireline, and other alternatives to minimize the risk of future disruptions matching the totality and length of 2017's Puerto Rico disruption. The Commission can lead the efforts to identify vulnerable communities, whether in the 9th Ward in New Orleans, or the islands of Puerto Rico and the USVI, and ensure that the people who need help the most can call for it. The Commission possesses a model it could replicate, namely its efforts following Katrina and Sandy to allow a broad-range of stakeholders to assess the federal effort and demand more of their government. More critically, the Commission can leverage its expertise and inter-agency and industry relationships to determine whether the lessons learned in prior disasters worked or did not work, to continue to build a knowledge base.<sup>66</sup> While the Commission has thus far failed to build adequately on its knowledge since last year, it still has opportunity to treat this disaster with the gravity it requires.

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<sup>65</sup> See *generally* Intergovernmental Panel on Climate Change, Climate Change 2014: Synthesis Report (2015).

<sup>66</sup> See *PSHSB Public Notice*.



We applaud efforts by providers to increase resilience in preparation for the 2018 hurricane season on their own.<sup>67</sup> However, that work appears to vary depending on the individual providers and across sectors.<sup>68</sup> This is precisely the moment that the Commission can take leadership and, working with recommendations from an independent panel, coordinate these resilience efforts.

We also agree with the Commission's recommendation that "[t]hose providing critical communications services should ensure there is sufficient physical path diversity, which may include addition of satellite networks, microwave links, or alternate wireline connections."<sup>69</sup> However, we could read this as either a general pronouncement for providers to implement individually, or an opportunity for the Commission to coordinate and guide these providers to ensure this path diversity is implemented in an intentional way. This is a collective action problem the Commission is best suited to address and one that would be informed by an independent panel. Once the Commission convenes an independent panel and receives recommendations, the Commission should reopen comment on the *Uniendo Fund* with a Further Notice of Proposed Rulemaking to ensure that the panel's recommendations, and the input from a broader inclusion of stakeholders, can better leverage the additional information sharing and relationships.

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<sup>67</sup> See Antonio R. Gómez, "Generators: lifesavers for the telecommunications industry," (July 10, 2018) (describing varying degrees of readiness for the upcoming 2018 hurricane season, such as backup battery power).

<sup>68</sup> See *id.* (readiness described with some specificity as well as optimistic assurances from spokespersons).

<sup>69</sup> *FCC Hurricane Response Report* ¶ 61.

**C. The Commission Must Abandon Proposals to Gut Lifeline and Instead Expand the Program to Ensure More Low-Income Individuals Have Access to Affordable Communications**

We remain<sup>70</sup> extremely concerned about the effect that the Commission's proposed changes to Lifeline<sup>71</sup> would have on the people in Puerto Rico and the USVI and their recovery from these storms. Such Lifeline changes would be "particularly cruel given the unprecedented devastation and disruption"<sup>72</sup> there. These Puerto Rican people had their pleas for help silenced by FEMA's insufficient response, disparate media coverage, and an incredibly vulnerable communications infrastructure. The last thing they need is to be priced out of or cut off from whatever communications services remain.

The Commission's current Lifeline proposals would cut off hundreds of thousands of individuals in hurricane-stricken areas. Puerto Rico has 506,025 households subscribed to Lifeline, which represents nearly a 60 percent participation rate based on the eligible population. The Commission's proposed ban on non-facilities-based providers could potentially disconnect

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<sup>70</sup> See Comments of Free Press, WC Docket No. 11-42 *et al.* (filed Feb. 21, 2018).

<sup>71</sup> See generally *Bridging the Digital Divide for Low-Income Consumers et al.*, WC Docket Nos. 17-287 *et al.*, Notice of Proposed Rulemaking, 32 FCC Rcd 10475 (2017).

<sup>72</sup> Letter from 18MillionRising.org, Access Humboldt, American Library Association, Appalshop, Inc., Asian Americans Advancing Justice – AAJC, Benton Foundation, Center for Media Justice, Center for Rural Strategies, Color Of Change, Common Cause, Common Sense Kids Action, Communications Workers of America, CREDO, Ellis Jacobs, Attorney for the Greater Edgemont Community Coalition of Dayton Ohio, EveryoneOn, Free Press, Janice Meyers Educational Consulting, LLC, NAACP, National Association of Broadcast Employees and Technicians – CWA, National Congress of American Indians, National Consumer Law Center, on behalf of its low-income clients, National Hispanic Media Coalition, New America's Open Technology Institute, OCA – Asian Pacific American Advocates, Public Knowledge, The Greenlining Institute, United Church of Christ, OC Inc., X-Lab to The Honorable Ajit Pai, Chairman, *et al.*, WC Docket Nos. 17-287 *et al.*, at 2 (filed Nov. 8, 2017).

75 percent of Lifeline recipients on the island,<sup>73</sup> or a total of 379,519 households. This would bring certain hardship to those still struggling to return to normalcy. Further, although this change would cause particular hardship in the context of Puerto Rico post-Maria, the implications are wide ranging. We cannot stress enough how critical Lifeline has been and will be for the recovery efforts in Puerto Rico and displaced people on the mainland. Although more than a year has passed, many communities there are even more financially vulnerable now and still reeling from the particular hardships created by the 2017 hurricane season.<sup>74</sup>

## CONCLUSION

Recovering from the scale of destruction to Puerto Rico's communications infrastructure requires a much more rigorous information gathering effort. Rebuilding a more resilient system will require coordinated action by the Commission, informed by a thorough and critical investigation by an independent panel. The Commission has a tremendous opportunity to rebuild and strengthen Puerto Rico, but only if acts now to ensure it possesses the most accurate broadband deployment and connectivity data to address its Uniendo Fund; to reopen or reexamine the hurricane response docket under an independent panel; and to give up its ill-advised Lifeline proceeding which could jeopardize Puerto Ricans' efforts towards making ends meet since Maria.

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<sup>73</sup> See Nat'l Consumer Law Center, A Lifeline that Breaks Down Barriers to Affordable Communications, Puerto Rico (last visited Feb. 21, 2018), <https://www.nclc.org/images/pdf/take-action/lifeline/fact-sheets/PR-LL.pdf>.

<sup>74</sup> See Arelis R. Hernández & Samantha Schmidt, "A year after Maria, Puerto Rico's economy remains feeble," Wash. Post (Sept. 12, 2018) (citing an economist who noted that "[f]amilies who were already poor are now in extreme poverty" and a Post-Kaiser poll showing "51 percent of Puerto Ricans are worried they won't be able to find or keep a good job").

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## Appendix A: Broadband Deployment in Puerto Rico

Free Press analyzed FCC Form 477 deployment data as of December 31, 2016 to create a snapshot of fixed-terrestrial broadband deployment in Puerto Rico prior to the 2017 hurricane season (i.e., we did not examine mobile wireless or satellite broadband deployment). This data is a rich source of information on broadband deployment. Every ISP submits to the FCC on a semi-annual basis information on the types of technology it offers and the transmission speeds for every Census block where it offers broadband.

Our analysis of this FCC broadband deployment data shows that Puerto Rico's fixed broadband access market mirrors that seen at the national level: a cable-telco duopoly that covers most of the urban population and a large proportion of the rural population, with notable gaps. Puerto Rico's telephone company ISP (Claro, formerly called Puerto Rico Telephone Company) – like all other telephone company ISPs – continues to lag behind its cable company competitor (Liberty) in terms of transmission speeds, but is slowly narrowing the gap. This gap is due to the far higher costs of upgrading telephone company networks compared to cable networks. It will continue to narrow in urban areas, though at an uncertain pace. While the FCC does not collect pricing data, other research indicates that weak-duopoly competition results in artificially high prices and other suboptimal outcomes (in areas such as customer service and innovation).

Highlights of our analysis of FCC broadband deployment data for Puerto Rico as of December 31, 2016 include:

### Five fixed terrestrial ISPs serve Puerto Rico.

- Claro (the trade name of ISP services sold by Puerto Rico Telephone Company), is Puerto Rico's largest fixed broadband carrier, offering DSL and fiber-to-the-home (FTTH) internet access services to 90 percent of Puerto Ricans. Claro markets internet access service exceeding 10 Mbps across its entire Puerto Rico footprint, but its deployment of higher speeds is notably smaller.
  - Claro's primary technology is ADSL2, which it uses to offer 16 Mbps downstream service. Claro offers a faster DSL standard (VDSL) to 29 percent of the customers in its service footprint (delivering 50 Mbps downstream), and FTTH (delivering 75 Mbps downstream) to just 0.4 percent of the customers in its footprint. Overall, 30 percent of the population in Claro's service footprint can purchase services at downstream speeds exceeding 25Mbps. Claro's higher-speed coverage is actually greater in its rural footprint, with 49 percent of these persons able to purchase 25Mbps or higher-level services. In total, Claro offers internet access service to 92 percent of the island's urban population, and 62 percent of the rural population.
- Liberty, owned by cable mogul John Malone's Liberty Global, is Puerto Rico's second largest fixed broadband carrier, offering cable modem-based internet access services to 86 percent of Puerto Ricans. Liberty markets internet access service exceeding 300 Mbps across its entire Puerto Rico footprint. Liberty offers internet access service to 89 percent of the island's urban population, and 40 percent of the rural population.

- Caribe.Net (the trade name for ISP services sold by Critical Hub Networks) is Puerto Rico's third largest fixed broadband carrier, offering primarily fixed wireless internet access services to 37 percent of Puerto Ricans. The company was Puerto Rico's first ISP, and also operates as a "wireline over-builder" where it markets FTTH. Caribe.Net markets internet access service exceeding 10 Mbps across its entire Puerto Rico footprint, but its deployment of higher speeds is notably smaller.
  - Caribe.Net's primary technology is fixed wireless, which can reach very high speeds, but the company's offering is 10Mbps. Caribe.Net offers a this service to all of the customers in its service footprint, and FTTH to 8 percent of the customers in its footprint (the latter equating to 3 percent of Puerto Rico's total population). In total, Caribe.Net offers internet access service to 40 percent of the island's urban population, but only 3 percent of the rural population.
- The remaining two providers cover a much smaller portion of the island's population.
  - Worldnet (a Competitive Local Exchange Carrier, or CLEC) primarily relies upon wholesale access to Claro's network and its own facilities to serve businesses. Its residential offerings are available to 10 percent of Puerto Ricans, and are based upon an older cable modem standard. This service offers speeds between 15 and 20 Mbps.
  - CoquiTel markets a 10Mbps fixed wireless service to less than one-tenth of one percent of the island's population.

**Basic broadband availability** (i.e. access to service at certain speeds, without regard to the number of providers) **in Puerto Rico is similar to that seen in the overall U.S.**

- Nearly 9 out of every 10 persons in Puerto Rico are served by at least one fixed terrestrial ISP.
  - 91 percent of the Puerto Rican population is served at any speed. This is slightly below the value for the entire U.S. (97 percent of the population).
  - 91 percent of the Puerto Rican population is served by a wired ISP offering downstream speeds of 10 megabits per second (Mbps) or higher. This is slightly below the value for the entire U.S. (94 percent of the population).
  - 91 percent of the Puerto Rican population is served by a wired ISP offering downstream speeds of 25 Mbps or higher. This is almost identical to the value for the entire U.S. (92 percent of the population).
- The availability of higher transmission speeds in Puerto Rico exceeds the national value, primarily due to the fact that Puerto Rico has a very high urban population (94 percent) compared to the overall U.S. (81 percent).
  - 90 percent of Puerto Ricans reside in a location with at least one wired ISP offering services exceeding 50Mbps downstream, with 86 percent able to purchase services exceeding 300Mbps.

**Puerto Ricans have less ISP choice at higher speeds than the average person residing in the U.S.**

- The average person in Puerto Rico has 2 choices of wired ISP offering speeds at 10Mbps, slightly higher than the national average (1.7 such ISPs). At higher speeds, the market quickly turns into a Liberty monopoly.
  - Only 24 percent of persons in Puerto Rico are served by two or more fixed terrestrial ISPs offering 25Mbps or higher level services. By comparison, 54 percent of all persons in the U.S. have ISP choice at this speed threshold.
  - Only 24 percent of persons in Puerto Rico are served by two or more fixed terrestrial ISPs offering 50Mbps or higher level services. By comparison, 43 percent of all persons in the U.S. have ISP choice at this speed threshold.
  - Only 3 percent of persons in Puerto Rico are served by two or more fixed terrestrial ISPs offering 100Mbps or higher level services. By comparison, 24 percent of all persons in the U.S. have ISP choice at this speed threshold.

**Rural Deployment is lower overall in Puerto Rico compared to the entire U.S., but exceeds the national level at the very highest speeds.**

- Approximately 65 percent of Puerto Ricans residing in rural areas are served by one or more terrestrial fixed ISP, with deployment to all of these persons of 10Mbps-level service. By comparison, 87 percent of the total U.S. rural population are served by one or more terrestrial fixed ISPs, with deployment to 77 percent of rural U.S. inhabitants of 10Mbps-level service.
  - Approximately 64 percent of Puerto Ricans residing in rural areas have access to 50Mbps-level service. By comparison, 62 percent of rural U.S. inhabitants have access to 50Mbps-level service.
  - Approximately 40 percent of Puerto Ricans residing in rural areas have access to 300Mbps-level service. By comparison, 21 percent of rural U.S. inhabitants have access to 300Mbps-level service.

**Rural ISP choice is lower overall in Puerto Rico compared to the entire U.S.**

- Approximately 38 percent of Puerto Ricans residing in rural areas are served by two or more terrestrial fixed ISPs, with all of these rural persons having access to 10Mbps-level service. By comparison, 50 percent of the total U.S. rural population are served by two or more terrestrial fixed ISPs, with 34 percent of rural U.S. inhabitants having access to 10Mbps-level service from two or more providers.
- Puerto Rico's maximum available internet access speeds are high (due to improvements in cable modem technology), but are slightly behind the U.S. average.
  - The average maximum available downstream speed available in Puerto Rico is 308Mbps, compared to 396Mbps for the entire U.S.

In sum, broadband deployment in Puerto Rico – like the rest of the nation – is progressing, with cable leading the way. Puerto Rico's incumbent telephone company ISP has plenty of work to do to catch up to its cable competitor. Until it does (and even if it does), Puerto Ricans will continue to face a market that increasingly functions as a weak-monopoly.

**Figure 1:**

**Percent of Puerto Rico's Population with Access to Wired Broadband by Downstream  
Speed  
(Year-End 2016)**

Downstream Speed	Percent of Puerto Rico's 2010 Census Block Population with Access to Wired Broadband by Downstream Speed  December 31, 2016
Any	91.2%
≥3 Mbps	91.2%
≥10 Mbps	91.2%
≥25 Mbps	89.8%
≥50 Mbps	89.8%
≥100 Mbps	86.3%
≥300 Mbps	86.3%

Source: Free Press analysis of FCC Form 477 deployment data, as of December 31, 2016 (version 1). Values are based on U.S. Census Bureau's Block-level population counts as reported for the 2010 Census.



**Figure 2:**  
**Percent of Puerto Rico’s Population by Number of Available Wired ISPs and Downstream Speed**  
**(Year-End 2016)**

Number of Wired ISPs	Percent of 2010 Census Population by Number of Available Wired ISPs and Downstream Speed Year-End 2016						
	Any Speed	≥3 Mbps	≥10 Mbps	≥25 Mbps	≥50 Mbps	≥100 Mbps	≥300 Mbps
0	8.8%	8.8%	8.8%	10.2%	10.2%	13.7%	13.7%
1	5.5%	5.5%	5.5%	65.4%	65.4%	83.5%	83.5%
2	74.8%	74.8%	74.8%	22.7%	22.7%	2.8%	2.8%
3	10.1%	10.1%	10.1%	1.6%	1.6%	0.0%	0.0%
4 or More	0.8%	0.8%	0.8%	0.0%	0.0%	0.0%	0.0%
One or More	91.2%	91.2%	91.2%	89.8%	89.8%	86.3%	86.3%
Two or More	85.7%	85.7%	85.7%	24.3%	24.3%	2.8%	2.8%

Source: Free Press analysis of FCC Form 477 deployment data, as of December 31, 2016 (version 1). Universe is populated 2010 Census blocks in Puerto Rico (50,920 blocks containing 3725789 persons). Values do not capture population growth, population movement between blocks, or deployment in blocks with zero residents as of the 2010 Census.

**Figure 3:**  
**Average Maximum Available Wired Downstream Speed (Mbps) by Area Type**  
**(Year-End 2016)**

Puerto Rico Census Block Type	Average Maximum Available Wired Downstream Speed (Mbps)
	Dec. 31, 2016
2010 Rural Blocks	177.7
2010 Urban Blocks	308.5
All Puerto Ricans (population-weighted)	307.8

Source: Free Press analysis of FCC Form 477 deployment data, as of December 31, 2016 (version 1). Values reflect all 2010 populated Puerto Rico Census blocks.

**Figure 4:**  
**Percent of Puerto Rico Population Served by Downstream Speed and Area Type**  
**(Year-End 2016)**

Wired ISP Downstream Speed	Percent of 2010 Census Rural Population Served	Percent of 2010 Census Urban Population Served
	Dec. 31, 2016	Dec. 31, 2016
Any	65.0%	92.9%
≥3 Mbps	65.0%	92.9%
≥10 Mbps	65.0%	92.9%
≥25 Mbps	63.8%	91.5%
≥50 Mbps	63.8%	91.5%
≥100 Mbps	40.3%	89.4%
≥300 Mbps	40.3%	89.4%

Source: Free Press analysis of FCC Form 477 deployment data, as of December 31, 2016 (version 1). Values reflect all 2010 populated Puerto Rico Census blocks.

**Figure 5:**  
**Percent of Puerto Rico Population Served by Two or More Wired ISPs,**  
**by Downstream Speed and Area Type**  
**(Year-End 2016)**

Wired ISP Downstream Speed	Percent of 2010 Census Rural Population Served by Two or More ISPs	Percent of 2010 Census Urban Population Served by Two or More ISPs
	Dec. 31, 2016	Dec. 31, 2016
Any	38.2%	88.9%
≥3 Mbps	38.2%	88.9%
≥10 Mbps	38.2%	88.9%
≥25 Mbps	6.8%	25.5%
≥50 Mbps	6.8%	25.5%
≥100 Mbps	0.0%	3.0%
≥300 Mbps	0.0%	3.0%

Source: Free Press analysis of FCC Form 477 deployment data, as of December 31, 2016 (version 1). Values reflect all 2010 populated Puerto Rico Census blocks.