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

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| In the Matter of | ) | |
| | ) | |
| Response Efforts Undertaken During 2017 | ) | PS Docket No. 17-344 |
| Hurricane Season | ) | |

**COMMENTS OF CTIA**

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**COMMENTS OF CTIA**

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CTIA[1] submits these comments in response to the *Public Notice* issued by the Public

Safety and Homeland Security Bureau ("Bureau") regarding response efforts undertaken during

the 2017 hurricane season.[2]

## I. INTRODUCTION AND SUMMARY

CTIA's member companies take seriously their commitment to provide Americans with

the best, most resilient wireless services and networks in the world. For this reason, CTIA

welcomes this opportunity to recount the wireless industry's vigorous efforts to ensure that

millions of Americans were able to communicate with emergency services, connect with family,

and help their neighbors in the face of the historic 2017 hurricane season. As hurricanes struck

Texas, Louisiana, Florida, Mississippi, Alabama, the U.S. Virgin Islands, and Puerto Rico, the

wireless industry worked to keep networks operating in unprecedented conditions. Ultimately,

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[1] CTIA® (www.ctia.org) represents the U.S. wireless communications industry and the companies throughout the mobile ecosystem that enable Americans to lead a 21st- century connected life. The association's members include wireless carriers, device manufacturers, suppliers as well as apps and content companies. CTIA vigorously advocates at all levels of government for policies that foster continued wireless innovation and investment. The association also coordinates the industry's voluntary best practices, hosts educational events that promote the wireless industry, and co-produces the industry's leading wireless tradeshow. CTIA was founded in 1984 and is based in Washington, DC.

[2] *Public Safety and Homeland Security Bureau Seeks Comment on Response Efforts Undertaken During 2017 Hurricane Season*, Public Notice, DA 17-1180 (rel. Dec. 7, 2017) ("*Public Notice*").

millions of Americans were able to rely on mobile wireless services when they needed it most. As a few examples:

- In response to Hurricane Harvey, 96,000 calls from consumers were delivered to Houston's 9-1-1 center during the initial phase of the storm alone;

- Residents turned to social media on mobile devices to coordinate rescue efforts amongst themselves when 9-1-1 call centers and first responders became overwhelmed with requests;

- The National Weather Service and local alerting authorities sent over 300 Wireless Emergency Alerts to mobile devices alerting consumers to changing conditions in relation to Hurricane Harvey; and

- Miami-Dade County officials urged residents to use mobile apps for shelter, power outage, gas station, and traffic updates during and after Hurricane Irma.

The availability of mobile wireless networks was due, in large part, to the wireless industry's application of lessons learned from past storms – most notably Hurricane Katrina and Superstorm Sandy. Wireless providers have invested to strengthen networks, and with the storms approaching, they pre-positioned resources and put into operation the key elements of the 2016 Wireless Network Resiliency Cooperative Framework ("Cooperative Framework" or "Framework").[3]

The Cooperative Framework, a voluntary initiative developed by industry in collaboration with Congressional leaders and the Commission, identifies actionable items to keep customers connected when disasters occur and expedite service restoration when networks go down. It proved effective in enhancing service continuity and information sharing during and immediately after these historic storms. And when cell sites went down, the Cooperative Framework helped wireless providers and their representatives on the ground restore service as

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[3] Letter from Joan Marsh, AT&T; Charles McKee, Sprint; Grant Spellmeyer, U.S. Cellular; Scott Bergmann, CTIA; Steve Sharkey, T-Mobile; and William H. Johnson, Verizon, to Marlene H. Dortch, Secretary, Federal Communications Commission, PS Docket Nos. 11-60 & 13-239 (Apr. 27, 2016) ("Cooperative Framework").

quickly as possible and support the greater rebuilding efforts in impacted communities.  In Puerto Rico and the U.S. Virgin Islands, where extreme weather conditions and the near total destruction of the electric grid posed significant challenges across the board, the coordination and flexibility provided for in the Cooperative Framework helped wireless providers collaborate and develop innovative solutions to maintain and restore service.

The Commission and other government entities at the federal, state, and local levels all played integral roles in responding to the events of the 2017 hurricane season.  In particular, CTIA commends the Commission for its commitment to supporting response efforts during the 2017 hurricane season.

To further promote service continuity and enhance the information made available on the status of communications networks, CTIA encourages the Commission to: continue to facilitate investment in wireless networks through modernizing infrastructure deployment processes and making more flexible use spectrum available for mobile broadband; and provide flexibility in the content of its Disaster Information Reporting System ("DIRS") reports.  Reducing regulatory barriers to infrastructure deployment and making additional spectrum available for mobile wireless use will allow for continued network densification and increased capacity, which will in turn improve network resiliency and ensure networks are able to carry the increased volume of critical communications during and after emergencies and disasters.  And maintaining flexibility in the DIRS reporting process will allow the Commission to tailor the information available to the public based on the particular circumstances of each emergency or disaster, providing greater clarity to the public about the availability of communications services in their areas.

## II. CONSUMERS TURNED TO WIRELESS NETWORKS THROUGHOUT THE HISTORIC 2017 HURICANE SEASON.

As four historic hurricanes hit communities across Texas, Louisiana, Florida, Mississippi, Alabama, the U.S. Virgin Islands, and Puerto Rico, the wireless industry was working around the clock to keep mobile networks up and operating for consumers, to restore service as quickly as possible where networks were impacted, and to support the greater rebuilding efforts in these communities. CTIA appends to these comments a document providing a snapshot of how wireless carriers helped consumers maintain and regain wireless connectivity during and after this historic hurricane season.

Following Hurricane Katrina and Superstorm Sandy, the wireless industry took stock, identified lessons learned from those devastating storms, and worked collaboratively to develop practices to prepare for the challenges posed by the next storms. These lessons learned from Katrina and Sandy are reflected in discrete actions that helped enable service continuity and restoration in the 2017 hurricane season.

First, wireless providers have invested billions of dollars in their networks, resulting in greater capacity and increased densification, both of which played key parts in facilitating communications over wireless networks this hurricane season.[4]

Second, as the hurricanes approached, wireless providers went to work readying resources in threatened areas. Wireless carriers pre-positioned critical equipment, topped off fuel cartridges for backup generators, and brought in portable cells to extend networks. These efforts were critical to expediting restoration efforts after the storms passed.

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[4] *See,* Letter from Steve Sharkey, Vice President, Technology and Engineering Policy et al., T-Mobile, to Marlene H. Dortch, Secretary, Federal Communications Commission, PS Docket No. 17-344 (Jan. 8, 2017).

And third, wireless providers put into operation the key elements of the Cooperative Framework, the voluntary initiative to enhance coordination among providers, municipalities, and consumers. Developed through a collaborative process in the aftermath of Superstorm Sandy, the initiative provides five prongs to enhance coordination and advance wireless service continuity and information sharing during and after emergencies and disasters. The structure of the Framework provides carriers with the flexibility necessary to tailor network resiliency and continuity of service efforts to the individualized needs of affected communities and the unique challenges presented by each storm.

Together, these efforts helped keep networks operating in unprecedented conditions. Notably, wireless networks in Texas, Louisiana, Florida, Alabama, and Mississippi demonstrated remarkable resiliency:

- In Texas and Louisiana, at least 95 percent of cell sites in the areas affected by Hurricane Harvey maintained operations.[5]

- In response to Hurricane Harvey, the National Weather Service and local alerting authorities sent over 300 Wireless Emergency Alerts, and 96,000 calls to 9-1-1 were delivered to Houston's 9-1-1 center during the initial phase of the storm alone.[6]

- In Louisiana, only six cell sites went down as a result of Hurricane Harvey,[7] despite the storm dropping over 17 inches of rain near Lake Charles.[8]

- Wireless networks in Florida displayed similar levels of resiliency in response to Hurricane Irma. More than 90 percent of Verizon's facilities remained operational over

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[5] CTIA, Hurricane Harvey: Resiliency & Relief, https://www.ctia.org/hurricane-harvey/ (last visited Jan. 16, 2018).

[6] *Id.*

[7] FCC, Communications Status Report for Areas Impacted by Post-Tropical Cyclone Harvey, at 3 (Sept. 2, 2017), https://apps.fcc.gov/edocs_public/attachmatch/DOC-346477A1.pdf.

[8] Weather.com, Historic Hurricane Harvey's Recap (Sept. 2, 2017), https://weather.com/storms-/hurricane/news/tropical-storm-harvey-forecast-texas-louisiana-arkansas.

the first days after the storm in Florida,[9] and approximately 92 percent of cell sites overall in the impacted areas of the state were operational five days after Hurricane Irma made landfall.[10]

Yet, no two events are the same, and the experiences in Puerto Rico and the U.S. Virgin Islands reflected the historic nature of Hurricane Maria.  Hurricane Maria was the most intense hurricane to hit Puerto Rico in nearly a century,[11] and challenges remain today.  Devastating 155 mph winds knocked out power to the entire territory and severely impacted communications and transportation channels, making coordination with local authorities challenging as carriers tried to deploy resources and assist in restoration and recovery efforts.[12]  Maria's lashing winds and fierce rains caused similar destruction in the U.S. Virgin Islands.[13]  In the aftermath of the storm, the Federal Emergency Management Agency estimated that restoring power to Puerto Rico could take up to six months.[14]

The wireless industry worked around the clock to restore and maintain service.  In the days and weeks following the storm, carriers deployed hundreds of cells on light trucks ("COLTs"), cells on wheels ("COWs"), and portable generators in Puerto Rico and the U.S.

[9] News Release, Verizon, *Hurricane Irma: Florida Update from Southeast Market President Russ Preite* (Sept. 5, 2017), http://www.verizon.com/about/news/hurricane-irma-florida-update-southeast-market-president-russ-preite.

[10] FCC, Communications Status Report for Areas Impacted by Hurricane Irma (Sep. 15, 2017), https://apps.fcc.gov/edocs_public/attachmatch/DOC-346754A1.pdf.

[11] Luis Ferré-Sadurní & Anemona Hartocollis, *Maria Strikes, and Puerto Rico Goes Dark*, NY Times, Sept 20, 2017, https://www.nytimes.com/2017/09/20/us/hurricane-maria-puerto-rico-power.html?_r=0.

[12] *Id.*

[13] Morgan Winsor, *US Virgin Islands in Ruins from Hurricane Maria*, ABC News (Sept. 29, 2017), http://abcnews.go.com/International/us-virgin-islands-ruins-hurricane-maria/story?id=50178300.

[14] FoxBusiness, *Puerto Rico Power Restoration Could Take 6 Months:  FEMA Director* (Sept. 21, 2017), http://www.foxbusiness.com/features/2017/09/21/puerto-rico-power-restoration-could-take-6-months-fema-director.html.

Virgin Islands.[15]  Carriers that do not serve Puerto Rico or the U.S. Virgin Islands also jumped in to lend a helping hand, providing network equipment and other aid to assist in restoration efforts.[16]

As a result of these and other efforts, wireless networks were processing 12 million calls and 6 million texts each day by mid-October, even as the electrical grids remained devastated.[17] By early November, 74 percent of Puerto Ricans had wireless coverage, despite the fact that less than 43 percent had access to commercial power at that time.[18]  In the U.S. Virgin Islands, approximately 95 percent of the population had wireless coverage by the end of November.[19]

And the wireless industry remains committed to continuing to prepare for future emergencies and disasters.  Last month, CTIA released Best Practices for Enhancing Emergency and Disaster Preparedness and Restoration ("Best Practices for Preparedness and Restoration" or "Best Practices"), a set of tools to help coordinate joint efforts by wireless carriers and local governments to maintain service continuity, promote resiliency efforts, and expedite restoration

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[15] CTIA, Hurricane Maria:  Resolve & Collaboration, https://www.ctia.org/hurricane-maria/ (last visited Jan. 16, 2018).

[16] *See, e.g.*, News Release, Verizon, *Verizon Supports Hurricane Relief to Puerto Rico and the U.S. Virgin Islands with $5 Million Contribution* (Nov. 3, 2017), http://www.verizon.com/about/news/verizon-supports-hurricane-relief-puerto-rico-and-us-virgin-islands-5-million-contribution (noting that, in addition to giving $5 million to support relief efforts, Verizon also supported recovery efforts by sending Verizon engineers and equipment, including generators for cell sites, wireless antennas, mobile cell sites, and laptop computers).

[17] CTIA, Hurricane Maria, *supra* note 15.

[18] FCC, Communications Status Report for Areas Impacted by Hurricane Maria, at 3 (Nov. 6, 2017), https://apps.fcc.gov/edocs_public/attachmatch/DOC-347626A1.pdf; U.S. Department of Energy, Hurricanes Maria & Irma, November 6 Event Summary (Report #74), at 2 (Nov. 6, 2017), https://energy.gov/sites/prod/files/2017/11/f46/Hurricanes%20Maria%20and%20Irma%20Event%20Summary%20November%206%2C%202017_0.pdf.

[19] FCC, Communications Status Report for Areas Impacted by Hurricane Maria, at 3 (Nov. 29, 2017), https://apps.fcc.gov/edocs_public/attachmatch/DOC-348009A1.pdf.

activities during and after a disaster.[20]  The Best Practices were developed collaboratively by the

signatories to the Cooperative Framework and local government and public safety officials from

a diverse set of localities across the country.  The participants disseminated the Best Practices

through social media and by working with third party organizations affiliated with local

government representatives across the country.[21]

CTIA and its member companies are proud that wireless networks provided a lifeline for

consumers when they needed it most during and after these recent storms, and the industry will

continue to work to strengthen networks and raise awareness about the Cooperative Framework

and tools such as the Best Practices for Preparedness and Restoration.  In preparation for, during,

and in the aftermath of disasters and emergencies, wireless providers are committed partners

with affected communities and the people that wireless networks connect.

## III.   THE COOPERATIVE FRAMEWORK ADVANCED WIRELESS SERVICE CONTINUITY AND RESTORATION DURING AND AFTER THE HISTORIC STORMS OF 2017.

### A.   The Cooperative Framework's Success Is Due in Part to the Collaborative Nature in Which It Was Developed.

In the aftermath of Superstorm Sandy, House Energy and Commerce Ranking Member

Frank Pallone, Jr. (D-NJ), Commission staff, and CTIA convened to find ways to improve the

resiliency of the nation's wireless communications networks.  Through months of discussions,

the parties developed the Cooperative Framework.

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[20] CTIA, *CTIA Announces New Best Practices to Help Local Governments Maintain Wireless Service During Natural Disasters* (Dec. 20, 2017), https://www.ctia.org/industry-data/press-releases-details/press-releases/ctia-announces-new-best-practices-to-help-local-governments-maintain-wireless-service-during-natural-disasters.

[21] *See, e.g.*, *id.*; Francisco Sanchez (@DisasterPIO), Twitter (Dec. 21, 2017, 12:02 PM), https://twitter.com/DisasterPIO/status/943934745418895360 ("We recently worked with @CTIA  to develop new list of best practices to help to maintain #wireless service during natural disasters.  Click here for full article http://bit.ly/CTIABestPractices …").

The Cooperative Framework contains five prongs to improve safety and enhance coordination during and after emergencies. Specifically, the Cooperative Framework:

- Provides for reasonable roaming among wireless providers under disaster arrangements when technically feasible;

- Fosters mutual aid among wireless providers during emergencies;

- Enhances municipal preparedness and restoration by committing to convene with local government public safety representatives to develop best practices, and to provide contact information for a provider/Public Safety Answering Point contact database;

- Increases consumer readiness and preparation through development and dissemination with consumer groups of a "Consumer Readiness Checklist;" and

- Improves public awareness and stakeholder communications on service and restoration status through Commission posting of data on cell site outages on an aggregated, county-by-county basis in the relevant area through its DIRS reports.

These common-sense solutions were designed to harness the collective resources of the wireless industry, the Commission, and local municipalities and public safety entities to keep customers connected when disasters occur and expedite service restoration when networks go down. AT&T, Sprint, T-Mobile, U.S. Cellular, and Verizon all committed to adopting the Cooperative Framework.

In announcing the Framework, Ranking Member Pallone hailed the voluntary initiative as an agreement that "will save lives during major emergencies like Superstorm Sandy"[22] and commended industry and the Commission for working with him "to craft a comprehensive agreement that ensures consumers have access to wireless service during an emergency even if

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[22] *See* Press Release, Committee on Energy & Commerce, *CTIA & Pallone Announced "Wireless Network Resilience Cooperative Framework" for Disasters and Emergencies* (Apr. 27, 2016), https://democrats-energycommerce.house.gov/newsroom/press-releases/ctia-pallone-announce-wireless-network-resiliency-cooperative-framework-for.

their wireless network goes down."[23]  The Commission later unanimously adopted the *Mobile Wireless Resiliency Order*, which expressed support for the Cooperative Framework.[24]  As part of that decision, Commissioner Jessica Rosenworcel praised the stakeholders involved and recognized that the Framework would "improve[] safety now—before the next storm strikes."[25]

## B.    The Cooperative Framework Proved Extremely Effective in the 2017 Hurricane Season.

The wireless industry responded to the 2017 hurricane season with more robust wireless network resiliency, and this was due in part to key actions facilitated by the Cooperative Framework.  Indeed, roaming arrangements and the provision of mutual aid among carriers, for example, helped customers stay connected during unprecedented conditions.  However, the success of the Framework's approach also can be attributed to its inherent flexibility.  Because the Framework eschewed inflexible rules or false incentives,[26] carriers were able to tailor their efforts to the unique challenges presented by the 2017 hurricane season.  The industry's response not only helped consumers maintain and regain connectivity, but it also helped communities begin the long recovery and rebuilding process.

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[23] *See id.*

[24] *Improving the Resiliency of Mobile Wireless Communications Networks*, Order, 31 FCC Rcd 13745 (2016) ("*Mobile Wireless Resiliency Order*"); *see also* FCC, Wireless Resiliency Cooperative Framework, https://www.fcc.gov/wireless-resiliency-cooperative-framework (last visited Jan. 16, 2018).

[25] Statement of Commissioner Jessica Rosenworcel, FCC 16-173 (Dec. 20, 2016) (regarding *Mobile Wireless Resiliency Order*).

[26] *See Improving the Resiliency of Mobile Wireless Communications Networks*, Notice of Proposed Rulemaking, 28 FCC Rcd 14373 (2013) (For example, the NPRM proposed requiring carriers to publicly disclose the percentage of their cell sites providing service during and after an emergency on an individual basis, which would have discouraged the kind of collaboration that has been crucial to recovery efforts in Puerto Rico).

### 1. Disaster-Based Roaming Arrangements and Mutual-Aid Fostered Wireless Service Continuity and Restoration.

In the aftermath of a disaster, wireless roaming arrangements can play a critical role in helping affected carriers maintain and restore connectivity for their customers. These arrangements permit consumers to access critical data, voice and text services even if their carrier's network is down. And, these arrangements allow affected carriers to maintain services to customers and prioritize restoration efforts to the greatest number of people – as quickly as possible and free of any roaming charges. For this reason, carriers have triggered roaming arrangements in response to previous natural disasters, most notably immediately following Superstorm Sandy and Hurricane Katrina.

The Cooperative Framework commits signatories to implement reasonable roaming arrangements in disaster scenarios in the event carriers do not already have existing commercial roaming agreements in place.[27] Disaster-based roaming arrangements were used in response to Hurricanes Harvey, Irma, and Maria. As one example, in Puerto Rico and the U.S. Virgin Islands, the four wireless carriers operating on the islands opened up roaming to ensure service to the maximum population with the coverage available on the islands.[28] Existing commercial arrangements were also used where appropriate.

Carriers also collaborated by sharing resources with and providing mutual aid to one another to help with restoration. For example, carriers shared space on a cargo plane to transport

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[27] Cooperative Framework at 1-2.

[28] FCC, Communications Status Report for Areas Impacted by Hurricane Maria, at 2-3 (Oct. 12, 2017), https://transition.fcc.gov/Daily_Releases/Daily_Business/2017/db1012/DOC-347207A1.pdf.

generators to Puerto Rico following Hurricane Maria.[29] In another instance, one carrier allowed another to use its facilities in the U.S. Virgin Islands during Hurricane Irma.[30] These arrangements helped carriers maximize the utility of their collective resources for the benefit of customers in impacted areas.

### 2. Wireless Carriers Deployed Innovative Strategies to Restore Service and Connect Citizens in the Affected Areas.

The flexibility afforded by the Cooperative Framework gave carriers the freedom to experiment with and develop new and innovative techniques to restore service in the aftermath of the 2017 hurricanes. AT&T, for example, used a "flying cell on wings," or a drone cell site, to temporarily provide data, voice and text services over a forty mile radius in Puerto Rico in the aftermath of Hurricane Maria.[31] It was the first time such a device had been deployed.[32] In addition, AT&T and T-Mobile partnered with Alphabet's Project Loon to provide LTE-based services to tens of thousands of people in Puerto Rico using a network of balloons.[33] Verizon and AT&T deployed drones to check towers for damage in response to Hurricane Harvey,[34] and

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[29] *See,* Letter from Steve Sharkey, Vice President, Technology and Engineering Policy et al., T-Mobile, to Marlene H. Dortch, Secretary, Federal Communications Commission, PS Docket No. 17-344 (Jan. 8, 2017)

[30] U.S. Government Accountability Office, GAO-18-198, Report to the Ranking Member, Committee on Energy and Commerce, House of Representatives: *Telecommunications: FCC Should Improve Monitoring of Industry Efforts to Strengthen Wireless Network Resiliency* 24 (Dec. 2017).

[31] Rob LeFebvre, *AT&T's 'Flying COW' drone provides cell service to Puerto Rico*, Engadget (Nov. 6, 2017), https://www.engadget.com/2017/11/06/att-flying-cow-drone-cell-service-puerto-rico/.

[32] *Id.*

[33] Monica Alleven, *T-Mobile Joints AT&T in Collaborating with Project Loon in Puerto Rico*, Fierce Wireless (Oct. 28, 2017), https://www.fiercewireless.com/wireless/t-mobile-joins-at-t-collaborating-project-loon-puerto-rico.

[34] Monica Alleven, *Verizon, AT&T Deploy Drones to Check Towers in Areas Hit by Hurricane Harvey*, Fierce Wireless (Sept. 5, 2017), https://www.fiercewireless.com/wireless/verizon-at-t-deploy-drones-to-check-towers-areas-hit-by-harvey.

Verizon also deployed portable facilities that used satellite connectivity for backhaul purposes in some limited circumstances, so the provider was not dependent on landline connectivity.

Moreover, after the storms passed, carriers employed innovative methods to connect loved ones in Puerto Rico with friends and family. For example, AT&T and T-Mobile allowed customers to register the cell phone number of a family member or friend located in Puerto Rico.[35] When the Puerto Rico-based consumer's cell phone connected to the network, he or she was notified that his or her family or friends stateside had attempted to be in contact. Steps such as these provided customers the peace of mind that their loved ones were safe in the aftermath of Hurricane Maria.

### 3. The Wireless Industry Launched Consumer Readiness and Preparation Campaigns and Found Other Ways to Aid Communities with Services, Devices, and Dollars.

In keeping with the Cooperative Framework, the wireless industry launched robust consumer education campaigns to ensure consumers were informed about preparedness measures in advance of the 2017 hurricanes. As part of these efforts, the wireless industry developed a Consumer Readiness Checklist to help consumers better prepare for these hurricanes.[36] CTIA disseminated this checklist, along with tips for making emergency calls, in advance of Hurricanes Harvey, Irma, Maria, and Nate. These campaigns targeted individuals in the likely affected areas, both during the 48 hours before each storm made landfall and in the aftermath of

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[35] *See* News Release, AT&T, *AT&T Creates Website to Help Locate Family Members in Puerto Rico* (Sept. 24, 2017), http://about.att.com/story/att_creates_website_to_help_locate_family_members_-in_puerto_rico.html (last visited Jan. 16, 2018); T-Mobile, *T-Mobile offers service to help connect with loved ones in Puerto Rico*, https://www.t-mobile.com/customers/hurricane-maria-support (last visited Jan. 16, 2018).

[36] CTIA, How to Prepare Wireless Devices for Emergencies, https://www.ctia.org/consumer-tips/emergency-preparedness-wireless-tips (last visited Jan. 16, 2018).

each storm.[37]  CTIA's targeted social media push alone garnered more than 1.5 million impressions on Twitter, Facebook, and Instagram.

The Cooperative Framework's flexibility enabled the wireless industry to dedicate resources to aid communities affected by the 2017 hurricanes in more ways than just consumer education.  To help customers connect with loved ones, wireless carriers waived fees and overages on calls and texts in many of the areas impacted by these storms.  In response to Hurricanes Harvey and Irma, for example, all four of the nationwide carriers waived call, text, and data overages for customers located in areas affected by these storms.[38]

Carriers offered even more free services to connect consumers in Puerto Rico and the U.S. Virgin Islands.  AT&T waived overage fees for talk, text, and data, offered late payment forgiveness, and automatically provided credits for two months of AT&T wireless and prepaid service for its customers in Puerto Rico and the U.S. Virgin Islands.[39]  T-Mobile offered unlimited calling, texting, and data for its customers in Puerto Rico and unlimited calling and texting for customers in the U.S. Virgin Islands.[40]  In addition, T-Mobile also made it free to call and text *from* the U.S. mainland to Puerto Rico and the U.S. Virgin Islands, and waived roaming

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[37] *See, e.g.*, CTIA (@CTIA), Twitter (Sept. 18, 2017, 7:23 PM), https://twitter.com/CTIA/status-/909966023251591174/ ("In advance of #HurricaneMaria, prepare w/ tips like battery savings for your mobile devices + 911 best practices").

[38] KBMT 12 News Now, *Wireless Carriers Waiver Data Overage Fees for Harvey Victims* (Aug. 31, 2017), http://www.12newsnow.com/weather/harvey/wireless-carriers-waive-data-overage-fees-for-harvey-victims/469829521; Fox 13 News  Staff, *Wireless Carriers Waiving Overage Charges For Florida Customers* (Sept. 14, 2017),  http://www.fox13news.com/weather/tropics/irma-local-coverage/wireless-carriers-waiving-overage-charges-for-florida-customers.

[39] News Release, AT&T, *AT&T Provides Credits for Customers in Puerto Rico and US Virgin Islands* (Oct. 4, 2017) http://about.att.com/story/att_provides_credits_for_customers_in_puerto_rico_and_us_virgin_islands.html.

[40] News Release, T-Mobile, *T-Mobile Responds to Hurricane Maria* (Sep. 19, 2017), https://newsroom.t-mobile.com/news-and-blogs/t-mobile-responds-to-hurricane-Maria.htm

fees on calls and texts for customers on these islands.[41]  Sprint waived all text, call and data

overage fees for its customers in Puerto Rico and the U.S. Virgin Islands.[42]  Through these

actions, wireless carriers allowed customers to focus on restoring their lives rather than

monitoring their wireless usage.

Wireless carriers provided more than communications services too.  For example, T-

Mobile provided the Federal Aviation Administration a large generator to help keep the San Juan

airport open, allowing for the delivery of life-saving supplies.[43]  Similarly, AT&T worked with

government organizations, humanitarian groups, other telecommunications companies, and the

military to coordinate recovery efforts in Puerto Rico.[44]  And while Verizon is not a wireless

service provider in Puerto Rico, it contributed computers and printers to set up communications

stations with the goverment throughout Puerto Rico and provided generators to its partner

wireless providers and a Puerto Rico University.

Carriers also made charitable contributions to help impacted communities recover and

rebuild.  Although Verizon does not operate its own wireless network in Puerto Rico or the U.S.

Virgin Islands, the Verizon Foundation committed $5 million to support long-term relief efforts

for Puerto Rico and the U.S. Virgin Islands.[45] Verizon also announced a separate $10 million

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[41] News Release, T-Mobile, *T-Mobile Responds to Hurricane Irma*, https://newsroom.t-mobile.com/news-and-blogs/t-mobile-responds-to-hurricane-irma.htm.

[42] News Release, Sprint, *Sprint Updates Related to Hurricane Irma:  Sprint is Ready for Hurricane Irma* (Sept. 6, 2017), http://newsroom.sprint.com/sprint-ready-for-hurricane-irma.htm.

[43] News Release, T-Mobile, *On the Road to Recovery in Puerto Rico* (Oct. 27, 2017), https://newsroom.t-mobile.com/news-and-blogs/puerto-rico-network.htm.

[44] AT&T, *Hurricane Maria Response & Live Updates:  Maria Update* (Oct. 7, 2017), http://about.att.com-/inside_connections_blog/hurricane_maria.

[45] News Release, Verizon, *Verizon Foundation Commits an Additional $4 Million to Support Long Term Relief Efforts for Puerto Rico and U.S. Virgin Islands as Hurricane Maria Recovery Continues* (Sept. 29,

pledge to fund Hurricane Harvey relief efforts.[46]  Sprint and Softbank committed another $2.5

million in support for those affected by Hurricane Harvey.[47]

T-Mobile used its position as the Official Wireless Sponsor of Major League Baseball

("MLB") to raise money and awareness for hurricane recovery during the MLB Postseason.

Specifically, T-Mobile donated at least $2 million to Team Rubicon's hurricane recovery efforts

through its #HR4HR – Home Runs for Hurricane Recovery – campaign.[48]  As part of the

campaign, T-Mobile donated $10,000 per homerun during the MLB postseason and another $1

every time someone tweeted with #HR4HR during the postseason.[49]  In addition, AT&T donated

$1.65 million to support rescue and recovery efforts in communities in the U.S. and Caribbean

affected by the 2017 hurricanes.[50]  Verizon deployed five emergency response vehicles to

communities affected by Harvey and seven for Irma, which included a mix of mobile command,

emergency operations, and communications centers, along with charging stations.

The wireless industry is proud of these contributions, which were made possible in part

by the flexibility provided by the Cooperative Framework.  Rather than tying down resources

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2017), http://www.verizon.com/about/news/verizon-foundation-commits-additional-4-million-support-long-term-relief-efforts-puerto-rico.

[46] News Release, Verizon, *Verizon Commits $10 Million to Support Hurricane Harvey Relief Efforts* (Aug. 29, 2017), http://www.verizon.com/about/news/verizon-commits-10-million-support-hurricane-harvey-relief-efforts.

[47] News Release, Sprint, *Sprint Updates Related to Hurricane Harvey:  Sprint and SoftBank Commit $2.5M in Support for Employees, the Red Cross & Communities Impacted by Storm* (Aug. 30, 2017), http://newsroom.sprint.com/sprint-is-ready-for-hurricane-harvey.htm.

[48] News Release, T-Mobile, *T-Mobile Announces #HR4HR Home Runs for Hurricane Recovery* (effective Oct. 27, 2017; originally released Oct. 6, 2017), https://newsroom.t-mobile.com/news-and-blogs/hr4hr.htm.

[49] *Id.*

[50] News Release, AT&T, *AT&T Pledges an Additional $1.4 Million to Hurricane Relief with New Matching Donation,*" ( Sep. 11, 2017), http://about.att.com/story/att_pledges_additional_hurricane_relief_team_rubicon.html.

with unworkable and unnecessary mandates and false incentives, the Cooperative Framework allows carriers to tailor response efforts where they will have the most positive impact for consumers and communities affected by emergencies and disasters. Through these efforts, the wireless industry is helping our customers and our communities as we all recover and rebuild – together – from the historic 2017 hurricane season.

### 4. Wireless Carriers Are Committed to Raising Public Awareness Regarding the Status of Service Restoration.

The wireless industry is dedicated to raising public awareness regarding the availability of communications services during and in the immediate aftermath of emergencies and disasters. Such efforts are an important resource to help consumers understand the communications services available to them and develop contingency plans in the event of outages.

To help further public awareness, the signatories to the Cooperative Framework promised to support the Commission in making certain DIRS data available. DIRS, a voluntary system that wireless providers and other communications companies can use to report communications infrastructure status and situational awareness information, is activated by the Commission in times of crisis.[51] The signatories to the Cooperative Framework committed to make DIRS data available regarding the total number of cell site outages on an industry-aggregated, county-by-county basis when the Commission activates DIRS.[52] In the aftermath of 2017's four hurricanes, wireless carriers delivered on this commitment, in each instance providing – and continuing to provide to this day – the DIRS data specified in the Framework.

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[51] *See* FCC, Cybersecurity and Communications Reliability Division, Disaster Information Reporting System (DIRS), https://www.fcc.gov/general/disaster-information-reporting-system-dirs-0 (last visited Jan. 16, 2018).

[52] Cooperative Framework at 3.

At the same time, DIRS data represents a snapshot in time, and wireless networks are only one of the communications services that consumers rely on.  Moreover, because wireless networks today are designed with numerous, overlapping cell sites that provide maximum capacity and continuity of service even when individual sites are inoperable, the number of cell site outages is not necessarily a useful basis for attempting to measure the availability of wireless service to consumers.  Yet, some press reports following the hurricanes mistakenly equated the percentage of cell sites out of service with the percentage of customers in the affected area who lacked wireless coverage, likely creating misimpressions among consumers.  Further, DIRS reports do not provide other information that may provide context to consumers regarding the underlying reasons for outages, such as the lack of availability of commercial power.

In the context of responding to the devastation caused by Hurricane Maria, the wireless industry provided additional information in the content of the DIRS report to help consumers understand the types of communications services available and the timeframe for service restoration.  The Commission then included in its DIRS reports details regarding carriers' cooperation and roaming arrangements and carriers' efforts to deploy COLTs and COWs.[53] While this information may not be necessary or especially helpful in all emergency and disaster response situations, wireless carriers recognized – in the context of Hurricane Maria – the value

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[53] *See, e.g.*, FCC, Communications Status Report for Areas Impacted by Hurricane Maria, at 3 (Oct. 10, 2017), https://apps.fcc.gov/edocs_public/attachmatch/DOC-347174A1.pdf ("The four major wireless companies have opened up roaming on the islands so that they, collectively, can serve the maximum population of the islands with the current coverage available.  They are coordinating and prioritizing the recovery of cell sites and placement of temporary assets with the other carriers to maximize the coverage for all subscribers. Satellite Cells on Light Trucks (COLTs) have been deployed in Aguadilla, Arecibo, Cayey, Caomo Sur, Fajardo, Guayama, Manati, Mayaguez Mesa, San German, Vega Baja, and Yauco and Terrestrial Cells on Wheels (COWs)/COLTs in Humacao, Quebradillas, Rio Grande, and Utuado. Approximately 54% of the population is reported to be covered by wireless carriers in Puerto Rico.").

of this additional information in aiding consumers in understanding the status of communications services available in Puerto Rico.

## IV. CTIA COMMENDS THE COMMISSION FOR ITS COMMITMENT TO ENABLING RESPONSE EFFORTS AND MAKES RECOMMENDATIONS TO FURTHER THESE EFFORTS.

The Commission and the wireless industry share the critical objective of ensuring the resiliency and reliability of wireless networks in times of disasters and emergencies and in their aftermath. In the 2017 hurricane season, the Commission significantly aided wireless providers' resiliency and recovery efforts. As noted in the *Public Notice*, staff provided a number of public safety functions, including managing the 24/7 Operations Center; activating DIRS; granting hundreds of requests for special temporary authority; adopting over 30 public notices and orders aimed at, among other things, facilitating service restoration efforts; granting waivers of Universal Service Fund support rules to expedite rebuilding efforts and promote access to broadband by schools, libraries, healthcare institutions, and low-income consumers; and deploying personnel to the affected regions to support service restoration activities.[54] And as noted above, the Commission permitted additional details and context in DIRS reports issued in response to Hurricane Maria to help provide consumers with a more complete suite of information regarding the communications services available and the timeline for restoration.[55] CTIA commends the Commission for these efforts.

To further promote effective communications during disasters and emergencies, CTIA urges the Commission to facilitate network investment through modernizing infrastructure

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[54] *Public Notice* at 2-3.

[55] *See supra* Section III.B.4.

deployment processes and making more flexible use spectrum available for mobile broadband, and to provide more flexibility in the content of its DIRS report.

*Modernize infrastructure deployment processes and make more flexible use spectrum available.* Since Hurricane Katrina and Superstorm Sandy, wireless providers have invested billions of dollars to strengthen and harden wireless networks. These investments have led to, among other things, increased network densification and greater wireless network capacity. Both of these actions are critical in helping to make wireless networks more resilient and expediting service restoration when outages inevitably occur.

Increased network densification helped make wireless networks more resilient in the face of the 2017 hurricanes. As T-Mobile recently highlighted to the Commission, the density of its network in Houston allowed it to optimize service around those cell sites that were affected by Hurricane Harvey.[56] These and other recent efforts by wireless carriers to densify networks were made possible, in part, by Commission actions over the past decade to ease regulatory impediments to wireless deployment. For example, shot clocks for new infrastructure deployment and categorical exclusions for certain facilities from environmental and historic preservation reviews have helped to streamline infrastructure deployment processes and facilitate

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[56] *See,* Letter from Steve Sharkey, Vice President, Technology and Engineering Policy et al., T-Mobile, to Marlene H. Dortch, Secretary, Federal Communications Commission, PS Docket No. 17-344 (Jan. 8, 2017) (noting that T-Mobile's network fared well in response to Hurricane Harvey because the density of the carrier's network allowed it to optimize around "holes").

greater investment in building out wireless infrastructure.[57]  The Commission should look for more opportunities to lower regulatory barriers for private investment in network densification.[58]

The Commission also should continue to keep the spectrum pipeline flowing to enable carriers to continue to improve the capacity of wireless networks.  Specifically, FCC actions to make additional spectrum available on a flexible use basis allowed the wireless industry to rapidly deploy nationwide 4G LTE networks.  These networks, with increased capacity and speeds, are able to accommodate increased traffic and roaming – keeping consumers connected – that occurs during disasters and emergencies.[59]  Increasing network capacity is particularly important in light of the growing role wireless networks play in providing information during disasters and emergencies.  For example, in the context of the 2017 hurricanes, consumers affected by these storms obtained information and coordinated rescue efforts through the use social media services and applications provided over 4G LTE networks.[60]

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[57] *See Petition for Declaratory Ruling to Clarify Provisions of Section 332(c)(7)(B) to Ensure Timely Siting Review and to Preempt Under Section 253 State and Local Ordinances that Classify All Wireless Siting Proposals as Requiring a Variance*, Declaratory Ruling, 24 FCC Rcd 13994 (2009); *Acceleration of Broadband Deployment by Improving Wireless Facilities Siting Policies,* Report and Order, 29 FCC Rcd 12865 (2014).

[58] *See* Comments of CTIA, WT Docket No. 17-79 & WC Docket No. 17-84 (June 15, 2017); Joint Comments of CTIA and the Wireless Infrastructure Association, WT Docket No. 17-79 (June 15, 2017); Reply Comments of CTIA, WT Docket No. 17-79 & WC Docket No. 17-84 (July 17, 2017); Joint Reply Comments of CTIA and the Wireless Infrastructure Association, WT Docket No. 17-79 (July 2017, 2017).

[59] *See*, e.g., AT&T, "AT&T Florida Networks Prepared for Hurricane Irma," (Sep. 5, 2017) https://www.prnewswire.com/news-releases/att-florida-networks-prepared-for-hurricane-irma-300514226.html ("During an emergency, many people are trying to use their phones at the same time. The increased calling volume may create network congestion….").

[60] *See*, Maya Rhodan, *'Please Send Help.' Hurricane Harvey Victims Turn to Twitter and Facebook*, Time, Aug. 30, 2017, http://time.com/4921961/hurricane-harvey-twitter-facebook-social-media/.

***Provide for flexibility in DIRS reporting.*** While DIRS reports throughout Hurricanes Harvey and Irma generally served their intended purpose, it became evident following Hurricane Maria that including additional information could provide a more accurate picture of the status of communications networks. As previously noted, the Commission offered wireless carriers the ability to provide additional information and context in DIRS reports regarding carrier roaming arrangements, deployment of COLTs and COWs, and included information regarding the availability of wireline and broadcast services – all of which was relevant in the context of Hurricane Maria. Including this information helped consumers understand that even though cell sites were down in their area, wireless service may still have been available.

Based on these experiences, changes to improve the usefulness of DIRS information to Commission staff and the relevance of the Commission's reports to consumers and other stakeholders may be possible. As one example, CTIA supports including other relevant information, such as the status and availability of commercial power, to the extent such information is publicly available from federal agencies. CTIA and its members welcome further discussions with Commission staff on potential improvements to DIRS reporting. As the Commission explores these ideas, it should ensure that processes remain flexible to allow the Commission and the wireless industry to tailor information to individual events and the communities affected.

## V.    CONCLUSION

In 2017, millions of Americans were able to rely on mobile wireless services when they needed it most. This was the result of the wireless industry applying lessons learned from Hurricane Katrina and Superstorm Sandy to deploy a vigorous response to the historic hurricane season. The Cooperative Framework was a key component of this response. To further promote effective communications during disasters and emergencies, the Commission can continue to

facilitate investment in wireless networks through modernizing infrastructure deployment processes and making more flexible use spectrum available for mobile broadband and by providing for more flexibility in the content of its DIRS reporting.

Respectfully submitted,

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