

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554**

In the Matter of)	
)	
Public Safety and Homeland Security Bureau)	PS Docket No. 17-344
Seeks Comment On Response Efforts)	
Undertaken During 2017 Hurricane Season)	
)	

COMMENTS OF COMCAST CORPORATION

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Comcast Corporation (“Comcast”) hereby responds to the Public Notice (“*Notice*”) issued by the Public Safety and Homeland Security Bureau (“Bureau”) of the Federal Communications Commission (“Commission”) in the above-referenced docket.¹

I. INTRODUCTION AND SUMMARY

The 2017 hurricane season had an historic impact on many communities and individuals throughout the United States and its territories. Despite the widespread damage, however, the *Notice* has touched upon an important way in which policymakers and industry participants can learn from these experiences. In particular, the fact that multiple, high-impact hurricanes hit different areas of the country in close succession provides policymakers with an opportunity for constructive assessment of the resiliency of communications infrastructure and effectiveness of government and industry responses. Comcast witnessed first-hand the devastation caused by

¹ *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 (Dec. 7, 2017) (“*Notice*”).

Harvey and Irma to the communities we serve, and we welcome the opportunity to share our experience in support of the Commission's public safety and network resiliency goals.

Thanks to the tremendous efforts of Comcast's teams in Texas and Florida, Comcast's network weathered both hurricanes remarkably well. Comcast's teams prepared our networks for the disasters, communicated with customers and other consumers throughout the areas before, during, and after the storms, and closely coordinated disaster response efforts with federal, state, and local emergency officials. Effective disaster response begins well before a hurricane makes landfall, and lasts long afterward – as evidenced by Comcast's ongoing efforts to rebuild in affected areas.

Because of this work, Comcast was able to keep many consumers connected, even those consumers displaced from their homes, during and in the immediate aftermath of both storms. In the Houston area, all 29 of our affected hub facilities remained operational despite massive flooding from the equivalent of a year's worth of rain in four days. And in Florida, despite significant winds that knocked down support structures and cables across the state, we were able to restore service to more than 92% of our impacted customers within the first week after Hurricane Irma passed, and to over 99% of our customers a few days later.

Importantly, Comcast's commitment to the communities we serve goes beyond the networks we operate. We take pride in the work our teams have done to help those communities recover from these disasters – from the compassion shown by our employees in helping their colleagues and neighbors who were hit hardest by the storms, to the fundraising and other efforts to provide food, clothing, and shelter to those in need. Throughout each disaster, Comcast put customers first by waiving fees for damaged equipment, enhancing access to our Xfinity Stream app on mobile devices outside the home, and providing flexibility for billing issues as customers

recovered from the storms. Comcast NBCUniversal and its Foundations also assisted relief efforts by making substantial charitable donations in the affected communities and supporting other fundraising activities such as through telethons and public service announcements, generating more than \$100 million to date for disaster relief.

While there are certainly lessons to be gleaned from both events, Comcast's experience this hurricane season confirms that there can be significant differences between disasters, even two of the same type of disaster. Heavy rain and flooding in Houston, for example, caused different damage and required a different response than strong winds and storm surge in the Florida Keys. Likewise, the ability to incorporate new technology – from drones that allow communications providers to remotely survey network damage to apps that make news, weather, and other video programming available to customers both inside and outside the home – can be instrumental to speeding the recovery of the network and keeping consumers informed. It is therefore critical that communications providers both have the flexibility to adapt to different – sometimes changing – circumstances on the ground, and maintain open communications and close coordination with federal, state, and local officials as events unfold, so that the disaster response is cooperative, efficient, and based on the best available information.

II. COMCAST'S PREPARATION AND RESPONSE KEPT CUSTOMERS AND EMERGENCY OFFICIALS CONNECTED AND INFORMED.

As Chairman Pai has stated, “[a]ccess to reliable communications services during times of emergency is critical to enabling Americans in danger to request help and our heroic first responders to do their jobs.”² In service areas affected by the 2017 hurricanes, Comcast moved quickly to prepare its network for maximum resiliency, survey and repair extensive damage, and

² Notice at 1.

keep lines of communication open with customers and emergency officials. Before, during, and after each storm, our teams worked tirelessly under challenging conditions to minimize disruption of service and help their communities rebuild.

A. Disaster Response and Customer Outreach Begin Before Each Disaster.

Comcast's networks are designed from the ground up to maximize reliability and resiliency. In flood-prone areas of Texas, for example, we position hub facilities in elevated locations – significantly above ground clearance – to minimize flood risk. Comcast also adheres to a rigorous generator maintenance and testing program, which includes running each generator under actual electrical load on a regular basis. And to refuel these generators during extended power outages, Comcast has developed an emergency fuel plan that mobilizes fuel trucks to secure staging areas within range of affected communities.

Anticipating many of the needs that would arise in the course of operating the network during the storms and restoring the network after the storms, Comcast teams in Texas and Florida began working proactively several days before each storm made landfall. These teams established command centers in each geographic area; moved to protect hub facilities with sand bags and other protective measures; tested and refueled backup generators; pre-positioned fuel trucks; and reserved blocks of hotel rooms for out-of-state repair crews.

Comcast also executed extensive customer communications plans, which were initiated in advance of each storm's landfall and continued throughout the storms' duration, with lessons learned from Comcast's experience in Houston applied to the circumstances Comcast and others faced in Florida. For example, in Houston, Comcast created <http://houston.comcast.com> to serve

as a centralized resource for service status, frequently asked questions, and updates on repairs.³ Based on the positive response to that effort, Comcast created <http://florida.comcast.com>, which provided our customers with regular updates on our restoration efforts throughout Florida during and after Hurricane Irma.⁴ Comcast also provided customers with information about how to use the Xfinity My Account app to learn about service updates; how to find hotspots with the Xfinity Wi-Fi hotspot app; how to access TV via the Xfinity Stream app; and a reminder to charge devices and protect devices with a surge protector. We used the region-specific websites mentioned above, as well as Twitter, Facebook, and other social media constantly to share live updates on each storm, as well as our restoration efforts and status, on a variety of platforms.⁵

Comcast also enhanced its Xfinity Stream app to allow continued access to live news and TV programming, plus On Demand content, outside the home for those forced to evacuate their homes or without power for in-home Wi-Fi.⁶ And in Florida, we worked quickly to negotiate a carriage agreement with local NBC affiliates to enable our customers who lost power or were

³ See Comcast Houston, Hurricane Harvey Recovery FAQ, <http://houston.comcast.com/2017/09/01/hurricane-harvey-faq/> (last visited Jan. 13, 2018).

⁴ See Comcast Florida, Florida Keys Restoration Update, <http://florida.comcast.com/2017/10/04/florida-keys-restoration-update-2/> (last visited Jan. 13, 2018).

⁵ See, e.g., Comcast Cares (@ComcastCares), Twitter (Aug. 30, 2017, 1:31 PM), <https://twitter.com/comcastcares/status/902992169060810752>; Comcast Houston (@ComcastHouston), Twitter (Aug. 31, 2017, 2:35 PM), <https://twitter.com/ComcastHouston/status/903370739205775360>; Comcast Florida (@ComcastFL), Twitter (Sept. 15, 2017 2:31 PM), <https://twitter.com/ComcastFL/status/908805543342612480>.

⁶ See Comcast Houston, Hurricane Harvey Recovery FAQ, <http://houston.comcast.com/2017/09/01/hurricane-harvey-faq/> (last visited Jan. 13, 2018).

displaced from their homes but remained in-market to remotely access live-stream broadcasts so they could watch local weather reports and newscasts.⁷

As the hurricanes hit, Comcast used its telemetry capabilities to remotely monitor the health of our network and identify areas without power or those that suffered physical damage. Comcast also worked closely with emergency officials to obtain access to emergency operations centers (“EOCs”) and coordinated with state and local governments, law enforcement, and electric utilities to protect and restore service to high-priority locations and infrastructure. As a participant in the Commission’s voluntary Disaster Information Reporting System (“DIRS”), Comcast also provided daily outage reports for the activated areas and assisted the Commission in providing emergency officials with the best-available situational awareness on the status of communications networks.

As the storms receded and efforts turned to restoration of service, Comcast surveyed network damage and prioritized repairs to critical infrastructure, including facilities granted priority restoration status under the federal Telecommunications Service Priority (“TSP”) program. Thousands of employees and contractors contributed to this effort, including our own technical crews from eight states (Illinois, Michigan, Ohio, Kentucky, Tennessee, Georgia, Pennsylvania, and Texas). New technologies also proved extremely valuable at this stage. For example, Comcast used drones in Florida to fly over areas that remained inaccessible to provide HD video of affected facilities. Electric utilities often receive priority access to storm-damaged

⁷ See Comcast Florida, Frequently Asked Questions for Hurricane-Impacted Customers, <http://florida.comcast.com/2017/09/14/frequently-asked-questions-for-hurricane-impacted-customers/> (last visited Jan. 13, 2018) (“XFINITY TV customers in these areas can watch live news and weather reports including local networks WTVJ NBC-6 in Miami and WPTV Newschannel 5 Palm Beach and the Treasure Coast, giving you a way to keep in touch with local news and information.”).

poles and rights-of-way, and Comcast worked cooperatively with those companies to restore power to hub facilities and deploy new cables and fiber to replace damaged plant. Permanent repairs continue to this day. While the worst of these storms has passed, Comcast is mindful that some of our employees remain displaced from their homes and that a significant part of our local teams' efforts in the coming months will be to assist with rebuilding and preparations to withstand future events.

B. Comcast's Efforts Produced Positive Results.

Despite massive flooding in and around Houston, and destructive winds and storm surge that inundated affected areas in Florida, Comcast's network performed remarkably well throughout both hurricanes, minimizing service disruptions to our customers. Comcast teams also applied lessons learned in Houston and in previous storms to optimize their response in Florida, and took advantage of advanced technology to stay connected and improve their situational awareness.

In preparation and response to Hurricane Harvey, Comcast's team in Houston:

- Anticipated and mitigated flooding hazards so that all 29 affected hub facilities remained fully operational throughout the storm.
- Maintained service, despite widespread flooding and power outages, to more than 90% of our Houston-area customer base, and restored service to 99% of those customers whose service was impacted within 15 days after the hurricane.
- Completed restoration of service to all customers within 18 days, with all cell towers served by the Comcast network restored within 6 days.
- Enhanced our Xfinity Stream app to provide customers with the ability to watch live TV and On Demand content from a computer or mobile device – even if their homes had no power and no cable service.

During Hurricane Irma, Comcast's Florida team:

- Restored service to more than 92% of our impacted customers within the first week after Hurricane Irma passed, and to over 99% of our customers a few days after that.

- Deployed and maintained more than 900 generators to power our plant due to extensive commercial power outages across Florida.
- Deployed more than 4.5 million feet of new cable to replace damaged lines and repaired more than 45,000 downed cable drops. This included installation of temporary fiber all the way to Key West, with portions spanning distances of up to 5,000 feet.
- In the Keys, prepositioned a barge along with equipment needed to restore our fiber to bridges or across poles in the water.
- Deployed drones over the Keys to provide HD images of network impacts even before those areas were accessible by road.
- As in Houston, provided enhanced access to the Xfinity Stream app on mobile devices. Comcast also enabled our customers in South Florida and Southwest Florida who lost power or were displaced from their homes but remained in-market to remotely access live-stream broadcasts from their local NBC affiliate so they could watch local weather reports and newscasts.

III. COMCAST’S COMMITMENT TO THE COMMUNITIES WE SERVE GOES BEYOND THE NETWORK WE OPERATE AND SERVICES WE PROVIDE.

Comcast takes pride in the care and compassion of its employees as members of their communities. As our customers, friends, and neighbors began to take in the devastation from the 2017 hurricanes, Comcast’s efforts were much broader than just restoring the network we operate and the services we offer.

Employees gave shelter, clothing, and assistance to nonprofit organizations and were actively involved in community response efforts in coordination with emergency officials. One among many examples was Mike Piel, a manager in Comcast’s sales team in Houston, who led a team of four men and two boats to come to the rescue of his fellow Texans after Hurricane Harvey.⁸ In Florida following Hurricane Irma, Universal Orlando partnered with the Salvation Army and American Red Cross to provide thousands of meals to local residents and assist the

⁸ Comcast Voices Blog, *A Look Back At How Our Support Helped Improve Lives In 2017*, Jan. 2, 2018, <https://corporate.comcast.com/stories/our-community-impact-in-2017>.

City of Orlando with distributing ice. Universal Orlando team members also volunteered with Feeding the Children Everywhere to help prepare 4.4 million disaster meal kits for those in Puerto Rico affected by Hurricane Maria.

As customers were forced to evacuate their homes – often returning to significant damage, or no home at all – Comcast sought to minimize unnecessary stress and financial burdens by waiving fees, suspending billing collections, and providing billing adjustments and credits to customers displaced from their homes. For example, in both Houston and Florida Comcast replaced any damaged, impaired, or lost Xfinity equipment at no additional charge; temporarily suspended charges for an in-home appointment with a technician during recovery efforts; suspended late payment fees and collections activity immediately following the storms; and waived early termination fees, unreturned equipment fees, and reactivation fees.⁹ And Comcast established new processes allowing customers who had evacuated or were otherwise unable to return to their homes to suspend Xfinity services for up to four months – thereby reducing their bills – while allowing them to retain use of key services like My Account, voice mail, Comcast.net email, and streaming video content.

Comcast also used its existing facilities to help neighbors in need throughout both communities stay connected. For example, although our customer service center in Marathon, Florida was flooded with 9 feet of water, we opened a temporary service center to assist customers in that area, as well as others in Key Largo and Key West. In Houston, Comcast opened its retail stores as charging stations for community members to gather and recharge

⁹ See, e.g., Shelby Reynolds, *Comcast Offers Financial Relief to Florida Customers Impacted By Irma*, Naples Daily News, Sept. 24, 2017, <http://www.naplesnews.com/story/weather/hurricanes/2017/09/24/hurricane-irma-comcast-offers-financial-relief-customers-affected/698067001/>.

depleted devices. Also in Houston, CBS-affiliate broadcast station KHOU's studios were flooded, but Comcast was able to run an emergency fiber link to the station that enabled KHOU to continue broadcasting important news coverage. Comcast also made employee safety a high priority, accounting for all employees through updated emergency contacts, distributing information on storm preparation and safety around downed power lines, and ensuring that crews dispatched from out-of-state had secure accommodations.

Comcast NBCUniversal and its Foundations also made substantial charitable contributions and supported additional fund-raising efforts in areas affected by the hurricanes and other major disasters, including:

- \$1 million (\$500,000 cash and \$500,000 in-kind contributions) to the American Red Cross and local Hurricane Relief Fund in Houston;¹⁰
- A “Houston Strong” community partner lunch to honor 25 nonprofits that were on the ground to help those in need during and after the storm and present each with a \$10,000 Comcast NBCUniversal Foundation grant;¹¹
- An additional donation of \$1 million in cash to support relief efforts in the aftermath of Hurricane Irma;¹²

¹⁰ Comcast Houston, Comcast NBC Universal Supports Hurricane Harvey Relief Efforts, <http://houston.comcast.com/2017/08/30/comcast-nbcuniversal-supports-hurricane-harvey-relief-efforts/> (last visited Jan. 13, 2018).

¹¹ Comcast Houston, 25 Houston-Area Nonprofit Organizations Benefit on Giving Tuesday, <http://houston.comcast.com/2017/12/05/25-houston-area-nonprofit-organizations-benefit-on-giving-tuesday/> (last visited Jan. 13, 2018).

¹² Comcast Florida, Comcast NBCUniversal Makes Additional \$1 Million Cash Donation to Hurricane Relief Efforts, Bringing Total Contributions to Almost \$20 Million in Cash, Funds Raised, and In-Kind Support, Sept. 18, 2017, <http://florida.comcast.com/2017/09/18/comcast-nbcuniversal-makes-additional-1-million-cash-donation-to-hurricane-relief-efforts-bringing-total-contributions-to-almost-20-million-in-cash-funds-raised-and-in-kind-support/>.

- \$5 million in airtime to run public service announcements for Volunteer Florida, which administers funding for national service and volunteer programs;¹³
- Telethons hosted on and supported by NBC and Telemundo networks and affiliate stations, including “Hand In Hand: A Benefit For Hurricane Relief,” and “One Voice: Somos Live!” featuring Jennifer Lopez, Marc Anthony, and Alex Rodriguez, which ultimately raised nearly \$100 million for victims of recent disasters;¹⁴ and
- An On Demand and X1 voice remote feature to make contributing to relief efforts quick and convenient for video customers.

These efforts exemplify Comcast’s strong commitment to the communities we serve.

IV. CLOSE COORDINATION AND THE FLEXIBILITY TO ADAPT ARE CRITICAL TO SUCCESSFUL DISASTER RECOVERY.

Comcast has substantial experience in network resiliency preparation over the course of decades and many significant disasters, and regularly enhances its preparation plans as a result of lessons learned from those occasions. The unusual circumstances of the 2017 hurricane season forced providers like Comcast to quickly identify any lessons learned from one experience and apply them to the next experience. Ultimately, however, the 2017 hurricane season confirms that there can be significant differences even between two of the same type of disaster, and while preparation, communication, and coordination are important in any disaster, specific steps or tactics that may work well for one situation either will not apply or may actually be harmful in another situation. As a result, the best strategy is to promote policies that allow flexibility to

¹³ Press Release, Governor Scott and Volunteer Florida Thank Comcast for \$500,000 Donation to Florida Disaster Fund; Comcast Also Donating \$5 Million In Airtime For Volunteer Florida PSA, Sept. 28, 2017, <https://www.volunteerflorida.org/comcast-donation-irma/>.

¹⁴ See, e.g., Erin Nyren, ‘Hand in Hand’ Hurricane Relief Telethon Raises More Than \$55 Million, Variety (Sept. 20, 2017), <http://variety.com/2017/tv/news/hand-in-hand-hurricane-relief-telethon-final-donation-count-1202564642/>.

adapt to changing facts on the ground and encourage coordination and communication between service providers, electric utilities, and emergency officials.

Comcast's experiences with Harvey and Irma reinforce the need for close coordination and open communications between service providers and federal, state, and local officials. As each hurricane was approaching landfall, Comcast's local teams established contacts with federal, state, and local government authorities to ensure open communications channels, and obtained letters and other authorizations identifying its vehicles and repair crews as critical infrastructure providers eligible to access restricted areas. This coordination with local governments also expedited recovery efforts by facilitating both formal and informal waivers and other authorizations to deploy new cables and fiber, sometimes on a temporary basis, outside the usual permitting process.

Useful, timely, and accurate information about the impact of the disaster and service providers' efforts to mitigate the effects of the disaster can be extremely helpful to government officials in many ways. Comcast team members made significant efforts prior to each hurricane's landfall to connect with local and state officials and provide them with information about Comcast's preparation and plans. These early outreach efforts allowed those local and state officials to better position resources and integrate Comcast's efforts into their overall recovery plans. For example, Comcast worked closely with state and local leaders in Florida and Texas to ensure that they were aware of our efforts to prepare our networks for the storm and mitigate any impact to our customers, including our plans to open our Xfinity Wi-Fi network to all consumers and first responders.¹⁵

¹⁵ To help keep communities connected, Comcast provided all consumers in the affected areas (including non-subscribers) with free access to its Xfinity Wi-Fi network, including 53,000 hotspots in the Houston area and 137,000 hotspots in Florida.

Comcast also kept federal officials informed, primarily through its participation in the Commission's voluntary DIRS program. DIRS allows providers like Comcast to share useful information in a secure, confidential manner,¹⁶ and because DIRS relieves some of the time pressure on service providers' obligations to respond to the Commission's mandatory outage reporting rules, providers share outage information in a manner that best balances the Commission's desire for timely information with the goal of restoring services and repairing networks as efficiently and effectively as possible.¹⁷ Moreover, DIRS enables the Commission to share timely and useful outage information with its Federal agency partners and with the public in an aggregated form, as evidenced by the daily reports released by the Bureau.¹⁸

Of course, this works both ways. For example, by connecting with state and local officials in the areas preparing for Harvey, Comcast established communications channels to deliver data and information to those local officials *and* ensured that local officials knew whom to contact at Comcast when they needed to report information. In one Texas city, our

¹⁶ See *The FCC's Public Safety & Homeland Security Bureau Launches Disaster Information Reporting System (DIRS)*, Public Notice, 22 FCC Rcd 16757 at 2 (2007) (noting that "[b]ecause the information that communications companies input to DIRS is sensitive, for national security and/or commercial reasons, DIRS filings shall be treated as presumptively confidential upon filing").

¹⁷ See *The FCC's Public Safety & Homeland Security Bureau Announces The Activation Of The Disaster Information Reporting System In Response To Hurricane Harvey*, Public Notice, 32 FCC Rcd 6690 at 1 (Aug. 25, 2017) (noting that DIRS reports were requested on a daily basis, and that "the separate Network Outage Reporting System (NORS) obligations are suspended for the duration of the DIRS activation with respect to outages in the counties where DIRS has been activated").

¹⁸ As noted, DIRS is a very useful tool that promotes information sharing and coordination between communications providers and the federal government. Reviewing the ease-of-use of the DIRS interface, as well as the effectiveness of the DIRS instruction manual and DIRS training, could be one way the Commission can ensure that DIRS remains a valuable tool for future disasters.

coordination with local officials resulted in them refueling a generator that was inaccessible to Comcast due to flooding, and these local officials assisted further by emailing Comcast crews photos of the flooded facility to help plan repairs. Comcast had a similar experience in Florida, where open communications channels with state and local officials ensured that those officials could quickly provide information to Comcast about downed facilities, service outages, and other issues, enabling Comcast to respond efficiently and direct resources to the areas where they were needed with the most urgency. And Comcast's outreach to appropriate federal agencies generally ensured that Comcast personnel had necessary paperwork and credentialing to reach the impacted areas in a timely manner.

To be sure, open channels of communications are necessary, but not sufficient. In Miami, for example, despite the best efforts of all parties to coordinate during the disaster, communications providers such as Comcast were not automatically placed on the "priority list" to obtain emergency fuel or have commercial power restored to hub facilities by the local power company. This miscommunication made it more difficult for Comcast to refuel the generators needed to keep its facilities running until commercial power was restored. More broadly, Comcast's efforts to bring contractors and other resources from outside the affected areas to help with preparation and recovery encountered numerous transportation-related administrative hurdles, because many of the inspections and registrations for certain vehicles are done on a state-by-state level.¹⁹ Comcast and other service providers typically are able to overcome these

¹⁹ In its response to Harvey and Irma, Comcast dispatched trucks and other large vehicles from as far away as Colorado, Arizona, and Minnesota to Texas and Florida. These vehicles typically must meet regulatory guidelines from the Department of Transportation in each state where they are operated, which can involve state-specific inspections, registrations, and other administrative requirements. While states affected by disasters may temporarily waive such requirements, vehicles arriving from out-of-state may have to pass through several other

types of impediments, but at a cost to the efficiency and effectiveness of our ability to prepare our network for the disaster and restore the network afterwards.

Finally, while Comcast undertook significant efforts in the time period immediately before, during, and after the storms, so much of the work to facilitate these open lines of communication is done when there is no storm on the horizon. Comcast's incident response planning and training efforts leverage industry best practices, FEMA Incident Command guidance,²⁰ and its past experiences to bring together cross-functional teams that are prepared to manage large-scale incident response and recovery efforts. Comcast is very proud in particular of the efforts of its local teams to develop strong, positive working relationships with officials in the communities we serve. The fruits of those labors are evidenced in our ability to serve our customers with a resilient broadband network and robust services that keep our customers connected and informed even during the some of the worst disasters we have ever experienced.

jurisdictions en route to their destinations, encountering delays along the way. A federal waiver for all vehicles responding to the disaster would significantly mitigate any delays.

²⁰ See FEMA Incident Command System Resources, <https://www.fema.gov/incident-command-system-resources> (last visited Jan. 15, 2018).

V. CONCLUSION

Comcast appreciates the opportunity to share this perspective on the 2017 hurricane season and cooperative efforts to respond to storm damage, restore service, and prepare for future disasters. We look forward to working with the Commission, federal, state, and local emergency managers, and other partners in industry and government for an even more effective response in the 2018 season and beyond.

Respectfully submitted,

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