



Testimony of
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Acting Chairwoman and Commissioners, thank you for the opportunity to testify this morning and to share the wireless industry's commitment to resilient networks, service continuity, and where necessary, rapid restoration in the face of increasing emergencies and disaster events across the nation. CTIA and our member companies throughout the wireless industry are proud of the central role that wireless plays in our lives—especially during emergencies. When a friend or family member needs help, when a stranger is in trouble, we pick up our wireless devices to call—or text—9-1-1. When disaster strikes, we reach for our wireless devices to find up-to-the-minute information that can lead us to safety and help us respond and recover. And when significant emergencies threaten our communities, public safety professionals send Wireless Emergency Alerts with critical information that spurs us to action and helps us stay safe.

Unfortunately, as the effects of climate change are felt more broadly, disaster events are increasing in both severity and frequency. In the aftermath of winds exceeding 150 mph, unprecedented floodwaters, extreme temperatures, and wildfires, our communities face widespread destruction—massive property damage, flying debris, fallen trees, flooded streets, and destroyed or even burned homes and businesses. The challenges left in their wake are compounded when infrastructure is affected, causing power outages, loss of indoor heating in winter or air conditioning in summer, and restrictions on access to drinking water.

To combat network outages, the wireless industry is making investments in many forms. These include densifying networks with overlapping cell sites that can maintain service if one or more cell sites goes down; pre-positioning deployable equipment—temporary cell sites, portable generators, fuel, and much more—along with regional rapid response teams for speedy restoration; and enhancing coordination with other communications providers, electric utilities, and federal and state emergency managers.

The Wireless Network Resiliency Cooperative Framework is part of the collaboration that jumpstarts response and recovery. Each disaster event is different and requires boots-on-the-ground assessments in challenging, often hard-to-reach circumstances, and the Framework provides a meaningful array of tools to help coordinate and speed recovery.



Together, we are stronger than we were just a few years ago, and we continue to draw lessons from the increasing severity and frequency of disasters and develop best practices that strengthen our networks, our response, and our performance for everyone who relies on wireless during emergencies. Of course, each event brings its own unique set of challenges that drive wireless providers to continually strive to enhance resiliency moving forward. Across the last several years of increasingly-severe disasters, we are proud of our industry’s response—our network investment, preparation, coordination, and restoration—as we improve continuity of service and bring service back online in the face of increasing disaster events.

And so we welcome the FCC’s interest in our recovery efforts, both during the hearing today and as part of the resiliency proceeding you have just launched. The Wireless Network Resiliency Cooperative Framework was developed in collaboration with the FCC and Congress, and the wireless industry works in partnership with the Department of Homeland Security and state and local emergency personnel. We support close collaboration and common expectations among all stakeholders, which are critical to successfully prepare for, and respond to, disaster events. This Framework is working effectively to the benefit of wireless consumers. We only caution against significant changes that force a once-size-fits-all approach to rapidly evolving networks and disaster events.

An Update on Hurricane Ida. Hurricane Ida presented historic conditions in the Gulf area—the fifth strongest storm to make landfall in the U.S. Ida unleashed sustained winds of 150 mph at landfall, knocked down over 30,000 utility poles, flooded whole communities, shattered the power grid, and left over a million people without electricity. In some parishes, Louisianans did not have electricity for weeks.

I’m proud to report that the wireless infrastructure in the Gulf proved to be remarkably resilient, and our planning and response teams worked tirelessly to get service up and running as quickly as possible where it was knocked out. Anticipating long periods without commercial power, wireless providers worked in advance to ready back-up power resources and staged equipment such as COLTs, COWs, movable microwave hops, temporary satellite links, and portable generators just outside the projected impact zone so they could be deployed quickly. These temporary facilities provide key coverage often in the hardest hit communities. Once Ida passed, our response teams were among the first on the ground, and wireless providers braved dangerous post-storm debris, used airboats, and launched drones to help quickly assess and respond to Hurricane Ida’s damage.

Ida’s devastating forces took down infrastructure and property, but wireless restoration was impressive. More than half of the cell sites knocked out by Ida were up and running within 48 hours. And more than 95% of cell sites in Louisiana were up and running by September 7, even as roughly half a million customers across the state were still without power. And during this time, wireless networks handled even more traffic than usual as wired broadband and Wi-Fi connections were down, providing a critical lifeline for public safety and consumers to communicate and share lifesaving information. In addition, wireless providers transmitted 235 Wireless Emergency Alerts to cellphones along Ida’s path as it made landfall and progressed through the eastern U.S.



AT&T, T-Mobile, and Verizon also worked to help families recover. Each offered free calls, text, and data, provided credits for customers affected by the storm and set up stations to provide consumers and first responders a place to recharge their devices. And in the days after Ida, wireless providers donated generators to keep water treatment plants operating, delivered generators to local government offices to get connectivity up and running, and offered a central location with internet-enabled wireless devices for the community to connect with family, friends, and much more.

We are proud of how the wireless industry responded to Ida and I'd like to focus the balance of my testimony on three critical elements of wireless network resiliency and restoration that enabled our industry's strong response to Ida and other disaster events in the last several years and will facilitate our industry's response to whatever comes next: resiliency by design; preparedness and rapid response; and coordination and collaboration.

Strengthening Networks through Investment and Resiliency by Design. Wireless providers are making investments that are resulting in more resilient networks. The wireless industry invested nearly \$30 billion in 2020—the third straight year of increased capital expenditures—and nearly \$140 billion since 2016. This investment includes expansive growth in new cell sites, particularly in new small cell deployments. Small cell deployments involve overlapping coverage areas and incorporate diversity in wireless networks. Today's networks often keep consumers connected even when nearby cell sites are impacted by extreme weather. In Ida, for example, one wireless provider reported that by September 1, 90 percent of its sites in the path of the storm were in service, and customers served by about half of the out-of-service sites were able to get signal due to overlapping coverage from nearby sites. All told, the wireless industry has increased the number of cell sites across the U.S. by 35% since 2016—and in just the past two years, more cell sites have been built than the previous seven years combined. All told, more than 800,000 small cells are projected to be deployed by 2029.

Wireless providers are also designing networks for resiliency from the outset. Operators tailor deployments to unique regions of the country and anticipated emergency events. In areas more prone to hurricanes like Ida, providers design networks to account for the combination of threats posed by these storms, using sophisticated risk-analysis tools to inform key aspects of network design and keep critical network assets out of harm's way. These are often site-specific, region-specific decisions—whether it goes to placement, hardening, or power supply. For example, wireless providers have installed more permanent generators in the Gulf region, elevated equipment to account for future flooding in Texas and Louisiana, and buried new fiber in Panama City, Florida. Wireless providers have used steel rather than wood poles to better withstand high winds in Puerto Rico and the U.S. Virgin Islands. And in wildfire prone areas, providers have equipped critical cell sites with permanent generators and deployed backup battery power at other sites along with densifying the network. These are often site-by-site decisions in which network, environmental, community, and access considerations all contribute.

And we see that these investments in network resiliency are paying dividends in areas across the country. For instance, in the aftermath of 2020's Hurricane Delta, the percentage of cell sites in the overall affected area of Louisiana never fell below 89 percent on a given day. More than 83 percent of cells sites



remained in service in areas impacted by Hurricane Sally, despite the storm's 105 mph winds, tornadoes, storm surges, and flooding. And in the face of increasingly frequent and widespread wildfires in the western regions of the country, available data shows that wireless networks continue to meet the challenges posed by these devastating disasters. In 2019, 96 percent of cell sites remained operational throughout the areas of California affected by preemptive public safety power shutoffs—despite the fact that more than 2.7 million Californians were without power.

These statistics do not diminish the frustrating and threatening experiences consumers suffered from these devastating events. Yet, they help highlight how the wireless industry's resiliency approach has enabled providers to effectively prepare and respond to diverse emergency events.

Preparedness, Rapid Response, and Restoration. Climate change has resulted in more storms that are more powerful, threatening all infrastructure, including wireless networks. Storm winds in excess of 100 mph inevitably result in property destruction and flying debris, and communications facilities – wired and wireless – are by their nature put in harm's way. This is the reality we live in. And while no single, one-size-fits-all strategy will address each unique storm circumstance, pre-planning and preparation goes a long way to enable a rapid, effective response.

With this evolving reality, wireless providers have in place regional response teams and pre-position a wide range of temporary assets they can use to maintain and quickly restore services, including portable generators and fuel trucks as well as mobile cell and backhaul units. Pre-staging also includes trailers with food and housing for our response teams, which in some cases may be on the ground for days if not weeks. These dedicated teams also engage in around-the-clock site-based preparatory work: from verifying cell site battery backup, to topping off backup generator fuel tanks, to securing all attachments to towers and poles.

Wireless providers' disaster preparedness playbooks are constantly evolving, leveraging lessons learned from past storms and disasters and applying them to the next. For example, in advance of many events, wireless providers now prepare for extended commercial power outages, not just 24- or 36- or even 72-hour outages. This means scores of portable generators—one wireless provider reported that they employed 400-500 generators to restore business-as-usual service in the aftermath of Hurricane Ida. It also means plans in place to maintain ongoing operations: providers pre-position fuel tankers and arrange for continuous sources of fuel to keep the generators up and running, and their response teams engage in regularly scheduled generator maintenance and upkeep to keep them running. Commercial power outages may be the source of many out-of-service cell sites, but wireless providers are developing plans to restore service—and maintain it—well before commercial power is back up and running.

Another lesson learned has involved pre-positioning of temporary backhaul links to help address instances where loss-of-service may be driven by transport issues, not power. These temporary links can be especially relevant in areas that rely heavily on aerial fiber for backhaul.

Coordination and Collaboration. Response and restoration efforts are also facilitated by around-the-clock engagement and coordination with the federal government and state Emergency Operations



Centers (EOCs) to share timely information with government officials, power companies, and other public safety stakeholders.

Even as the wireless industry invests in redundant and well-designed networks and response team efforts, there is broad recognition that coordination with other providers, partners in government, public safety, and the energy sector further advances preparedness and restoration. To this end, CTIA and the nationwide providers all serve on the Cybersecurity and Infrastructure Security Agency's (CISA) National Coordinating Center for Communications (NCC), a forum in which wireless operators participate in “blue skies” Emergency Support Function-2 exercises, share planning and network status information, and coordinate response activities. This federal coordination is enhanced through regular engagement at state Emergency Operations Centers, which facilitate preparation among a wide variety of stakeholders—wireless providers, electric companies, and state and local government and public safety officials—for the types of events most common for that region.

And as the Commission is well aware, the wireless industry has launched initiatives to further coordination among interdependent stakeholders. As noted above, following Hurricane Sandy, CTIA worked with congressional and FCC leaders to develop the Wireless Network Resiliency Cooperative Framework to identify best practices for wireless providers to work together and accelerate response and recovery efforts from disaster events, including Hurricane Ida. The Framework contains five elements: (i) providing for reasonable roaming under disaster arrangements when technically feasible; (ii) fostering mutual aid during emergencies; (iii) enhancing municipal preparedness and restoration; (iv) increasing consumer readiness and preparation; and (v) improving public awareness and stakeholder communications on service and restoration status.

While the wireless industry has advanced solutions in each of these areas, Roaming under Disasters, or RuD, has garnered the most attention. RuD is an important tool in the toolbox, and multiple RuD agreements were activated during Ida, as they have been in response to other disasters such as Hurricane Michael and Hurricane Maria. At the same time, RuD is complicated—it requires a host provider to assess from an engineering perspective the capacity and capabilities of its network under emergency event conditions and determine how its network and in-service capabilities will remain resilient and effective throughout the event, while also continuing to support necessary recovery efforts. RuD requires careful and deliberate decisions by provider traffic engineers and cell site subject matter experts to ensure reliable and resilient performance.

Taken together, the common-sense, actionable principles of the Framework have helped to harness the collective resources of the wireless industry to maintain and quickly restore wireless services to Americans affected by disasters.

Access to critical first responder communications are available on any connecting network regardless of RuD status. For example, if a consumer dials 9-1-1 and its provider’s network is down but another provider’s network is in service with operational cell sites in the area and compatible technologies, that 9-1-1 call goes through. Similarly, when Wireless Emergency Alerts are broadcast over a network, any compatible wireless device can receive them.



More recently, CTIA united with the Edison Electric Institute, NCTA – The Internet & Television Association, US Telecom – The Broadband Association, and others as part of the Cross-Sector Resiliency Forum, an initiative convening representatives from the communications and energy industries to identify actions that can improve information sharing and preparedness. This forum has fostered collaboration between the industry sectors, from facilitating contact information for coordination before, during and after an event, to fostering participation in exercises, workshops and summits, to enhancing response and developing targeted initiatives to promote overall resiliency. These activities and initiatives reflect our understanding that coordinated efforts between interdependent stakeholders can advance communications resiliency.

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We welcome the opportunity for further dialogue with the Commission, and we look forward to participating in the resiliency proceeding launched earlier this month. Resiliency by design, emergency preparedness, and collaboration involve an evolving mix of investment and effort. A flexible approach is essential to tailor an effective response to the unique circumstances posed by each event. The wireless industry’s commitment, however, is resolute: we know that Americans rely on wireless service in times of need. Together, we are stronger today than ever before, and the lessons drawn from recent disasters have allowed us to continue to strengthen our networks, our responses, and our performance for everyone who relies on wireless during emergencies.