Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of

Hurricane Michael	)	**PS Docket No. 18-339**
Preparation and Response	)	

COMMENTS OF SPRINT CORPORATION

In response to the Federal Communications Commission ("FCC" or "Commission") Public Safety and Homeland Security Bureau ("Bureau") Public Notice seeking comment on carrier preparation for and response to Hurricane Michael, Sprint Corporation ("Sprint") provides the following information and perspective on Sprint's efforts to anticipate and react to this significant natural disaster[1].

Implementation of Industry Best Practices

As the Bureau recognized in the Public Notice, Sprint and the other nationwide wireless service providers have developed industry best practices that address the operation of communications networks in high-risk areas like the hurricane-prone Gulf Coast. Consistent with those industry best practices, Sprint has a robust emergency response and disaster recovery plan in place which allows quick restoration of impacted services following a disaster and includes significant coordination with third parties and contracted vendors. These plans rely on established best practices for a standardized response that helps facilitate cooperation and coordination with

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[1] Public Safety and Homeland Security Bureau Seeks Comment on Hurricane Michael Preparation and Response, Public Notice, PS Docket No. 18-339 (DA 18-1176), Released Nov. 16, 2018 ("Public Notice").

third parties. Sprint implemented its emergency response plan during Hurricane Michael, which helped ensure assets were in place and restoration teams were able to gain access to impacted areas. In particular, Sprint's staging location strategy and credentialing process were effective in speeding the repair of damaged plant and equipment.

Sprint has established large storage and staging yards for disaster recovery in several areas of the southeastern United States. Many of our disaster recovery assets, including portable diesel generators, fuel pods and cell sites-on-wheels ("COW's") are stored at these locations. We have also established smaller staging areas at other various Sprint locations throughout the country. These smaller staging areas contain similar assets and can also safely and securely hold fuel to use during recovery efforts. For Hurricane Michael in particular, we identified several staging locations near the potential impact area prior to the storm making landfall, based on the projected path of the hurricane from various storm-tracking resources.

Sprint restoration teams did not encounter any significant issues gaining access to areas impacted by Hurricane Michael. Of particular importance, the Department of Homeland Security ("DHS") and the Federal Emergency Management Agency ("FEMA") teams coordinated directly with Sprint personnel to provide access and debris removal. Our disaster recovery teams were also provided with letters granting permission to travel prior to dispatch for reconnaissance and restoration efforts, which proved helpful. Sprint also provided contacts for escalation to help address any issues encountered by field teams through the National Coordinating Center for Communications ("NCC") Watch and/or Emergency Support Function ("ESF") #2 Desk.

Service Restoration Challenges

While all storms are unique in how they impact communications networks and can be difficult to prepare for ahead of time, Sprint's disaster recovery plans are based on having a number

of deployable solutions that our restoration teams can implement quickly and efficiently to help restore communications services. These solutions offer flexibility and allow our network engineers and technicians to deploy a unique approach for whatever issue may arise.

Wireless network restoration is typically hampered by broader challenges with the commercial electrical power grid, along with wireline/fiber telecommunications backhaul issues. In the case of Hurricane Michael, the damage and prolonged restoration of backhaul was a significant problem, which hampered the ability of Sprint's teams to bring wireless facilities on-air in a timely manner.

Asset Pre-Positioning and Preparation

Regarding the staging of assets for Hurricane Michael, it is not part of Sprint's standard process to move assets directly into the projected track ahead of the storm. If assets were moved strictly in reaction to storm path projections, these assets could end up in an area that is not heavily impacted or may be in a location that no longer has accessibility due to disruption of infrastructure. Sprint's goal is to be able to fully access and utilize our assets when necessary following the most damaging part of a storm. Based on the location of our large disaster recovery yards and the small asset staging locations, there were already numerous assets in the general area of the storm path.

As Hurricane Michael got closer to landfall and gained intensity, Sprint identified that additional assets and temporary staging locations would be required. Sprint made contact with several individuals across the Florida Panhandle who own private property that would help support our recovery needs. We also began staging portable generator assets in our disaster recovery yards on flatbeds so they could be more readily shipped into the impacted area and support the recovery efforts. As soon as the storm passed, teams determined which of the identified temporary staging locations would best suit our needs based on network impact and access to affected areas. Large

shipments of portable generators and fuel were staged and set for delivery at or near the temporary locations the day after the storm had cleared.

Again, in our experience, commercial power availability and telecommunications backhaul issues must typically be resolved prior to full wireless network restoration and, of course, Sprint has little control over when and how such restoration occurs. We do, however, attempt to obtain frequent status updates from the vendors and utility companies that provide those vital services. Sprint maintains a fleet of mobile diesel-fueled electrical power generators that can be deployed to impacted service areas rapidly to provide temporary power, until commercial providers are able to restore service. Again, these generators are stored at large disaster recovery yards in certain hurricane-prone parts of the country, as well as smaller strategic staging locations. For Hurricane Michael, Sprint also established multiple temporary staging locations within the impacted area, which allowed for assets to be brought in and teams to have easy access to these items for network recovery. Sprint maintains ongoing relationships with three large disaster recovery refueling vendors and has numerous arrangements with general contractors and tower crews for expedited response from dedicated resources.

Restoration of Communications Services

For Hurricane Michael, a major disruption in fiber backhaul in the immediate area and specifically Bay and Gulf Counties caused significant impact to the Sprint network. Restoration of the backhaul took several weeks and was handled exclusively by our backhaul provider. The provider had teams working around the clock to restore the fiber, but unfortunately temporary fiber runs that had been deployed were again interrupted when they were cut by other recovery teams as they were moving around the impacted area. Sprint held two status conference calls each day with the fiber backhaul provider throughout the recovery timeframe and coordinated activities

between the fiber restoration teams and our internal network operations teams. As may be expected following major natural disasters, timeframes continued to change due to the fluid situation on the ground and repeated damage to the temporary and permanent fiber runs.

In the interim, Sprint deployed other solutions to help restore service to our wireless network. Multiple satellite-based cell sites-on-light-trucks ("SatCOLT's") were deployed in the first week following the storm. These assets utilize satellite telecommunications to connect portable cell sites to our communications network and provide great flexibility when working to restore network coverage in areas significantly impacted by the storm. A variety of services, including voice, data, text and dedicated internet access could then be provided in limited areas within the storm impact zone. We were also able to leverage systems specifically designed to provide satellite backhaul to existing macro cell sites that were damaged or impaired by the hurricane or subsequent damage by cleanup crews. Sprint evaluated sites based on priority and restored them as resources, primarily related to backhaul, became available. We continued to deploy available assets through the first part of November, 2018, as deemed necessary.

Satellite-based backhaul solutions do not have the necessary capacity to support a large number of impacted cell sites in the area, but can prove useful as a temporary measure to provide limited service while other longer term repairs are made. To help expedite the restoral of wireless network services, Sprint also deployed alternative backhaul solutions, such as temporary microwave backhaul links, to support existing cell sites in the impacted area. In this way, Sprint was able to restore wireless telecommunications prior to complete fiber backhaul restoration.

9-1-1 Calling and Wireless Emergency Alerts

Regarding the provision of 9-1-1 services, we are not aware of any outages reported on 9-1-1 circuits provided by Sprint and our contracted vendors. To our knowledge, public safety

answering points in the areas impacted by Hurricane Michael should have been able to receive 9-1-1 calls carried over Sprint's wireless network throughout the duration of the storm. By all indications, diversity and redundancy built into the 9-1-1 backhaul network helped contribute to overall reliability of Sprint's network, specifically for 9-1-1 calling. Similarly, we did not experience any known issue with the broadcast of wireless emergency alerts over the Sprint network during Hurricane Michael. Cell sites that remained on-air were able to support emergency services during the storm.

Wireless Network Resiliency Cooperative Framework

Sprint recently responded to a request from the Bureau regarding the Wireless Network Resiliency Cooperative Framework ("Framework"), which included information specific to Hurricane Michael.[2] The Framework established goals for enhancing coordination during an emergency or disaster by providing for reasonable roaming when technically feasible, fostering mutual aid among wireless providers, enhancing municipal preparedness and restoration by convening meetings with local government public safety representatives to develop best practices, working to increase consumer readiness and preparation and improving public awareness and stakeholder communications on service and restoration status with county-by-county information.

The Framework was effective in preparation for and during Hurricane Michael as wireless carriers worked to make wireless networks available to consumers and public safety. As contemplated in the Framework, Sprint both provided roaming to other wireless carriers and made

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[2] Letter from Lisa M. Fowlkes, Bureau Chief, Public Safety and Homeland Security Bureau, Federal Communications Commission, to Charles W. McKee, Vice President, Government Affairs, Federal and State Regulatory, Sprint Corporation (dated Nov. 6, 2018) and Sprint Response (dated Nov. 26, 2018) filed in PS Docket No. 11-60 (Reliability and Continuity of Communications Networks).

arrangements for its customers to be able to roam, as necessary, particularly during natural disasters when wireless networks can become impaired. Sprint established roaming arrangements well in advance of any disaster which allow wireless subscribers from other wireless providers to roam onto Sprint's wireless network and vice versa, when and where technically feasible. Roaming on partner wireless networks during disasters does not typically require a proactive change or system selection to allow wireless traffic to traverse either network and should, in most cases, be automatic for most wireless subscribers. Wireless devices are generally programmed to allow for roaming on preferred providers when Sprint wireless network service is not available.

There were no instances we are aware of in which Sprint or another carrier declined a request for mutual aid or roaming during this event. Again, Sprint maintains significant resources to help respond to disasters, including trained technicians, portable diesel generators, specialized repair vehicles, COW's and predesignated strategic locations for staging equipment and other resources. For Hurricane Michael, we deployed numerous assets, including SatCOLT's throughout the impacted areas providing cellular voice and Long Term Evolution ("LTE") data for public safety first responders, medical facilities and the general public. We also utilized a number of satellite "fly away" systems and femto cells to help support governmental, military and public safety operations, including an emergency operations center, hospital and debris management facility, for dedicated internet access, cellular voice, and 3G data at specific locations.

Throughout Hurricane Michael, Sprint was ready and willing to assist other carriers with all available resources as necessary and appropriate upon request. Based on the impact of the storm and outages that were occurring, the carrier participants offered each other support. As discussed above, there were also daily communications regarding backhaul service and status of service restoration among telecommunication service providers and the potential for alternative

solutions for our wireless cell sites.

Conclusion

While Hurricane Michael was a particularly powerful storm that resulted in significant damage and devastation, Sprint and the other wireless carriers worked diligently to restore wireless services to the impacted communities and public safety first responders as soon as possible. Several key components of wireless networks, namely electrical power and backhaul, were negatively impacted during the storm, but through careful planning and preparation, wireless services were successfully restored on a temporary basis using innovative technological solutions. Wireless network services were then fully restored on a more permanent basis due to the tireless efforts of Sprint's partners and contractors in the industry, including utility crews restoring commercial power and telecommunications backhaul providers working to reconnect damaged fiber backhaul connectivity.

Respectfully submitted,

SPRINT CORPORATION

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December 17, 2018