

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

In the Matter of)	
)	
Improving the Resiliency of Mobile)	PS Docket No. 13-239
Wireless Communications Networks)	
)	
Reliability and Continuity of)	PS Docket No. 11-60
Communications Networks,)	
Including Broadband Technologies)	
)	

COMMENTS OF SPRINT CORPORATION

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COMMENTS OF SPRINT CORPORATION

Sprint Corporation (“Sprint”) hereby respectfully submits its comments in the above-captioned dockets. The Commission should decline to adopt rules requiring wireless carriers to publicly report the percentage of operating cell sites during a network outage. The proposed reporting obligation will confuse consumers and will not advance network resiliency. Instead, the Commission should allow wireless carriers to invest their resources toward network infrastructure and continue with their own plans and industry-wide efforts to improve network resiliency in the face of severe storms and other disasters.

I. INTRODUCTION AND SUMMARY

The Commission is justifiably concerned with the ability of wireless networks to withstand disasters and maintain service availability for emergency calling under even the worst conditions. Carriers have invested—and continue to invest—in various measures that make cell sites and other network components more resilient and more likely to maintain service even during severe storms. The Commission’s proposed rules, however, are unlikely to improve

network reliability in the face of storms and other disasters. The single metric that will be publicly disclosed will be confusing to consumers and not indicative of network reliability. Instead, the Commission should encourage a cooperative approach to emergency calling availability that will improve network resiliency, such as promoting common backup power systems, roaming, access to more reliable backhaul, and other concrete steps.

II. PROPOSED RULES WILL RESULT IN DISCLOSURES THAT WILL CONFUSE CONSUMERS

The Commission has proposed rules that will require carriers to file and disclose a deceptively simple metric: the percentage of operating cell sites on a day-by-day, county-by-county basis.¹ The Commission's rationale is that negative publicity will encourage wireless providers to allocate additional resources to backup power that they otherwise would not out of fear that bad headlines will encourage customers to switch to carriers that had better scores.²

If the proposed rules go into effect, the first public reports will undoubtedly generate press coverage: "Carrier X More Reliable Than Carriers Y and Z After Hurricane." But these headlines will not meaningfully inform consumers of the overall reliability of a given carrier's network and will not change the underlying capital investment of carriers.

A. Disclosures Would Provide Abstract Numbers With No Link to Consumers' Real-World Experience

The data gleaned from the proposed rules will do little or nothing to provide meaningful information to consumers that will allow them to make an informed choice as to which wireless carrier will provide the most reliable service during emergencies at a given location. The

¹*In the Matter of Improving the Resiliency of Mobile Wireless Communications Networks*, Notice of Proposed Rulemaking, PS Docket 13-239, PS Docket 11-60 (released Sept. 27, 2013) ("NPRM") ¶1.

² NPRM ¶ 26.

Commission is proposing that carriers report the percentage of cell sites in operation on a county-by-county, day-by-day basis.³ Because the reporting metric is a crude approximation of actual service availability, customers will have little context upon which to judge performance.

Suppose a consumer decides to choose a carrier after a recent hurricane in her area. What does it mean if Carrier A had a score of 86, and Carrier B had a score of 72? If Carrier B was able to maintain the same coverage area with fewer cell sites (either through radio propagation characteristics, power control or network management), then it would be inappropriate to conclude the carrier A had a superior network during the disaster. These metrics do not inform a customer whether they could have made a call from their home after the storm.

Moreover, they provide no basis upon which to judge whether Carrier A will have service after the next major storm. What if Carrier A had a better score on Day 1 after the storm, and Carrier B had a better score on Day 2? To add even more likely complexity, what if there were no recent reports in her county, but in other counties in the state Carrier A had better scores in some and Carrier B in others. How does this metric allow a customer to judge which network will perform better at her location during the next event? Additionally, Carrier A may have a need for more data capacity in a certain area due to a major enterprise customer commitment there. Carrier A will have more cells deployed than Carrier B who may just be serving the general consumer. Outage reporting on these sites built primarily to boost capacity has little to do with coverage and is non-representative of the coverage footprint and the ability of a customer to access the network.

³ NPRM Appendix A § 4.15.

B. The Infrequent Reports Are Statistically Meaningless

It doesn't take a statistician to realize that the sample size of the reports will not result in statistically significant results that can fairly guide consumer choice in selecting a wireless carrier based on network resiliency during a disaster and the NPRM contains no discussion of the anticipated sample size of the data reports and the statistical significance of such a small sample.

The proposed rules state that the reporting obligations will track those of the Disaster Information Reporting System ("DIRS"), which has only been fully activated on average once each year since it was introduced in 2007. Of the seven full DIRS activations, all but one were for hurricanes on the Gulf Coast and Eastern Seaboard.⁴ Only 19 states (including the District of Columbia) have ever been subject to a DIRS activation and only Florida, Louisiana, and Mississippi have been subject to more than one DIRS activation affecting more than four counties.⁵ In short, DIRS activations are sporadic, isolated, and non-representative.

Even for customers in areas that have been subject to DIRS, the activations are so infrequent that they are unlikely to provide critical information to customers about the likelihood of service interruptions in their town, in their neighborhood, or on their block. And for customers in the rest of the country, the proposed public reporting may have no relationship at all to network resiliency in their area. For a customer in California, information about network outages in Florida during one hurricane will provide no meaningful guidance for her selection of a wireless carrier when her concerns are about service interruptions during local earthquakes and

⁴ NPRM Appendix C. The only full non-hurricane activation was an ice storm in Kentucky in 2009. Partial activations were implemented for four additional events: the North Dakota floods in 2010; the Joplin, Missouri, tornadoes in 2011; a snow storm in 2011; and the Derecho in 2012. Two hurricanes initiated full activations that were later downgraded to partial activations: Hurricanes Alex and Earl (both in 2010).

⁵ Alabama and Texas have each been subject to two DIRS activations, but one of those activations in each state affected four or fewer counties.

wildfires—none of which have as yet spurred a DIRS activation. Consumers will undoubtedly assume that isolated data from one or two events per year is representative of a carriers' overall resiliency when there is no data whatsoever pointing to the validity of that assumption. Given the interests at stake, it is unfair to consumers and to wireless carriers to place so much weight on arbitrary data.

The Commission's analogy in the NPRM to public reporting of airlines' delay and cancellation rates misses the mark. Every day, tens of thousands of commercial flights take off all across the nation, generating a huge data set. Conclusions from this data set are meaningful and a fair way to compare different airlines on-time reliability. In stark contrast, comparisons among one or two reports each year affecting a small fraction of the population provide no such robust data set that can support reliable conclusions for consumers nationwide to choose a wireless provider.

During normal conditions, consumers have numerous ways to evaluate service quality at their homes and other locations they frequent. They can ask friends and neighbors about coverage with their wireless providers; they can consult online coverage maps from the various carriers; and, they can take advantage of carriers' return policies when service quality does not meet their needs after purchase. But the proposed rules will create an unsupported sense of certainty about emergency calling reliability even though the metric would not be an accurate representation of emergency calling service availability in any one area at any given time.

C. The Proposed Metric of Percentage of Sites in Service Has Little Relationship to Emergency Service Coverage

As the Commission is aware, wireless carriers, including Sprint,⁶ are moving away from large macrocell architecture to a heterogeneous design incorporating smaller macrocells and incorporating picocells and femtocells to help improve coverage in a variety of ways. The Commission has issued an NPRM seeking to facilitate construction of these smaller cells by easing zoning and other restrictions on their deployment.⁷ These smaller cells are located on office building rooftops, in shopping malls and sports stadiums, on utility and light poles, behind facades, and in other environments that simply do not have the space or weight-bearing capacity to accommodate permanent backup power generators and fuel tanks.

These “small cells” are a key component of the wireless industry’s solution to resolve in-building coverage and capacity issues. Large urban cities may have hundreds—or perhaps thousands—of small cells deployed due to dense urban clutter penetration loss and localized coverage gaps in urban environments.

Carriers often deploy in-building wireless solutions to:

- Overcome building penetration losses
- Overcome interference in high-rise buildings
- Create custom solutions for individual customer locations
- Offload the macrocell network traffic
- Increase capacity and coverage at stadiums, airports, malls, convention centers, and similar facilities with concentrated users

⁶ Sprint is in the middle of its Network Vision deployment, a massive network overhaul plan that will increase capacity and coverage through the deployment of additional cell sites, frequencies, and antenna technologies.

⁷ *In re Acceleration of Broadband Deployment by Improving Wireless Facilities Siting Policies, et al.*, Notice of Proposed Rulemaking, FCC 13-122, WT Docket No. 13-238, WC Docket No. 11-59, RM-11688 (terminated), WT Docket 13-32, (released Sept. 26, 2013).

Carriers also deploy outdoor small cell solutions to:

- Extend coverage in urban/suburban areas
- To help offload macrocells in heavily congested areas
- Overcome excessive shadowing in dense urban areas

It is difficult to draw a direct link between percentage of cell sites in operation and the ability of the public to make an emergency CMRS 9-1-1 call, especially given the increasing deployment of small cells. Macrocells often have overlapping coverage areas to increase capacity, so there is also ability for macrocells to handle emergency CMRS calls from locations that would normally be served by a different macrocell or a small cell. A single reporting metric of percentage of cell sites in operation will almost certainly understate network availability due to coverage areas supported by macrocells versus smaller cells and the ability of carrier to adjust their networks to increase coverage when and where it is needed.

D. Consumers Will Confuse Preventable Failures With Failures Beyond the Control of Wireless Carriers

As the Commission recognized in the NPRM, the three major causes of network failure during a storm or other disaster are commercial power failure, backhaul failure, and physical damage to the cell tower and associated equipment.⁸ While all three causes are initially beyond the control of the wireless carriers, there are steps they can take to mitigate outages for the first and third causes, namely by providing backup power and by promptly repairing physical damage or using more robust equipment. Outages due to backhaul failure, however, are ultimately out of the control of the wireless carrier, but the proposed public reporting would not distinguish among the various causes.

⁸ NPRM ¶ 32.

Wireless carriers are dependent on third-parties to carry signals from their towers to their switch locations.⁹ Those backhaul facilities are a common point of failure during storm outages, and those failures are completely beyond the wireless carriers' control. Wireless carriers purchase carrier-grade circuits that have more robust service requirements than other types of circuits, but a major storm can tax the ability of even the most diligent service provider from restoring service quickly while it also strives to restore its own retail customers and other wholesale customers.

Experiences during Super Storm Sandy were illustrative, as wireless carriers experienced widespread and prolonged service outages as a result of the storm. Analysis after the storm showed that initial cell site outages were roughly evenly split between those due to commercial power loss and those due to backhaul failure. (An additional small percentage of outages were due to direct physical damage to the tower and supporting equipment.) Seven days after the storm, however, the vast majority of the remaining outages were due to backhaul failures. While the failure of commercial power can sometimes be mitigated, wireless carriers can do little to lessen the effects of the failure of backhaul circuits provided by third-parties.¹⁰ The public reporting under the proposed rules provides no information to consumers as to the cause of the failure of their particular tower and whose responsibility it is to restore service.

⁹ Even Verizon and AT&T, which have ILEC affiliates, are dependent on third parties for backhaul outside the footprints of those ILEC affiliates.

¹⁰ Modern Ethernet technology that is increasingly being used for wireless backhaul is somewhat more resistant to damage than older DS-1 and DS-3 technologies, but the differences are unlikely to be large enough to make a significant difference in future disasters.

III. PROPOSED RULES UNDERMINE THE EFFECTIVE DIRS SYSTEM THAT HAS WORKED WELL FOR SIX YEARS

DIRS was developed as a voluntary effort between the communications industry and the FCC. In the six years DIRS has been operative, most are in agreement that the system has worked well, allowing government insight into the operations of communications networks that would otherwise be kept confidential by the reporting carriers. In announcing DIRS, the Commission recognized the logic underpinning the confidentiality of the voluntary reports:

DIRS filings voluntarily report weaknesses in and damage to the national communications infrastructure. The release of this sensitive information to the public could potentially facilitate terrorist targeting of critical infrastructure and key resources. Further, the DIRS filings contain internal confidential information that constitutes trade secrets and commercial or financial information. Public availability of these reports, which contain information the filers themselves do not routinely make public, could competitively harm the filers by revealing information about the types and deployment of their equipment and the traffic that flows across their networks.¹¹

Conversion of the existing, effective confidential voluntary system into a mandatory public reporting obligation could potentially undermine the effectiveness of the system and serve to spur some of the issues identified previously by the Commission.

The proposed rules could weaken the cooperative achievements of the Commission and the wireless carriers that resulted in DIRS. The NPRM justifies the new rules, in part, by stating that there are few additional costs because the new system would require essentially the same information as DIRS.¹² While potential financial impact to the wireless industry is an important

¹¹ The FCC's Public Safety and Homeland Security Bureau Launches Disaster Information Reporting System (DIRS), *Public Notice*, DA 07-3871 (PSHSB rel. Sept. 11, 2007) (*DIRS Public Notice*) http://fjallfoss.fcc.gov/edocs_public/attachmatch/DA-07-3871A1.PDF at 2.

¹² "Moreover, because these carriers are already reporting needed information, they have already incurred the startup costs associated with any reporting system." NPRM ¶ 11.

consideration, as the Commission correctly acknowledged, there are other significant concerns in transforming a confidential voluntary commitment into a mandatory public disclosure.

IV. RULES SHOULD ENCOURAGE A COOPERATIVE SOLUTION TO EMERGENCY NETWORK OUTAGES

The Commission should encourage cooperation, not just competition, to promote deployment of backup power resources. Many cell towers support multiple carriers, and the Commission rules should encourage the carriers sharing that tower—whether owned by one of the carriers or a third party—to have common backup power resources. This lessens the impact on the site because only one generator and fuel storage tank would be needed rather than separate facilities for each carrier. Backup power solutions can be difficult to deploy, can pose environmental risks and are infrequently utilized. Rather than creating a system that would encourage redundant deployment of backup power solutions by multiple carriers at the same location, the Commission should seek to stimulate cooperation among all parties.

Most telecommunication providers own less than 10 percent of their sites—and one national carrier recently announced its intention to sell a substantial portion of its owned sites. Stand-alone cell towers are primarily owned by companies referred to as tower aggregators and many towers support multiple wireless carriers. When all carriers at multi-tenant sites can tie into a diesel generator provisioned by the tower aggregator, it becomes the most effective and environmentally friendly way to make the telecommunications infrastructure more reliable. Rather than each carrier providing its own extended backup power source, a tower aggregator or other landlord can provide a fixed generator that carriers can access at a reasonable monthly charge. Rather than each carrier needing its own space—and space issues are becoming increasingly more difficult for each subsequent arriving carrier—a single generator model

achieves efficiencies. Additionally, installing a single generator rather than multiple generators for all carriers can help avoid additional environmental, noise, space and other concerns. The Commission could help in achieving this superior solution by focusing its efforts on encouraging the use of common backup power solutions and promoting industry cooperation for the use of limited assets when needed.

V. THE PROPOSED DEFINITION OF ‘NETWORK SITE’ IS OVERLY BROAD

Though Sprint does not support adoption of the proposed rules, it is important to address the proposed definition of “network site,” which would include “[a]ny land station controlled or operated by a Commercial Mobile Radio Service (CMRS) provider and used by it during periods of normal operation to provide CMRS.” Sprint has deployed hundreds of thousands of femtocells, which plug into the consumer’s electrical power outlet and use the consumer’s broadband connection to allow calls to reach Sprint’s network. Under the proposed rules, each of these femtocells would arguably meet the definition of a network site.

Femtocells generally do not have backup power capability, unless the consumer has a home backup power generator or uninterruptable power supply. Sprint has far more femtocells in its network than macrocells and this trend is increasing dramatically across the industry. The proposed definition would appear to include femtocells as part of any reporting requirement. Femtocells are just as vulnerable to commercial power outages as any other consumer electronic device that relies on a.c. power to operate.

Therefore, even if the macrocell network continues to function or wireless service has been restored with temporary cell towers, the proposed definition could still result in public reporting of network performance metrics that are misleading. While Sprint does not support adoption of the Commission’s proposed rules, should there be any movement in that direction,

the Commission should ensure that the definition of “network site” is very narrowly tailored to only include those macrocell sites that provide wide scale coverage to the general public.

VI. CONCLUSION

The proposed rules are well intentioned but will be confusing to consumers and ineffective in incenting wireless carriers to individually improve their backup power capabilities beyond what they are voluntarily doing already. Instead, the Commission should focus on encouraging cooperation that will allow carriers to work jointly with other industry partners to help ensure wireless networks remain operational during periods of commercial power outages.

Respectfully submitted,

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