A HOUSE ENERGY AND COMMERCE COMMITTEE
Subcommittee on Communications and Technology

"Strengthening Communications Networks to Help Americans in Crisis"

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TESTIMONY OF
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Chairman Doyle, Ranking Member Latta, and Members of the Subcommittee, thank you for the opportunity to testify this morning on the topic of strengthening communications networks' resilience. My name is Allen Bell, and I serve as Distribution Support Manager for Georgia Power. I am a member of the Federal Communications Commission's (FCC) Broadband Deployment Advisory Committee (BDAC) and serve on its Disaster Response and Recovery working group. I have nearly three decades of experience working disaster response and recovery and communications issues in the electric power industry, including serving 15 years on Georgia's 811 Board and working with the electric power industry on two revisions to the Georgia Utility Facility Protection Act, more commonly known as the Georgia Dig Law.

Georgia Power is the largest subsidiary of Southern Company, one of the nation's largest generators of electricity. Georgia Power serves 2.53 million customers across 24,088 square miles of service territory. Our footprint includes 12,400 miles of transmission lines, 50,000 miles of overhead distribution lines, 25,000 miles of underground distribution lines, and 670,000 transformers.

Southern Company operates regulated electric and gas utilities serving 9 million customers in six states, including three electric companies – Alabama Power, Georgia Power, and Mississippi Power – that provide retail and wholesale electric service throughout Georgia, the southern two-thirds of Alabama, and southeastern Mississippi. Southern Company's communications service provider affiliate, Southern Linc, operates a commercial digital 800 MHz ESMR system that uses an all-LTE platform to provide mobile interconnected voice, dispatch, push-to-talk, text and picture messaging, internet access, and data transmission services over the same handset. Southern Linc provides these services over a 127,000 square mile service territory covering Georgia, Alabama, southeastern Mississippi, and the Panhandle of Florida. Southern Linc offers comprehensive geographic coverage, serving the extensive rural territory within its footprint as well as major metropolitan areas and highway corridors. Because of its expansive regional coverage and history of reliability, Southern Linc's service is widely used by state and local public safety agencies, school districts, rural local governments, public utilities, and other emergency responders. It is also utilized by other commercial entities in both urban and rural areas.

Southern Company, including Georgia Power, has extensive experience with, and well-developed processes and procedures for, preparation, response, and restoration with respect to major storm events. Southern has seen its share of powerful hurricanes – including Opal (1995), Ivan (2004), Katrina (2005), Dennis (2005), Matthew (2016), and Irma (2017) – and was able to draw on its extensive experience with storms of such magnitude in its preparation for, and recovery from, Hurricane Michael. In addition to the storms that Southern has directly weathered, through the industry's culture of mutual assistance, Southern Company has contributed resources to help electric companies across North America respond and recover following all manner of natural disasters and other impacts to grid operations.

I am pleased to address the Subcommittee today to provide perspectives on H.R. 5926, the RESILIENT Networks Act; the current voluntary efforts underway between the electric power and communications sector; a better understanding of post-Hurricane Michael electric power service restoration efforts and coordination with communications providers; and recommendations for improving wireless resiliency.

H.R. 5926, RESILIENT Networks Act

The electric power industry appreciates Chairman Pallone and Congressman McNerney's efforts to improve network resiliency in times of emergency by introducing H.R. 5926, the RESILIENT Networks Act. As I will explain, this is a pressing and serious issue that is currently being addressed by a number of voluntary cross-sector efforts to address resiliency. These current initiatives do not require further regulation and should be given the opportunity to be seen through before any additional congressional action.

The electric power industry invests more than $110 billion a year to modernize the electric grid, including significant resiliency investments to harden the system and to deploy advance grid technologies. For example, Georgia Power just had more than a billion dollars in grid investment approved by the Georgia Public Service Commission. Smart Grid technology relies upon communications systems and networks to help expedite real-time system monitoring and controls thereby aiding the restoration efforts by improving situational awareness and damage assessments. Electric companies have also taken on major hardening efforts including strengthening towers and poles to withstand powerful winds. Additionally, electric companies leverage a variety of telecommunications systems to manage their own communications with customers and coordinate industry activities during disaster events.

Electric companies, such as Georgia Power, are committed to working with wireless providers to ensure critical services remain resilient and reliable. Given the interdependencies of these essential services, better coordination and communication between electric companies and wireless providers will improve the preparedness and restoration during emergency situations for both sectors. This also includes partnering with federal, state, and local governments to support efforts to enhance preparation, coordination, and response to widespread emergencies and disasters.

Among the current voluntary efforts to address these resiliency and cross-sector efforts the BDAC Disaster Response and Recovery working group is in the process of finalizing a report

that will be released at the end of March that will identify best practices for coordination among wireless providers, backhaul providers, and power companies before, during and after a disaster. The report will identify a series of procedures from government agencies, service providers, and others to identify data gathering, that can really improve the emergency response. In fact, the working group is meeting this afternoon to review the final set of recommendations.

At the request of the FCC, the Edison Electric Institute (EEI) and the CTIA are establishing a Cross-Sector Resiliency Forum for electric company and wireless disaster response and restoration. Still in its nascent stages, this effort demonstrates the two sectors' willingness to voluntarily come together to further enhance collaboration on efforts to maintain and restore services.

During the next several months, representatives from EEI and CTIA's member companies expect to:

- Identify near-term actions to improve information sharing and preparedness by focusing on lessons learned from the California public safety power shutoffs (PSPS) related to wildfire-events and mutual preparation and restoration efforts in hurricane prone areas;
- Discuss organizing joint exercises to prepare for wildfire and hurricane seasons in coordination with emergency response agencies; and,
- Identify longer-term efforts to facilitate sharing of industry-to-industry service expectations and planning needs that allow for better coordination during emergency and disaster events while also promoting overall resiliency.

Thereafter, on a biannual basis, these representatives expect to convene to share best practices, identify near- and long-term opportunities for actionable improvements to resiliency and improved collaboration, and engage with local, state, and federal public safety stakeholders to better prepare for emergency situations.

With respect to H.R. 5926, the Subcommittee should take a bottom-up approach to emergency preparedness and response. It is crucial to acknowledge that most disasters are local, state, or regional events. Therefore, coordination and response efforts must respect existing coordination and disaster recovery regimes.

For example, most critical infrastructure entities, such as electric companies, already maintain a master directory of customer contacts and have processes and procedures for priority restoration. Due to the local nature of emergencies, the goal should be to drive all coordination and information sharing through state or county Emergency Operation Centers (EOCs). The unintended consequence of a master directory, such as proposed in H.R. 5926, would be to encourage wireless providers to bypass the EOCs. The Subcommittee should instead consider ensuring states have robust support for EOCs and that the FCC encourages communications providers to participate and coordinate with electric companies in the EOCs. Driving all coordination and information sharing through the EOCs is more valuable than attempting to manage a database of contacts from Washington, DC and will reduce administrative burdens and prevent confusion during events. Further, electric companies work closely with their critical customers to identify potential demands and points of interdependency; legislative solutions should acknowledge the value of these local partnerships.

Another concern with H.R. 5926 is the consideration of applying the one-call notification system to fiber lines which misses the mark because most communications facilities are above-ground and to the extent that such facilities are located underground most states already have damage prevention laws that typically require fiber lines to be located within 48 hours before an excavation. However, the requirement is typically suspended during natural disasters due to "extraordinary circumstances." Treating fiber optics lines as the equivalent of hazardous transportation is not the right approach and instead there are two best practices that would address the issue:

1. Communications providers should assign fiber optic locators to electric and debris removal crews during storm restoration when there is the likelihood of restoration and debris clearing near critical communication facilities. This is similar to how Georgia Power ensures that natural gas lines are not damaged during storm restoration.

2. The FCC should evaluate construction practices for critical communications networks to ensure fiber lines are not laid adjacent to electric poles. As was discovered in the aftermath of Hurricane Michael, critical communication facilities adjacent to electric poles were damaged when broken poles are replaced in the same hole.

As described below, Southern's extensive experience with powerful storms such as Hurricane Michael demonstrate that hardening, redundancy, and preparedness are keys to improving resiliency and reliability, as shown by the restoration efforts of Southern's electric companies and by the performance of Southern Linc's communications network during and immediately after Hurricane Michael. Accordingly, the experience of Southern's electric companies and of Southern Linc provides useful guidance on ways to improve the resiliency of the nation's wireless networks.

Electric Power Service Restoration Efforts

Electric restoration after a storm of the magnitude of Hurricane Michael in 2018 is a complicated, labor-intensive process that involves nearly every employee of impacted electric companies, as well as marshalling and managing mutual assistance resources from across the country. Approximately 614,000 electric customers within the Southern Company service territory, including 396,000 Georgia Power customers, were impacted by Hurricane Michael, with damage to hundreds of miles of electric lines and thousands of distribution poles. Georgia Power estimated the damage to its electric distribution system from Hurricane Michael included more than 4,800 spans of wire down and approximately 2,000 broken or damaged power poles. Georgia Power's transmission system also was significantly damaged, with more than 2,000 miles of transmission lines impacted, more than 200 structures damaged, and more than 100 transmission spans downed. Overall, it was the most significant single storm to impact Georgia Power's transmission system in at least 25 years. Nevertheless, within 24 hours after the storm had passed, Georgia Power had restored electricity to 50 percent of its affected customers. Within 60 hours, Georgia Power had restored electricity to 75 percent of its affected customers, a number that rose to 95 percent within four days after the storm. Within one week after the storm, Georgia Power had restored electricity to 99 percent of its affected customers.

Coordination with Communications Providers

Southern's primary focus after an event like Hurricane Michael is the safe and quick restoration of power. For some electric customers, including nursing homes and hospitals, electric service restoration can be a matter of life and death. Even while undertaking challenging storm restoration efforts, Southern still coordinated and communicated regularly with communications providers regarding restoration status and efforts. Southern's former electric company, Gulf Power, went to extreme lengths, undertaking a number of extraordinary steps in its coordination with certain communications companies due to the almost unprecedented severity of Hurricane Michael. As noted above, much of this communication and coordination is designed to occur at the state and county EOCs and is available to any communications provider with a representative at the EOC.

The EOC mechanism is designed to provide government and public safety officials and providers of public services – including electric companies and communications providers – with the information and coordination needed for recovery and restoration. At the EOC, a representative of a communications provider would be able to receive updates on a daily basis on the status and location of utility repair or reconstruction work, thus enabling the communications provider to perform its own repair and restoration work without conflict. In addition, a communications provider's representative at an EOC would be able to coordinate directly with government, public safety, and electric company representatives regarding the need to elevate the priority for restoration of particular routes or facilities that may be critical to that communications provider.

In short, there already exists a well-developed, multiagency, multi-stakeholder process for communication and coordination during emergency events, and all critical infrastructure providers have a responsibility to use this process to improve the resiliency of their systems. Improving coordination at the state EOCs should result in important benefits for all stakeholders.

Southern Linc's Speed of Restoration of Service

The resiliency and reliability of Southern Linc's communications network was demonstrated by the speed with which Southern Linc was able to restore service in the wake of Hurricane Michael. In particular, although Southern Linc – like all other wireless carriers – experienced cell site outages in the areas affected by Hurricane Michael, Southern Linc successfully restored these sites at a rate much faster than the rest of the industry based on data reported to the FCC through the Disaster Information Reporting System. This was due, in part, to Southern Linc's pre-preparation and staging of assets and personnel. For example, on October 11 – the day after Hurricane Michael passed through – approximately 88 percent of Southern Linc's sites in the affected areas were in service, compared to approximately 81 percent of the sites for all carriers combined. Just two days later, on October 13, more than 97 percent of Southern Linc's sites in Alabama and Georgia were in service and more than 90 percent of its sites in the affected areas in Florida were in service. By the following day – three days after the storm had passed– the percentage of Southern Linc sites in service had increased to 100 percent in Alabama, more than 99 percent in Georgia, and almost 92 percent in Florida. Significantly, this rapid pace of site

restoration does not account for the even quicker restoration of service and coverage by Southern Linc to the affected areas through the use of cells on wheels, microwave paths, and other measures.

One reason for Southern Linc's ability to maintain and restore operational cell sites at a rate exceeding the rest of the industry is Southern Linc's greater use of generators and fuel cells at its cell sites, including, but not limited to, those sites that have been identified as critical to its network operations. In order to ensure the resiliency and reliability of its wireless network, 99 percent of Southern Linc's LTE sites are equipped with a generator or fuel cell and 92 percent of its iDEN sites are equipped with a generator. To the best of its knowledge, Southern Linc's deployment of generators and fuel cells greatly exceeds the industry norm, even though the importance of backup power in general, and on-site generators in particular for network resiliency, was identified by the FCC more than a decade ago, following Hurricane Katrina. Another key factor in the resiliency of the Southern Linc network is Southern Linc's use of redundant backhaul and transport links for its sites. Southern Linc uses fiber transport – including transport provided by third party providers – as one of the means of connectivity for its sites, and Southern Linc experienced the same difficulties as other wireless carriers with damage and disruptions to its fiber transport. However, the comprehensive use of redundant microwave paths and other alternative transport links enabled Southern Linc to maintain and restore connectivity with its sites without the need to wait for the restoration of these fiber links.

Recommendations for Improving Wireless Resiliency

Based on its performance during and after several large-scale storm events over the years, from Hurricanes Ivan and Katrina through Hurricane Michael, Southern Linc's experience provides useful guidance on ways to improve the resiliency of the nation's wireless networks.

1. On-Site Generators

Hurricanes and other storm events often cause widespread power outages. Although electric power crews expend enormous effort to restore electric service everywhere as quickly as possible, wireless carriers should expect that a site located in a storm-damaged area could potentially be without commercial electric service for anywhere from 24 to 72 hours or even longer, which is well beyond the capacity of any battery-based backup power solution. While having an on-site generator at every site may not be economically or logistically feasible, many wireless carriers do not have generators even at sites that the carrier has identified as critical to its network operations.

2. Redundancy in Backhaul and Transport

While some carriers attributed delays in the restoration of their own service to lost connectivity due to fiber cuts, Southern Linc also experienced disruptions in transport due to severed fibers, but quickly overcame them through its use of redundant design and planned alternatives, such as microwave links. During and immediately after a large-scale storm event or other disaster, damage to communications fiber, electric distribution lines, and other infrastructure is inevitable and utterly predictable, and thus can and should be planned for in advance. By designing and

implementing redundancy and backup transport alternatives into their systems as Southern Linc has done, particularly where the transport link has been identified as critical, carriers can significantly improve the resiliency of their wireless networks.

On a related note, Southern Linc observes that third party transport providers can often be an obstacle to prompt restoration of wireless services. While alternatives such as microwave links may enable quick restoration of connectivity, they may be a temporary or less than optimal solution for full service restoration, particularly along high-capacity paths, and it is therefore essential that primary transport links be restored to service as soon as possible. In many cases, however, wireless carriers must rely on third party providers for these transport services, as well as for the restoration of these services. It has been Southern Linc's experience, including during Hurricane Michael, that difficulties with site restoration can and do arise due to delays by third party transport providers in repairing and restoring their own transport services.

And, while fiber cuts are predictable, improved coordination between critical infrastructure sectors and debris removal operations at state and local EOCs also can ensure critical fiber lines are identified and prioritized to prevent damage in the first place.

3. Interoperability Between FirstNet and Other Public Safety Systems

Finally, the experience of Hurricane Michael underscores the critical need to ensure interoperability between public safety communications systems, regardless of which network they may be on. Large-scale events such as Hurricane Michael require an immediate response by, and coordination among, multiple public safety agencies and emergency first responders from multiple jurisdictions. The ability of these agencies to communicate and exchange information between applications, databases, and systems when responding to emergencies will save lives and property and protect first responders and the community. Both Congress and the FCC should formally affirm that ensuring interoperability between public safety communications systems and other wireless networks is a fundamental responsibility of FirstNet. Clarifying that AT&T and FirstNet must ensure that interoperability with commercial carriers is supported at all levels – including sharing priority and preemption protocols, applications, local control, non-mission critical and mission-critical PTT communications, and off-air device-to-device communications – is not only life-saving public policy, but also required under the Spectrum Act.

Conclusion

As described above, experience with powerful storms such as Hurricane Michael demonstrate that hardening, redundancy, and preparedness are keys to improving resiliency and reliability, as shown by the restoration efforts of Southern's electric companies and by the performance of Southern Linc's communications network during and immediately after Hurricane Michael.

Southern and the broader electric power industry are committed to working with all stakeholders to strengthen infrastructure security and resilience and to promote safe, effective disaster response and service restoration.