

**Winning the Race to 5G and the Next Era of Technology Innovation in the United States**

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Chairman Wicker, Ranking Member Cantwell, and Members of the Committee, thank you for the opportunity to testify about how to preserve and expand broadband opportunities in rural America as the industry evolves to the next generation of wireless technology.

I am testifying on behalf of Competitive Carriers Association (“CCA”), the nation’s leading association for competitive wireless providers. CCA is composed of nearly 100 carrier members ranging from small, rural providers serving fewer than 5,000 customers to regional and nationwide providers serving millions of customers, as well as vendors and suppliers that provide products and services throughout the mobile communications ecosystem.

The communications industry is on the verge of new era of technology, and it is hard not to get excited about the potential benefits and capabilities of 5G wireless networks and the services they will power. Just as applications that are household names today seemed unimaginable in the days of 3G, the potential of 5G networks will welcome a new chapter for innovation and expand connectivity. 5G networks will be deployed in a variety of ways. Fixed 5G services will introduce new fixed competition without disturbing streets and land. 5G precursors, such as Narrowband Internet-of-Things (“NB IoT”), will provide new business opportunities while expanding low-power connectivity for sensors, tracking, and other uses, that can later be upgraded to more advanced services. Mobile 5G services will power the latest telehealth, precision agriculture, distance learning, autonomous vehicles, augmented and virtual reality, and public safety services. The possibility of a connected world is groundbreaking and exciting.

But the unfortunate reality is that the very existence of 5G is not inevitable, particularly in rural America. While the 5G buzz grabs the headlines, rural and hard-to-serve areas are at a crossroads. Decisions made by policymakers today can either launch new innovation, economic growth, and education and public safety benefits across all of America, or they will broaden the digital divide, leaving rural America behind. I am pleased that, at the start of this Congress, the Committee is already at work to

ensure that all Americans have access to the latest broadband technologies. The race to 5G will not be won if rural America is left behind.

### **Reliable Coverage Maps are Necessary for Policies to Spur 5G Deployment**

Tomorrow's 5G network deployments will build upon today's 4G coverage. Unfortunately, too many areas throughout the country lack 4G coverage, or indeed any network coverage at all. We cannot close the digital divide if we do not know the size of our country's existing coverage gap. More reliable data is necessary to determine where broadband coverage exists, and I thank this Committee for its steadfast leadership pushing to fix the coverage maps.

Based on your own experiences, members of this Committee know that coverage has been overstated – in some cases, substantially overstated. Coverage areas in the Federal Communication Commission ("FCC")'s recent mobile coverage map are unreliable. Based on this mapping data, the FCC is set to distribute \$4.53 billion in support to preserve and expand mobile broadband over the next ten years. To ensure funding goes to areas in need, CCA members have spent millions of dollars, untold hours of staff time, and significant additional resources to challenge overstated coverage in advance of the Commission's funding decisions. Fortunately, shortly after the challenge window closed last Fall, the FCC announced that, based on a preliminary review of more than 20 million speed tests, it too, noted increased concerns that current data is fatally flawed. The FCC accordingly launched an investigation into the proceeding, and CCA stands ready to work alongside the Commission and this Committee to ensure that future information collections provide an accurate and reliable foundation upon which to base critical funding decisions.

Connectivity for millions of Americans living in rural areas depends on using reliable, real-world coverage data to determine policy positions. Congress must remain engaged as the investigation into flawed data continues, and work beyond current FCC efforts to produce a map that more closely reflects

your constituents' experiences. CCA and our members are committed to continuing to work with Congress, the FCC, and other stakeholders to ensure that the parameters for identifying actual coverage in rural America will properly drive advanced network deployments instead of cementing the coverage status quo.

### **Universal Service Policies Must Support a 5G Future**

Congress created the Universal Service Fund ("USF") to ensure that all consumers, including those in rural areas, would have access to reasonably comparable telecommunications and information services as those provided in urban areas. I strongly urge Congress to reinvigorate this policy as 5G services become widely available. As discussed above, the FCC has allocated \$4.53 billion to support the deployment of 4G LTE network service over the next 10 years through Mobility Fund Phase II ("MF II"). As we've seen, a "generation" often finds its peak in its tenth year. While MF II is critically important to preserve and expand 4G services, absent additional support, rural America risks falling further behind in the digital divide as carriers serving rural areas constantly work to catch up to comparable urban services.

The USF program devised in the 1996 Telecom Act, groundbreaking as it was, was predicated on a 2G telecom industry – not 4G and certainly not 5G. Policymakers must recognize that the contribution base for all USF programs is insufficient and unsustainable. If Congress continues to believe that Americans living in rural, Tribal, and low-income communities deserve the same digital opportunities as their peers, USF contribution policies must be updated to account for a 5G world.

### **5G Wireless Demands Spectrum Access**

Spectrum is the lifeblood of the wireless industry, and is a finite resource only available from the government. All carriers must have access to spectrum at low-, mid-, and high-bands to serve their customers and provide the capacity necessary to support innovative applications. All spectrum is a public resource, owned by American citizens. Spectrum licenses can be obtained only through auction from the

FCC or from private market transactions approved by the FCC and other government actions. I commend the Committee for its ongoing work to reallocate spectrum for wireless use, and ask for continued focus on this critical issue, especially if the United States is to catch up to spectrum allocations available for wireless use in other countries that strive to assume global leadership for 5G networks. Ensuring that every carrier must have an opportunity to bid, buy, and access critical spectrum resources is key to competition and expanded broadband service, especially in rural America.

### Low-Band Spectrum

Low band spectrum, or spectrum below 1 GHz, has propagation characteristics that carry signals across long distances and through impediments such as walls or trees. This spectrum is particularly important for coverage in rural areas with lower population densities and vast areas to connect. It provides the base layer of coverage for today's networks, and 5G services deployed on low-band spectrum will have similar coverage advantages with upgrades to both latency and speeds.

The Committee deserves credit for enacting the first-ever incentive auction in the Middle Class Tax Relief and Job Creation Act of 2012. Provisions in the Act established a process by which television broadcasters could voluntarily elect from a range of options to relinquish, move, or share their spectrum assignment in exchange for a portion of the auction proceeds, using a market-based mechanism to reallocate the spectrum needed to keep up with insatiable demands for wireless access. Revolutionary in its inception, the incentive auction was a resounding success, netting billions of dollars for broadcasters and the Treasury for deficit reduction.

While the auction was a success, work is continuing to deploy this spectrum to serve consumers. We are 21 months into the "repack" process, in which remaining broadcasters are moved in the band to clear the way for the carriers that bid over \$19 billion to gain access to the frequencies to serve consumers. Nearly a year ago, Congress allocated an additional \$1 billion on top of the original allocation

of \$1.75 billion to cover relocation costs for broadcasters and to keep the repack timeframe on schedule, and to fund consumer education as the process moves forward. Congress should closely monitor the repack process and ensure that spectrum is expeditiously cleared for winning bidders to put to use as soon as possible and no later than the July 2020 deadline.

### Mid-Band Spectrum

Mid-band spectrum balances distance travelled with speed capabilities, making it particularly well suited for providing the latest generation wireless services in rural America. CCA members appreciate the compromise adopted by the FCC last year in the 3.5 GHz band and eagerly await its auction. Looking ahead, the C-Band spectrum, particularly the 3.7-4.2 GHz portion of the C-Band, shares favorable characteristics of mid-band spectrum, while presenting the opportunity for the larger blocks of spectrum that enhance network capabilities. Additionally, incumbent satellite users have identified capacity that can be reallocated for wireless use. It is critically important that policymakers adopt policies that both reallocate as much of this spectrum as possible to support 5G networks and ensure that competitive carriers and those serving rural America have a meaningful opportunity to gain access to this spectrum. Although it is encouraging to see some momentum in the C-Band proceeding, another mid-band proceeding seems to have stalled within the Department of Commerce. Policymakers should complete work on the L-Band to provide competitive carriers with another source of prime mid-band frequencies to help deploy advanced, next-generation networks.

### High-Band Spectrum

High-band spectrum makes up for lower distance propagation by enabling ultra-fast speeds. I am pleased that the FCC is moving forward with several millimeter wave spectrum auctions, including the recently concluded auction for the remainder of the 28 GHz band, and the 24 GHz band auction set to begin on March 14, 2019. These bands present opportunities for significantly larger swaths of spectrum,

a force multiplier for the wireless services that will ride on them. The FCC must ensure that all carriers can access these important spectrum bands for 5G services, particularly after the largest two carriers were permitted a significant head start in these bands through private market transactions. As additional high-band spectrum allocations are considered for wireless use, policymakers should preserve the opportunity for licensed use and provide certainty on service rules, such as power levels, needed to spur research and development to use this spectrum to serve consumers.

### **Infrastructure Deployment Policies Must Support 5G Services**

The right policies to deploy, maintain, and upgrade physical infrastructure are a vital part of both closing the digital divide and completing the generational upgrade to 5G wireless technologies. Unnecessary costs and delays for deploying new infrastructure are exponentially more problematic for deployments in rural America. While CCA commends steps taken so far, work remains to ensure that carriers have certainty as they navigate the approval process. For rural carriers, additional certainty regarding permitting on federal lands is particularly important.

New macro-towers are necessary to expand existing coverage and provide 5G services. 5G also will require significant network densification by deploying scores of small cells. Small cells are not only for big cities, as I have seen firsthand how carriers serving rural areas are using small cells to better serve their customers. For 5G deployments in particular, it is important to note that infrastructure deployment is not limited to cell towers and small cells. 5G networks will exist on a high-fiber diet, with estimates as high as 8 miles of fiber per square mile to provide 5G service in urban areas. Forward-thinking infrastructure deployment policies will ensure that backhaul does not become a choke point in the latest wireless networks. It is increasingly clear that 5G will be a mix of several converged technologies and different methods of communication.

### **5G Networks Must be Secure**

CCA and its members fully support efforts to protect and harden networks from cybersecurity and other national security threats. As carriers continue to deploy next-generation wireless services, policymakers should continue to provide guidance to all carriers regarding risks and potential threats. It also is imperative to ensure that all carriers have access to equipment that is secure, particularly for smaller and rural carriers that lack economies of scale.

With the telecommunications industry on the precipice of significant new investments in equipment and software to power 5G services, it is critically important that Federal authorities charged with national security decisions provide clear, unambiguous directions regarding the national security needs for all communications networks. With this direction, government and industry can define a clear pathway for enhanced security and a process to provide adequate resources to secure networks and sustain national security priorities.

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5G services promise an immediate and expansive impact on the lives of Americans living in rural areas; however, absent smart and swift action from policymakers to close the digital divide, those in rural areas will be sidelined from a connected future. With today's latest networks, telehealth services are providing monitoring and treatment options that are increasing healthcare offerings, lowering costs, and saving lives. Precision agriculture technologies are increasing yields and using fewer resources, while transforming farmers into agricultural engineers. Distance learning over broadband is allowing any student to travel the world in their studies, expanding their educational opportunities far beyond the traditional classroom. The potential of 5G networks can supercharge these technologies and unlock unprecedented economic, educational, health, and safety opportunities in rural America, if policies are in

place to make sure networks are being deployed by carriers serving rural, regional, and nationwide customer bases.

Congress should prioritize preserving and expanding wireless broadband services in rural America, through reliable coverage data, sufficient USF, expanded spectrum access for all carriers, streamlined infrastructure deployment policies, and secure 5G networks. Thank you for your attention to these issues and for holding today's important hearing. I welcome any questions you may have.