

Responses to Written Questions Submitted by Chairman Roger F. Wicker to Brad Gillen

Question 1. Mr. Gillen, during our hearing you expressed the importance of making more mid-band spectrum available for 5G deployment. Could you please discuss why making C-Band spectrum available is important to 5G deployment in the United States?

Response. To achieve our 5G goals, we are going to need different types of spectrum, but mid-band is key as it can offer both capacity and coverage. Mid-band spectrum will be critical to help fulfill 5G's promise to drive transformational improvements in health care, education, transportation, and nearly every other industry.

Unfortunately, the U.S. ranks sixth globally in terms of mid-band spectrum availability. Other countries are making four times more mid-band spectrum available than the U.S. South Korea just auctioned a significant amount of mid-band spectrum earlier this year. Here in the U.S., we don't have any mid-band auctions planned right now.

We need to move quickly to catch up on mid-band and C-band spectrum between 3.7-4.2 GHz offers the best path to making a large swatch of mid-band available to support robust 5G networks.

Question 2. Do you believe Congress needs to take action to make C-Band spectrum available for 5G deployment in a timely manner?

Response. This Committee has provided meaningful leadership and legislative direction to the FCC on mid-band spectrum, including the C-band, and we urge that leadership to continue. In fact, a provision in the Mobile Now Act, which became law as part of the Ray Baum's Act last year, directs the FCC to report by September 23, 2019, on "the feasibility of allowing commercial wireless services, licensed or unlicensed, to use or share use of the frequencies between 3700 megahertz and 4200 megahertz."

We need Congress's support to stress the urgency with which we need FCC action on the C-band. Continued direction and oversight of the FCC by this Committee is important to advance the reallocation of this key band.

Responses to Written Questions Submitted by Senator Jerry Moran to Brad Gillen

Question 1. As your testimony noted, China announced that its three existing state-owned wireless providers will receive a total of 460 megahertz of mid-band spectrum for 5G. What can we do to make sure U.S. wireless providers have access to a similar amount of spectrum as quickly as possible?

Response. A predictable pipeline of spectrum will do much to advance U.S. 5G interests, and help us match the aggressive efforts foreign governments are taking to allocate spectrum for 5G.

Encouragingly, the Administration and the FCC have identified all the right bands. Now it is about execution and speed to keep up with the rest of the world.

The Administration's forthcoming National Spectrum Strategy provides a unique opportunity to develop a five-year schedule of spectrum auctions, which is needed to accelerate the deployment of 5G networks and fully realize the connected life and Internet of Things breakthroughs of 5G-enabled services. Congress should ensure the Strategy supports our nation's 5G ambitions.

A long-term plan will allow wireless providers to plan and build their 5G networks to maximize efficiency and robustness. A schedule that provides access to the same or similar mid-band spectrum bands that are being made available throughout Asia and Europe is key.

By harmonizing U.S. mid-band spectrum with bands being made available for 5G around the globe, economies of scale would be achieved, reducing both the costs and time to deploy 5G. Analysis Group recently estimated the economic impact of U.S. policymakers freeing up mid-band spectrum and found that 400 MHz of mid-band spectrum will drive \$274 billion in GDP and 1.33 million new jobs.

Congress should also encourage several specific ongoing mid-band spectrum activities at the FCC and NTIA:

- The FCC recently finalized rules for the 3.5 GHz band for mobile broadband, which will result in 70 MHz of licensed spectrum to be auctioned soon
- The FCC has an open proceeding to evaluate repurposing up to 500 MHz of C-band spectrum (3.7-4.2 GHz)
- The Commerce Department's NTIA recently initiated a review of the 3.45 GHz band

Question 2. While I have supported legislation like the RAPID Act and the MOBILE NOW Act to streamline overly-cumbersome regulations, what else should Congress be doing to increase U.S. competitiveness in 5G deployment?

Response. Congress should encourage and provide oversight of two important Administration activities. First, the October 2018 Presidential Memorandum directed the development of a National Spectrum Strategy. Congress should support a proactive, 5G-centric spectrum strategy

that includes a clear long-term spectrum plan. Second, the U.S Government will participate later this year in the 2019 World Radio Conference. Congress should encourage the Administration to take positions that reinforce America's 5G leadership and to maintain access to critical spectrum bands that have already been identified for 5G use in the U.S.

Responses to Written Questions Submitted by Honorable Dan Sullivan to Brad Gillen

Question 1. In the race to find and repurpose spectrum for 5G, it is critically important that we also responsibly consider incumbent uses. This is especially important in Alaska, where incumbents are providing critical broadband and public safety services via C-Band spectrum. In any band transition, how can the wireless industry, working with the FCC, ensure that distance learning and telemedicine capabilities, and even FAA safety communications in Alaska will not be disrupted? In particular, permitting private parties to manage any reallocation and transition process raises red flags. If there is not traditional FCC oversight, how would we ensure that those incumbent uses would be protected and that nothing would go wrong during a privately managed transition process?

Response. Mid-band spectrum, including the C-band, will be critical to fulfilling 5G's promise to drive transformational improvements in health care, education, transportation, and nearly every other industry. We are seeing countries like China and South Korea move forward aggressively to make mid-band spectrum available to deploy 5G. Today, however, the U.S. has a mid-band spectrum deficit, ranking sixth globally in terms of mid-band spectrum availability and we need to catch up quickly. The large swath of spectrum in the C-band offers the best path to making mid-band spectrum available to secure America's 5G leadership.

The C-band today can be utilized more efficiently to accommodate the interests of both wireless and satellite providers. We appreciate that the C-band is used in a different manner in Alaska than in the continental U.S., and we pledge to work with you to ensure continued access to key satellite-based services as well as important access to mid-band spectrum for Alaskan wireless operators.

Question 2. Satellite companies have proposed a private sale of C-Band spectrum in which no money would go back to U.S. taxpayers. By contrast, FCC spectrum auctions have raised billions of dollars in the past. Do you agree that funding U.S. priorities like expanded rural broadband should come before enriching foreign satellite companies? If not, why?

CTIA is focused on making C-band spectrum available for 5G as soon as possible. As noted above, the United States is behind globally in terms of mid-band availability and we are committed to working with all stakeholders to remedy that deficit expeditiously.

We share your interest in using auction proceeds to help support rural wireless broadband deployment through a rural dividend or similar program. Unfortunately, no such mechanism is in place today, and we would welcome the opportunity to work with you to better leverage spectrum auctions—however constructed—to benefit rural America.

Responses to Written Questions Submitted by Honorable Shelley Moore Capito to Brad Gillen

Question 1. In your testimonies, many of you discuss the framework for 5G. While I understand the importance of innovation and support faster speeds, I have concerns that rural locations will not be adequately addressed:

What ways exist to ensure 5G develops in combination with rural broadband connectivity?

Response. The potential of 5G will continue to evolve as more capable networks get deployed and new services and use-cases develop on these platforms. As with any network, larger scale will ultimately mean more value, for both users and providers, and more opportunity for innovation. Therefore, it will be in the interest of all stakeholders to extend 5G connectivity broadly. One of the most promising aspects of deployment on new spectrum, particularly in the low- and mid-bands, is that fiber-like speeds will be achievable with wireless connectivity. This could be a particularly meaningful way to improve the economics of broadband deployment in rural areas. We continue to believe that the FCC's Mobility Fund and a rural dividend for future spectrum auctions will be critical to reaching unserved areas with advanced wireless connectivity.

Question 2. What are some steps the FCC can make to continue to streamline the deployment of 5G while ensuring rural areas continue to receive broadband and internet support?

Response. The FCC's action in 2018 to address both federal and local siting reforms are the most important steps the agency can take to promote widespread deployment and all stakeholders should commit to implementing those reforms expeditiously.

Further, sufficient spectrum is key to winning the 5G race and unlocking the corresponding economic and societal benefits. Encouragingly, the Administration and the FCC have identified all the right bands. Now it is a matter of us finishing the job fast by getting that spectrum in the hands of innovators.

We want to build out to as many communities as quickly as possible, and forward-thinking policies such as those recently adopted in West Virginia and by the FCC will help us do just that while preserving local siting authority.

Question 3. How can 5G be rolled out quickly to avoid a gap where there are have and have not?

Response. The wireless industry is projected to invest \$275 billion over the next decade to deploy 5G. This private capital investment will follow the \$226 billion made in our networks just since 2010. The competitive nature of the broadband market – including within just the mobile sector – and the promise that fully scaled 5G network deployments hold for new economic activity provide tremendous incentive for wireless providers to not only deploy 5G as quickly as possible, but also as broadly as possible. As noted above, we also support the FCC's Mobility Fund and an auction rural dividend to help reach those communities uneconomic to serve today.

Question 4. How does the Mobility Fund play a role in 5G deployment?

Response. The FCC's Mobility Fund II will deliver mobile wireless services to rural areas without sufficient access to the critical services enabled by 4GLTE today, such as public safety, healthcare, education and economic opportunities. Providers can speed the deployment of 5G to rural areas by leveraging the capabilities and infrastructure deployed with Mobility Fund support. We encourage the FCC to move forward with funding.

Question 5. 5G wireless services will require the deployment of a vast network of small cells. However, these networks will also need fiber-based wireline networks for their backhaul network. Could you explain to me the importance of a fiber backhaul and the allocation of spectrum in deploying these small cells?

Response. 5G will rely on both towers and small cells, and we should seek out solutions to promote the deployment of both. Backhaul is an essential component of wireless communications networks, and that includes both fiber and wireless backhaul solutions. This has been true since the earliest mobile voice calls were connected between 200-foot towers and will be true when real-time automobile data is sent back-and-forth over small cells on lampposts. The Committee should support widespread deployment of fiber to support both wired and wireless communications.

Question 6. Fortunately, every school and library in my state of West Virginia has a fiber connection, but this not the case when kids go home from school. Many of them cannot do their homework assignments. This digital divide cannot continue to be overlooked. How will 5G help our students at home? How long will it take for these students to see the benefits of 5G at their homes?

Response. Mobile broadband has been an effective tool to enhance education outside the classroom. A survey by Grunwald Associates found that more than two-thirds of parents said that mobile devices have opened learning opportunities to kids that were not available before. By delivering data speeds up to 100 times faster than 4G networks, 5G will further enhance learning through applications such as virtual reality and augmented reality. The potential for 5G to improve outcomes for students and resources for educators is yet another incentive to build out next generation wireless network capabilities as quickly and broadly as possible.

Question 7. Despite significant investment, the vast majority of my state lacks competitive access to a fiber network. How can internet providers ensure rural internet access remains competitive as 5G gains more prevalence?

Response. 5G promises to deliver fiber-like speeds with the added benefit of mobility. The two critical areas where we need congressional leadership is providing access to more spectrum and modernizing the siting rules for tomorrow's networks.

Question 8. How can Congress ensure the regulatory conditions are in place in order to ensure states like mine can participate in the 5G economy?

Response. Congress should continue to anticipate the tremendous bandwidth and connectivity needs of a 5G future and ensure a pipeline of spectrum is available to fully realize the connected life and Internet of Things possibilities. Congress should also use its oversight authority to

identify and eliminate unnecessary barriers to the deployment of 5G infrastructure, including by streamlining deployment on federal lands and modernizing the guardrails Congress placed on local regulatory authority decades ago to ensure availability of nationwide mobile services. Congress should explore the potential of new and improved services that 5G networks will facilitate, which will reach nearly every facet of the economy. For those areas unserved today, the key lies in support for the FCC's Mobility Fund and a rural dividend mechanism to direct future auction revenues to unserved rural America.

Question 9. Each member of this Committee has today or previously mentioned the importance of having accurate data and noted the flawed information that our current maps provide. Last year, I visited Flying W Plastics, a local polyethylene pipe products manufacturer in Gilmer County, West Virginia. According to a recent FCC Broadband Progress report, Gilmer County, WV is 100% served with 25 Mbps/3Mbps service. While visiting, I found this to be inaccurate. They do not have adequate broadband and unfortunately, this is not the only example like this in my state. So my question is:

When there are communities in my state who are still struggling to achieve 3 or even 4G, how do you suggest we measure the accuracy of their broadband availability?

Response. This Committee should be credited with identifying challenges with our broadband mapping. Timely and relevant data is critical to measuring broadband services that reflects consumer's real-world experiences. The FCC's Mobility Fund II challenge process provides a unique opportunity to determine how provider reported data and on-the-ground information can be harnessed to effectively determine the availability of mobile wireless broadband services.

Question 10. Last Congress, I introduced the Gigabit Opportunity (GO) Act and I plan to reintroduce it this Congress. This legislation would seek expedited deployment of broadband services in low-income rural and urban communities. The GO Act gives states flexibility, streamlines existing regulations, and eliminates barriers to investment so we can connect our low-income and rural communities.

How can tax proposals like the GO Act make a measurable difference in promoting rural broadband deployment? Could similar proposals help in 5G deployment?

Response. CTIA supported the GO Act last Congress and we applaud your leadership on this issue. The wireless industry is projected to invest nearly \$300 billion over the next decade to deploy 5G. A tax-based incentive proposal such as the Gigabit Opportunity Act would ensure more of that private investment goes into better networks and services for consumers.

Question 11. Congress has made several steps towards improving the deployment and accessibility of broadband to rural and tribal communities. For example, the AIRWAVES Act introduced by my Senate colleagues – Senator Gardner and Senator Hassan – included a “rural dividend” that would have dedicated 10 percent of any future spectrum auction funds to support the deployment of wireless infrastructure in unserved and underserved communities.

How will rural set asides like this be used differently than federal support already being distributed through programs like USF and RUS?

Response. The rural dividend would provide policymakers and communications providers an additional, and more targeted and flexible, tool to further close our nation's digital divide. We agree it is important that any new program complement and support existing rural funding mechanisms, and we welcome the opportunity to work with you to ensure funds directed at rural America have the most impact to expand connectivity.