

Questions for the Record from Chairman John Thune
To
Ms. Meredith Attwell Baker

Question 1. Ms. Baker, the Spectrum Act created the Technical Panel to review agency spectrum relocation plans. What has been the experience of the wireless industry with the Technical Panel? In what ways might the panel be improved to address our nation's spectrum needs going forward?

Answer: Industry's experience with the Technical Panel, which is comprised of three agencies, the FCC, NTIA and OMB, has been positive and, in general, we believe anything that enhances communication and collaboration between the government and industry is a positive. In the AWS-3 process, carriers and vendors alike participated in the CSMAC working groups to collaborate with agency stakeholders on ways to gain spectrum access on a system-by-system basis and this interaction proved to be very helpful in understanding each side's operational requirements and ultimately paved the way to developing each agency's transition plan.

As far as improving upon this concept, it likely would be worthwhile to have a Technical Panel post-auction so that it can review each agency's transition plan throughout the implementation process. This oversight could include measuring agency progress toward certain milestones, which in turn could be tied to payment to agencies as a way to incentivize quicker transitioning of the spectrum for commercial use.

Question 2. Ms. Baker, you have previously argued that continued growth of wireless broadband is based on availability of exclusive use licensed spectrum. Please share your views on whether exclusive use is a viable model for the future and the appropriate role for sharing arrangements and technologies.

Answer. Exclusive use spectrum has played a central role in the U.S.'s global lead in 4G technologies. Exclusive use auctions in 2006 and 2008 provided spectrum that is the backbone of much of our national 4G deployment. As I noted in my written testimony, the backbone of our national spectrum policy should remain licensed and exclusive use spectrum for the foreseeable future. Exclusive use spectrum is critical to carriers' planning; without it, they would be unwilling to make the enormous capital investments to build network capacity – investments that drive technology, create jobs and provide services to businesses and consumers. Of course, as the wireless industry evaluates spectrum that may be made available for exclusive licensed use in the future, we recognize that temporal and geographic sharing may be required, particularly as incumbent licensees relocate to other bands, or otherwise vacate their spectrum. The AWS-3 band provides a good example of how commercial users will work with federal licensees to share spectrum while the relocation process occurs. This type of sharing, which always has been part of our national approach, can be an effective bridge to exclusive licensed use. Other types of database-based sharing may be appropriate in the future. For example, the FCC continues to refine the rules that will govern shared access to the 3.5 GHz band for government users, licensed entities and unlicensed operations. However, these forms of flexible sharing, driven by database access and other technologies that have not been fully tested, cannot currently satisfy our spectrum needs and consumer demand. While we continue to

support the FCC's efforts to evaluate potential sharing arrangements and technologies, they are not yet mature enough to meet our Nation's critical spectrum requirements.

Question 3. Ms. Baker, are reforms needed to the Spectrum Relocation Fund to meet federal agencies needs and facilitate reallocation of federal spectrum? Please provide specific examples of changes that you believe are required.

Answer. The Spectrum Relocation Fund has been an important and positive development, and further enhancements to the Fund could facilitate more efficient and effective spectrum use. CTIA strongly supports changes to how auction proceeds that are deposited into the Spectrum Relocation Fund are distributed, to provide federal entities with incentives to use spectrum more efficiently and potentially make additional spectrum available for auction to commercial users. Today, money from the Spectrum Relocation Fund only compensates federal users whose spectrum is being immediately auctioned. A portion of auction proceeds should be available to federal agencies that wish to conduct research and development activities, even if their spectrum has not been designated for auction. Of course, distribution of those research and development funds cannot be unchecked; federal agencies should be required to show specific plans and how they may lead to the re-allocation and auction of some or all of the spectrum they currently use. Another way the Spectrum Relocation Fund can be reformed is to provide an incentive to federal entities that vacate their current spectrum when it is auctioned, instead of being relocated to alternative spectrum. Today, Spectrum Relocation Fund money is only available to cover relocation costs. However, if a federal agency vacates the spectrum completely – and uses a commercial system or shares a system with other federal users – it should recognize a benefit for doing so. Finally, because the Spectrum Relocation Fund only covers spectrum that is auctioned, there is no path to compensate federal entities whose spectrum becomes available for unlicensed operations. While CTIA believes that exclusive use licensed spectrum should continue to be the focus of U.S. spectrum policy, if federal spectrum becomes available for unlicensed use, those incumbent users must also be compensated.

Question 4. Ms. Baker, what actions can Congress or the Federal Communications Commission take to promote United States leadership in 5G?

Answer. As I noted in my testimony, a combination of sound spectrum policy, a light-touch approach to regulation, and pro-investment tax policy, have propelled the U.S. to its current status as the world's leader in 4G services. And it is a continued commitment to that course that will help us retain our lead as we move toward 5G. That requires filling the spectrum pipeline to ensure that America's wireless providers can meet user demand for mobile bandwidth with a mix of low-band, mid-band, and high-band spectrum. It also requires the FCC to exercise regulatory restraint and avoid the imposition of regulations that raise cost and slow innovation and infrastructure investment. And finally, it requires the adoption of both regulatory and tax policies that facilitate the deployment of advanced wireless infrastructure. Each of these elements is important and collectively they can work to help us maintain America's competitive edge.

Questions for the Record from Senator Heller

To

Ms. Meredith Attwell Baker

Question 1. Ms. Baker, while it is clear that additional spectrum is necessary moving forward, I am also interested in another aspect of mobile broadband – infrastructure deployment, particularly on federal lands considering Nevada is 85% federal lands. What are some of the challenges industry faces in deploying wireless infrastructure on federal lands? Do you have any recommendations for streamlining the process?

Answer. Compared to the process for siting infrastructure in a location governed by the municipal zoning process, which generally works well, the process for siting on Federal property is cumbersome and time consuming. While the municipal zoning process takes months, Federal processes often are measured in years. This is true across many agencies, and it is certainly the case at the Bureau of Land Management and the National Park Service, two of the largest landholders in Nevada. Leases to place new sites on lands regulated by BLM and NPS can take two or three years to negotiate and even simple lease renewals can take 12-18 months. In addition, even though BLM generally requires applicants to collocate antennas at existing sites (reducing the impact on subject lands), its processing of applications for “joint use of facilities” is time consuming. Both agencies should take steps to ensure that applications necessary for the deployment of wireless broadband service are processed without delay. As a first step in this process, BLM and NPS should consider adopting more standardized and streamlined procedures for processing wireless broadband siting applications.

Questions for the Record from Senator Daines

To

Ms. Meredith Attwell Baker

Question 1. Ms. Baker: what steps is industry taking to increase deployment on tribal lands?

Answer. By making available licensed spectrum on Tribal lands for commercial use, wireless carriers can provide the Tribes with access to a valuable resource that gives rise to a number of economic, social, and public safety benefits. But while broadband – and wireless broadband in particular – can be a boon for economic development, this is only true if broadband can be and is actually deployed. Steps can and should therefore be taken to streamline the siting process, while protecting Tribal interests and cultural resources. There are several steps the Bureau of Indian Affairs (“BIA”) should take to facilitate wireless broadband deployment on Tribal lands.

First, BIA should conclude its pending proceeding to streamline the right of way approval process. On June 17, 2014, BIA sought comments on new rules that would streamline the process of obtaining BIA grants of rights-of-way on Indian lands. BIA recognized that the rules, which were last updated in 1980, were burdensome and outdated. CTIA supports the proposed changes to the extent they would expedite broadband deployment on Tribal lands. Parties filed comments in November 2014 and BIA held Tribal consultations during August 2014. Thus, this item is ripe for action and BIA should act expeditiously to conclude its proceeding.

Second, BIA should consider ways to implement or encourage uniformity in the Tribal consultation process. For example, Tribes generally do not follow uniform timetables for responding to Tower Construction Notification System (“TCNS”) notifications. Tribes often enter the process late and then seek additional information regarding a project, which merely delays action. CTIA recommends that Tribes have a standardized window not only to respond to the initial TCNS notifications of a proposed facility, but also for responding to information subsequently provided by the applicant to the Tribe at the Tribe’s request. The Tribal application process should also be standardized to the extent possible. That way, applicants are better able to provide necessary materials and information to Tribes at the outset. A more simplified application process also could simplify and streamline review. In addition, BIA should encourage use of a uniform fee schedule by federally recognized Tribes for reviewing and processing wireless applications. The fees should be cost-based and used to ensure that Tribes are not penalized for protecting their cultural rights.

Finally, BIA should make clear that Tribal monitoring should be limited to situations of particular concern where the proposed site and excavation indicates that a potential impact on items or areas of Tribal significance is likely, based on clearly articulated factors. Monitoring can be an expensive process. In some cases, negotiation of these monitoring agreements, or the actions of monitors themselves, has delayed projects. For example, Tribal monitors have effectively shut down projects by refusing to oversee work until the financial terms of their employment are re-negotiated. BIA should work with Tribes to narrow the scope of antenna siting actions that require Tribal monitoring, subject at all times to the applicant’s obligation to cease excavation and construction immediately upon the discovery of any items of cultural significance. In this way, the relevant Tribe(s) can be consulted during the most sensitive siting

projects without impeding the deployment of valuable broadband services in areas where extensive Tribal monitoring is not needed.

Question 2. Ms. Baker: In your testimony, you mention that other countries are working to leapfrog the U.S. in the race to 5G. Can you talk a bit more about what our European and Asian trading partners are doing in this area?

Answer. From Western Europe to South Korea and Japan, our trading partners are taking steps to enhance their competitiveness and overtake the U.S. in wireless innovation. While the steps they are taking vary by country, these initiatives include the allocation of additional spectrum and investment in or support for research into 5G technologies. South Korea has pledged to facilitate the deployment of 5G trials for the 2018 Winter Olympics, with full deployment anticipated by 2020. South Korea's initiative, which includes 1.6 trillion Won in government support, is intended to include ultra-HD and hologram transmission. Japan has undertaken a similar initiative, aimed at delivering 5G by the time Japan hosts the 2020 Summer Olympics in Tokyo. While the U.S. is widely acknowledged as the world's current leader in wireless, these and other countries are working to claim that mantle, which is exactly why the United States needs a comprehensive plan to maintain our advantage in this key sector. That plan starts with a meaningful spectrum pipeline.

Question 3. Ms. Baker, I think we can all agree that more spectrum is needed to keep up with consumer demand and maintain our lead globally. But once spectrum is made available, the industry then invests billions more to deploy wireless infrastructure. As you know, in a state like Montana we have unique challenges but I want all of Montanans to be able to enjoy all of the benefits that access to mobile broadband provides. Are there things we can do to streamline infrastructure deployment in rural areas, and particularly tribal areas?

Answer. Deploying infrastructure in rural, less dense areas is a challenge for any networked industry, and wireless is no exception to that. While the substantial fixed costs associated with infrastructure deployment make such investments difficult, there certainly are things policymakers can do to help strengthen the business case for rural investment.

First, Congress and the Executive Branch should take steps to streamline the process for deploying telecommunications infrastructure – wireless and wireline alike – on Federal properties. The Federal government controls more than a quarter of the lands that make up the United States. In many cases, those Federal land holdings are adjacent to, or even surround, rural communities. Streamlining the process for deploying infrastructure on or across these parcels may improve access for all those who live or work near, or traverse, these areas. Such relief also should be afforded to energy providers, as communications networks rely on access to commercial power.

Second, Congress should enact legislation to extend bonus depreciation, a proven tool to encourage businesses to make additional capital investments. High fixed-cost industries like wireless are very sensitive to tax policies and a failure to extend this provision, which lapsed at the end of 2014, would raise the cost of infrastructure deployment, the exact opposite of what is

needed to encourage investment in hard-to-serve areas. Senator Roberts has proposed a bill, S. 1660, to extend bonus depreciation permanently and CTIA urges support for his legislation.

And third, it is imperative that a meaningful Universal Service Mobility Fund component be available to facilitate wireless deployment. Universal Service Fund support should be disbursed in a technologically neutral manner to support services that consumers – including those who live in rural areas – actually want and need. Increasingly, those services include mobile broadband. While 4G LTE service is available to 97 percent of the American public, there is more to be done. As industry works to fill in gaps in coverage, there are many providers that view the current Mobility Fund as inadequate to support the sort of ubiquitous deployment you seek for all Montanans.

Individually and collectively, these policy initiatives would improve the case for continued, or new, investment in rural America.

Finally, with specific respect to tribal areas, please see my answer to question 1.

Question 4. Ms. Baker, in a Wall Street Journal opinion piece that ran the day before the hearing, two former FCC officials noted that U.S. investment in mobile infrastructure—nearly \$32 billion last year—is more than 50% higher than in Europe. I'm sure that delta has a lot to do with why you say we lead in this space. Can you talk a bit about what conditions have led U.S. companies to invest at such a significantly faster rate than their counterparts in other parts of the world?

Answer. There are a number of factors that have helped drive the disparity in investment that divides the U.S. from Europe. First, the U.S. was “first to market” with the spectrum that provides the foundation for 4G services, and the first to deploy LTE technologies. Second, until the FCC’s recent Open Internet Order, the U.S. market had benefitted from a twenty-year, bi-partisan consensus that “light touch” regulation was the right approach to enabling both competition and investment. The Open Internet Order marks a departure from this course toward a European-style of regulation that has been proven to result in reduced investment. Third, the U.S. market has more competition than is the case in Europe. This vibrant competition among networks necessitates investment by providers hoping to attract and retain subscribers. Providers that fail to invest lose out in the marketplace. And finally, a decade-long, bi-partisan commitment to incenting investment through enactment and extension of bonus depreciation initiatives has helped fuel investment in U.S. network. In a high fixed-cost industry like wireless, the right tax policies matter. As I noted in response to question 1, Congress should extend this policy.

Questions for the Record from Senator Ayotte

To

Ms. Meredith Attwell Baker

Question 1. In your testimony, you noted that the FCC's 2010 spectrum demand study was quite accurate in estimating the incredible growth of mobile data traffic. The technological advancements of the Internet of Things has no doubt assisted this skyrocketing usage. Earlier this year, I coauthored a resolution with my colleagues – Senators Fischer, Schatz, and Booker – regarding the significance of the Internet of Things, which unanimously passed the Senate.

The Internet of Things incorporates innovative devices, services, and applications that already are and will continue to influence all of our lives. However, none of this is possible without a robust mobile network. For our role in creating sound spectrum policy, what is the most important action Congress can take to ensure the mobile network has the capacity to support the full potential of the Internet of Things?

Answer. CTIA is pleased that the Senate has recognized the significance of the developing Internet of Things (IoT), which is a means to wirelessly connect everyday objects to the Internet and to each other, allowing them to send and receive data. This exciting advance depends on a robust mobile infrastructure. And, the technological advancements brought about by the increasing popularity and continued growth of IoT has contributed to the skyrocketing demand for innovation and faster speeds. Support for IoT will require greater amounts of spectrum; ideally a continual mix of licensed and unlicensed, depending on the intended use cases. For instance, given the need for heightened security and reliability, health information, medical monitoring, financial records and connected vehicles, for instance, would be best suited to a licensed spectrum platform. When it comes to connected home devices and beacons, an unlicensed platform may be appropriate.

To best ensure that American consumers may fully benefit from the myriad benefits of IoT, I would encourage the Senate to undertake comprehensive action to ensure an ongoing, plentiful supply of licensed and unlicensed spectrum. CTIA supports the broad availability of free, unlicensed spectrum as long as uses of such spectrum do not interfere with licensed users or reduce the availability and usability of licensed spectrum.

Questions for the Record from Senator Johnson
To
Ms. Meredith Attwell Baker

Question 1. The AWS 3 auction was a huge success for taxpayers, government, and industry. What can Congress do to ensure that future auctions are as successful, if not more successful?

Answer. Consumer appreciation for the convenience and ease brought by the mobile connected life has led to skyrocketing demand for ever more substantial services at ever faster speeds. By 2019, wireless networks will face an estimated six-fold increase in data traffic over record 2014 levels. While carriers continue to upgrade their networks and deploy advanced services to more areas, infrastructure and technology alone cannot satisfy consumer demand. To keep up, our nation will need more than 350 megahertz of new licensed spectrum by the end of the decade.

Congress can help ensure that future spectrum auctions are successful in several ways. First, Congress should prioritize freeing up clear, unencumbered licensed spectrum for commercial mobile uses. Unhindered access to clear spectrum is the best way to provide the reliable and robust services that consumers have come to expect.

Next, Congress should emphasize the importance of freeing up uniform spectrum bands across the globe rather than in individual countries, known as “internationally harmonized” spectrum bands. Allocating harmonized spectrum minimizes radio interference and facilitates international roaming. Further, harmonization reduces the cost of mobile devices for consumers because the economies of scale encourage manufacture and delivery of more products and services to more people and allows them to use their mobile devices for less cost and with greater ease when travelling.

In addition, Congress should take steps to ensure that auction winning bidders have access to their spectrum as quickly as possible post-auction. Condoning or appearing to condone delay in the post-auction transition process would impede broad auction participation, hinder competition and delay investment. On the other hand, improving the speed at which new licensees may access their spectrum would incentivize more rapid deployment and foster greater broadband adoption.

Finally, Congress should require the FCC to develop and implement straightforward auction procedures, as well as understandable and predictable licensing rules for new spectrum bands. Regulations must be minimal and interference rules must be clear up front. The FCC should not condition or suggest technologies or uses. The benefits of flexible use have become even more apparent over time and thus must remain the default approach. Similarly, the AWS-3 auction illustrated that paired spectrum blocks are preferable to unpaired given that bidders in that auction won unpaired blocks for a fraction of the cost of paired blocks.

Question 2. What can Congress do to ensure that the necessary infrastructure is in place to handle the ever-expanding mobile broadband service offerings and increased data traffic?

Answer. The FCC's 2009 "shot-clock" order, which was upheld by the U.S. Supreme Court in *City of Arlington, Texas, Et Al., v. Federal Communications Commission, Et Al.* (2013), has significantly improved the process for siting wireless infrastructure on properties governed by the municipal zoning process. Similarly, the FCC's 2011 decision facilitating access to utility poles has improved the process for deploying small cell and distributed antenna system technologies. Unfortunately, the process does not work as well when a provider is attempting to site on property controlled by the Federal government, which accounts for 28 percent of the landmass of the United States. This property is often adjacent to population centers or transportation corridors and is attractive for siting if approvals could be gained in a reasonable expeditious manner. While Congress made a good-faith effort to address this in Section 6409 of P.L. 112-96, and the President did so as well in Executive Order 13604 - Improving Performance of Federal Permitting and Review of Infrastructure Projects, and Executive Order 13616 - Accelerating Broadband Infrastructure Deployment, siting on Federal properties continues to take significantly longer than siting on properties governed by the municipal zoning process. To remedy this disparity, Congress should act to impose streamlined timeframes for review and approval of wireless infrastructure deployments on Federal property. Industry does not seek free access to these locations, and CTIA recognizes that there may be instances in which siting requests may not be granted, but enactment of procedural reforms should generally have the effect of promoting investment and wider access to services.

Senator Gardner
To
The Honorable Meredith Attwell Baker

Question 1. Ms. Baker, I recently introduced the Wireless Innovation Act with Senator Rubio and others. Our legislation would create a spectrum pipeline as well as lead to more transparency and efficiency among federal spectrum users. Moving forward, is this the right kind of spectrum policy to enable industry to keep up with consumer demand and maintain its global leadership?

Answer: It is, and CTIA greatly appreciates the work you and the other sponsors of S. 1618 have invested in crafting a blueprint to ensure that our wireless future is as bright as our present. The bill's comprehensive acknowledgement of and plan to address the need for both licensed and unlicensed spectrum, improved spectrum management, and a streamlined process for infrastructure deployment offers an outstanding starting point for the Committee's work to address the critical question of what comes after the broadcast incentive auction. Collectively with other bills pending before the Committee, such as the Federal Spectrum Incentive Act (S. 887), the Rural Spectrum Accessibility Act (S. 417), and the Wi-Fi Innovation Act (S. 424), there is clear bi-partisan interest in advancing America's wireless future. CTIA stands ready to work with you and all members of the Committee to advance comprehensive spectrum legislation at the earliest possible date.