



Wireless
Infrastructure
Association

Testimony of

Jonathan Adelstein
President and CEO, Wireless Infrastructure Association

Before the

Subcommittee on Communications and Technology
Committee on Energy and Commerce
United States House of Representatives

Hearing entitled

“The Race to 5G and its Potential to Revolutionize American Competitiveness”

November 16, 2017

Chairman Blackburn, Ranking Member Doyle, and members of the Subcommittee, thank you for holding this important hearing and for the opportunity to testify on the future of 5G and American competitiveness. I am the President and CEO of the Wireless Infrastructure Association (WIA), the principal organization representing the companies that build, design, own, and manage wireless facilities in the U.S. and throughout the world. Our members include infrastructure providers, wireless carriers, equipment manufacturers, and professional services firms. WIA focuses on ensuring that the infrastructure is in place to make 5G a reality. Our mission is to expand wireless broadband everywhere.

The United States has been a leader in mobile communications and 4G. There is no guarantee, however, that the U.S. will stay on top as 5G rolls out. The wireless infrastructure industry is honored to work with this Subcommittee on sound policies to encourage deployment of broadband for all Americans so that the U.S. can remain on the cutting edge of wireless deployment, including 5G. This Subcommittee has shown great leadership in promoting broadband deployment and the wireless industry applauds your efforts.



The Wireless Data Crunch

America is facing an economic and technological challenge that can be described as the wireless data crunch. The challenge is to meet consumers' increasing demand for mobile data while keeping up with the network's capacity to deliver it. According to Cisco, over the next five years, mobile data traffic in the U.S. is set to increase five-fold.¹ Much of that growth is coming from smartphones, which account for most of the wireless connections today. But the number of machine-to-machine connections and machine- or device-to-Internet connections is growing exponentially. Cisco found that the number of Internet connected devices will increase three-fold by 2021, with smartphone traffic exceeding PC traffic over the next five years.²

These statistics underscore the need for government policies that consider the growing demand for mobile data and address the challenges of meeting it by efficiently deploying wireless infrastructure. This tremendous growth in demand is both encouraging and sobering at the same time. The issue for the wireless infrastructure industry and for this Subcommittee is how to meet this demand. The projections should serve as a wake-up call that industry and the government at all levels need to continue to work together to maintain the U.S.'s position as the global leader in wireless innovation, as this Subcommittee has long recognized.

To address the wireless data crunch, there are three basic ways to deliver more wireless data: (1) additional spectrum; (2) increased technological efficiency; and (3) more wireless infrastructure, or densification. All three are essential.

We certainly need more spectrum – as much as we can get, as quickly as we can get it. The mobile carriers paid high prices for spectrum in the recent auction, which is understandable because there may not many available opportunities for significant new spectrum in the near future, other than very high-frequency spectrum. With the successful close of the 600 MHz Incentive Auction, the last scheduled auction, it is more important than ever to plan for future spectrum needs. Technological efficiencies will also help ease the wireless data crunch. But even as we build out 4G and soon 5G, traffic immediately diverted to these new and more efficient standards—there's lag time here, too, with old 3G and even 2G handsets still in use. 5G will also require new handsets that will take many years and significant expense to get into consumers' hands. While carriers can incentivize customers to use new and more efficient handsets, this

¹ VNI Mobile Forecast Highlights, 2016-2021, *available at* https://www.cisco.com/assets/sol/sp/vni/forecast_highlights_mobile/#~Country (Cisco VNI).

² The Zettabyte Era: Trends & Analysis, *available at* <https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/vni-hyperconnectivity-wp.html>.



takes time. Technological innovation alone will not enable the wireless industry to meet growing consumer demand, even when combined with any new spectrum.

Wireless infrastructure immediately addresses the wireless data crunch as soon as it is deployed, but deploying infrastructure also takes time. And even with more spectrum or increased technological advancements, far more infrastructure is needed to deliver sufficient bandwidth. The massive growth in the number of connected devices will strain the capabilities of the infrastructure we have today. Supporting the demand for more infrastructure will require major investments. We need additional cell towers and poles and more antennas of all types and sizes that attach to structures of all sizes. And we need the all-important fiber networks that connect all these technologies. We simply need more wireless infrastructure so that these massive amounts of data can seamlessly move from point to point. In the 5G world, with the explosion of data demand, having robust wireless infrastructure becomes even more important.

Benefits of 5G

The benefits of 5G for economic growth, job creation and American competitiveness are well-documented. The wireless industry stands ready to make the necessary investments to make 5G a reality. In fact, Accenture estimates that wireless operators will invest as much as \$275 billion nationwide over seven years as they build out 5G.³ This investment could create direct impacts of 350,000 new construction jobs and a total of 850,000 jobs in the U.S. when considering suppliers and other partners cumulatively over the seven years of network build-out.⁴ The broader economic benefits from 5G could create an additional 2.2 million jobs in communities across the country.⁵ In total, about 3 million new jobs could be created by the 5G revolution and lead to a \$500 billion boost to the GDP.⁶

5G networks will be up to 100 times faster and five times more responsive than today's networks. It will be able to support 100 times more wireless devices. It will bring faster speeds, greater value, and more choices for consumers. 5G will spur life-altering innovations in telemedicine, distance learning, improved public safety response, mobile banking, and a host of industrial and manufacturing functions.

³ *How 5G Can Help Municipalities Become Vibrant Smart Cities*, Accenture Strategy (Jan. 12, 2017) available at <https://newsroom.accenture.com/news/new-research-from-accenture-strategy-highlights-economic-and-societal-impact-of-investing-in-5g-infrastructure.htm> (Accenture Study).

⁴ See Accenture Study.

⁵ *Id.*

⁶ *Id.*



Communities, big and small, will also benefit from 5G. “Smart Communities” will emerge across the country, providing municipalities the ability to improve quality of life for their residents and saving significant taxpayer money. 5G solutions applied to connected cars and the management of vehicle traffic and electrical grids could produce \$160 billion in benefits and savings through reductions in energy usage, traffic congestion and fuel costs.⁷ These 5G attributes will provide cities and towns with opportunities to reduce commute times, improve public safety and generate significant smart grid efficiencies.

The U.S. can lead in 5G. Several 5G trials are ongoing across the country, and the Federal Communications Commission (FCC) opened nearly eleven gigahertz of high-band spectrum that serves as an important down payment on the spectrum needed to support 5G. America is well-positioned, but there is growing competition from around the world. If U.S. policy does not evolve to encourage 5G investment, then other countries will surpass us and we will have missed an opportunity to create millions of jobs and hundreds of billions in economic activity.

I am confident U.S. policy will rise to meet the challenge. This Subcommittee clearly recognizes the challenges and is addressing it. Chairman Pai, all the Commissioners, and the staff of the FCC has also risen to the challenge, establishing an aggressive agenda to promote infrastructure deployment. The Trump Administration has also taken a strong stand to promote infrastructure, including a focus on broadband, and clearly indicating their intention to include broadband in the upcoming infrastructure initiative. Given strong leadership we are seeing from Congress, the FCC and the Administration, it is clear there is significant policy support that will enable the U.S. to lead the world in 5G deployment and innovation.

Congress’ Role in Encouraging 5G Deployment

5G could prove to be one of the most transformational standards in the history of technology. As promising as the 5G standard is, it is only as good as the infrastructure on which it is deployed. Building the networks of tomorrow requires sound policies from all levels of government today.

Accenture estimates that the network deployment build of 5G will involve ten to 100 times more antenna locations than 3G or 4G, meaning that all manner of infrastructure will be required, including traditional towers, small cells, distributed antenna systems (DAS), and unlicensed Wi-Fi offload. While the opportunities of 5G deployment present an exciting and historic opportunity, we must be mindful of potential warning signs. 5G buildout is capital intensive, and operationally demanding. Fully realizing the economic growth and international competitiveness of 5G, depends on how efficiently the 5G infrastructure will be deployed. Therefore, Congress

⁷ *Accenture Study.*



and the FCC need to enact policies that allow the wireless industry to invest finite private capital responsibly and efficiently.

Congress and the FCC need to speed the approvals of permits and applications so that companies can make the needed 5G investments. And we need local governments to recognize how crucial access to public rights-of-way to deploy antennas on existing structures will be as we move into the next phase of wireless deployment.

In addition to antennas on towers, poles and the sides or tops of buildings, new networks will rely on what is commonly known as “street furniture.” Bus stops, man-hole covers, park benches, mail boxes, the lights at a local high school or even a gazebo in a public park are all candidates to host cellular antennas. Policies need to recognize that all manner of infrastructure are needed to reap 5G’s benefits.

There are several specific steps Congress can take that will speed 5G deployment. First, Congress can look at Federal pole attachment rules that promote the deployment of broadband access and the new technologies that enable it, while providing fair treatment for pole owners. Among other things, Congress added “provider[s] of telecommunications services[s]” to the category of attachers entitled to pole attachments at just and reasonable rates, terms and conditions under Section 224 of the Telecom Act. This section has been modernized through action by the FCC, which has helped to provide greater access to poles for wireless attachers, shortened timelines for make-ready and other work, and rates in greater harmony with other like attachments. However, many local jurisdictions have been slow to adopt the FCC’s standards. In these states, the telecommunications industry must re-legislate, re-litigate, and otherwise relive the efforts taken before the FCC’s action. Greater national certainty and clarity with respect to the rights of wireless attachers in these jurisdictions would spur 5G broadband deployment.

Next, Congress should look to address the byzantine process of siting wireless broadband infrastructure on Federal lands. This Subcommittee on a bipartisan basis has expressed interest in this issue and we appreciate your leadership, along with your colleagues in the Senate. The Federal government owns or administers nearly thirty percent of all land in the U.S., as well as thousands of buildings, many of which are in desirable locations. Broadband providers currently face significant challenges when working to secure access to Federal lands and buildings. Deploying wireless infrastructure on these properties is critical for 5G rollout. Wireless facilities can be sited on Federal property in an environmentally responsible way that is sensitive to areas historic significance.

In addition, some state and local authorities are erecting barriers to broadband deployment that could prevent the full deployment of 5G. For example, some localities are charging fees that are



discriminatory, are not technology neutral, or exceed reasonable application processing costs, including demands to obtain expensive business licenses for cell sites. The current statute does not define “fair and reasonable compensation” and some localities have used fees as a revenue-generating measure. Still others impose high costs for unnecessary third-party consultants or require unreasonable escrow fees. Congress should clarify that right-of-way use and management charges should not include fees based on gross revenues, third party consultancy or review fees, travel expenses, business licensing fees, or unreasonable escrow fees.

An additional concern is that some localities require unreasonable amounts of information from applicants, some of which is completely unrelated to the application. Some localities also require an applicant to perform services unrelated to the wireless facility for which approval is sought. These requirements cause unnecessary and costly delays to the deployment of wireless infrastructure and could impede 5G. Congress should look at ways to limit the amount and type of information that is required by local governments in siting applications and Congress should prevent local governments from requiring an applicant to perform services unrelated to the wireless facility for which approval is sought.

Further, the shot clocks created by the FCC under Section 332 of the Telecom Act require an applicant to file a lawsuit in court if the locality does not act within the timeframes established. While helpful, there are still opportunities within the process that introduce substantial delay where the parties unnecessarily end up in court. This process can drag on for years. Congress should amend Section 332 to include a deemed granted remedy if a locality fails to act within the applicable shot clock.

Beyond local concerns, Congress can improve a number of Federal policies to expedite 5G. For instance, the FCC’s Tower Construction Notification System (TCNS) aids in connecting wireless infrastructure providers with federally recognized Native Nations that have expressed an interest in the area in which the deployment would take place. The process as it stands today is fraught with inefficiencies and lacks the clarity and certainty needed to efficiently build out 5G networks. The TCNS process applies to deployments where a tribe has indicated that they may have a historic, cultural interest in the underlying site. Congress should update the TCNS system to proactively exclude those deployments that have no new ground disturbance, should clarify procedures to better enable completion of the consultation process in a reasonable timeframe, and should ensure that fees are assessed only when appropriate, and that where fees are assessed, those fees are reasonable.

In addition, FCC rules and programmatic agreements implementing Section 106 of the National Historic Preservation Act (NHPA) have created a time-consuming process, often taking many months without effective mechanisms in place to close the process. The FCC revised its rules in



2014 and recently amended the Nationwide Programmatic Agreement for the Collocation of Wireless Antennas to categorically exclude certain collocations, including many small wireless antennas on existing structures. However, these exclusions do not cover many common and low-impact collocations or associated support poles. Congress should amend Section 106 of the NHPA to specify that the installation of small wireless antennas, including associated equipment and support poles, on existing towers, buildings, or other structures, or in a public right-of-way, is not an “undertaking” subject to Section 106 review.

Similarly, while collocations of small cells are categorically excluded from certain environmental reviews under FCC rules, associated support poles may still require an environmental review and both the small cell and the pole are still considered major Federal actions. Congress should amend Section 102 of the National Environmental Policy Act to specify that the installation of small wireless antennas (including associated equipment and support poles) on existing towers, buildings, or other structures, or in a public right-of-way, is not a major Federal action subject to NEPA review.

Along with Federal policy, several states are also looking to expedite 5G infrastructure deployment. In 2017, nearly two dozen bills have either been enacted or introduced that remove regulatory barriers, reduce delays, and rationalize fees. These bills also promote responsible deployment, creating height limits and other policies incentivizing deployment in specific areas, including the right-of-way and on existing infrastructure.

With the appropriate regulatory guidance, today’s wireless industry can better plan for the network of tomorrow. Too often, misunderstandings and misrepresentations about wireless infrastructure can stall the deployment of these life-changing technologies. 5G infrastructure will have the power to transform a municipality in economic decline into an innovation hub. It can breathe new life into aging commercial zones, and provide rural areas the ability to compete in the innovation economy.

Collocation and Responsible Deployment Are Important to 5G Deployment

American wireless networks are the envy of the world. When I speak with industry and governments around the globe, I am often asked how we did it. A major reason is the collocation model that has become the industry norm in the U.S. This shared infrastructure model works well for both the wireless industry and for local communities. Sharing is more economically efficient and promotes smart planning. Collocation also lowers barriers for new entrants, which leads to competition and innovation. And it supports environmental, historic and cultural preservation throughout local communities.



Congress, and this Subcommittee, have enabled the improvement of the collocation model by approving Section 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012. That law expedited deployment of 4G networks by allowing carriers and infrastructure providers to upgrade equipment on cell towers without having to undergo onerous zoning proceedings. Section 6409(a) is going to provide similar relief in the deployment of 5G networks.

5G will not only be provided through small cells. The entire network, on all frequencies and antennas, will be upgraded to 5G as time and capital allows. In fact, swapping out 5G antennas on traditional towers will provide a rapid and efficient means to get the 5G signals to the widest swaths of the U.S. population. Further refinements to Section 6409(a), along with the facilitation of small cell siting, will provide a further boost to the deployment of 5G networks.

One way to promote collocation to help boost 5G deployment is to streamline the process of compound expansions. The 2004 Programmatic Agreement excluded from review construction of a replacement structure that did not substantially increase the size of the existing tower and that did not expand the boundaries of the leased or owned property surrounding the tower by more than thirty feet in any direction or involve excavation outside these expanded boundaries. This relief has worked well. However, any site expansion to accommodate additional equipment associated with the collocation of a new antenna or transmission equipment still requires a full review, even if the expansion is as little as one foot. This unnecessary requirement is expensive, time-consuming and could slow down 5G. Providing the same thirty-foot allowance exclusion for compound expansions for collocation as currently exists for replacement towers, would have a significant impact in reducing delays and expenses.

As the U.S. moves to 5G, it is important to maintain a commitment to responsible infrastructure deployment. Siting a wireless facility can be a time-consuming and expensive process. Often, a vocal minority of residents express displeasure, or outright disapproval, of locating facilities in their communities. The wireless infrastructure industry works very closely with local governments and communities to meet their unique needs in terms of location, aesthetics, height, type of structure, and many other considerations. If a company carelessly comes into a community and circumvents local consultation, it rightly angers community residents and the local government. This can lead to a moratorium, either explicit or *de facto*, on siting new facilities in that community. A siting moratorium hurts responsible companies and creates resistance on the drive to 5G. It prevents consumers and communities from enjoying all the benefits that come with wireless services. WIA has long supported responsible infrastructure deployment in partnership with localities because it is the best way to develop the networks, including those that will enable 5G.



Creating the Wireless Workforce of the Future

5G deployment could create three million new jobs across the economy. Nevertheless, there is a dramatic skills gap between U.S. workers and the technical and professional skills needed to build wireless networks. This gap could lead to thousands of jobs going unfilled and dramatic increases in labor costs. We are already beginning to see this.

Wireless jobs are changing incredibly quickly. Many of our member companies report that they have difficulty filling positions because the applicants do not have the skills they need. A recent white paper published by WIA's Innovation and Technology Council found that government and industry should work together to develop training and educational programs to draw workers into the industry, and to provide the advanced skills needed to improve the safety and quality of wireless deployments.⁸

WIA is leading the fight to combat this skills gap so that the wireless industry can continue to grow and all communities can benefit from 5G. WIA is the National Sponsor for the Telecommunications Industry Registered Apprenticeship Program (TIRAP) to bring the apprenticeship model into the wireless industry for the first time.⁹ WIA has also developed training programs that will support apprenticeships, bolster efforts to train veterans, and provide a baseline of knowledge about radio frequency issues among the wireless workforce of the future.

The wireless industry and multiple Federal agencies recognize the critical role apprenticeships and workforce development programs can play in bridging the skills gap. On November 28, WIA and TIRAP will convene with representatives from the FCC, the Department of Labor, OSHA and senior executives from the private sector to celebrate the significant accomplishment of adding 1,000 registered apprenticeships to the wireless industry and explore the role apprenticeships and training and education will play in developing the skilled workforce the U.S. needs as it prepares for the widespread deployment of 5G mobile networks.

WIA is proud to support H.R. 3174, the CHANCE in Tech Act. This bill would reform the registered apprenticeship program by creating technology apprenticeships and help forge public-private partnerships to serve as intermediaries between employers participating in the registered apprenticeship program, industry, training partners, and government entities. Each intermediary would assess and train potential apprentices in coordination with local and regional workforce

⁸ The Skills Gap in Wireless Infrastructure Education: A Strategy for Improvement *available at* <https://wia.org/wp-content/uploads/The-Skills-Gap-in-Wireless-Infrastructure-Education.pdf> (May 2016).

⁹ See <http://www.tirap.org>.



demands. The CHANCE in Tech Act would help shrink the skills gap by revitalizing the registered apprenticeship program and providing students and workers with the hands-on, experiential learning needed to compete in today's economy.

The only way the U.S. is going to keep up with the ever-increasing demand for more capacity is through more wireless infrastructure, which will require a workforce with the skills to deploy wireless across the U.S. We cannot afford the lack of skilled workers to slow the path to 5G, so WIA looks forward to working with Congress to bolster efforts to train our workforce to expand high wage, high skilled jobs in our industry.

Broadband Deployment Advisory Committee (BDAC)

On January 31, 2017, FCC Chairman Ajit Pai announced the formation of a new Federal Advisory Committee, the Broadband Deployment Advisory Committee (BDAC). The BDAC's mission is to make recommendations on how to accelerate the deployment of broadband by reducing or removing regulatory barriers to infrastructure investment. I was fortunate to have been selected to serve on the Committee and was chosen to chair the Streamlining Federal Siting Working Group. The BDAC met and approved significant recommendations on November 9, including the entire report my working group and numerous suggestions from the others. My working group recommended that fees and rates for deployment on Federal lands need to be streamlined and that agencies should keep some of the revenue to help address staff constraints. My group also suggested implementing a 60-day shot clock, with a deemed granted remedy at 180 days for new builds or 90 days for collocations on Federal lands. Another issue with Federal land siting is that varying applications and processes exist across different Federal agencies. We recommended harmonizing applications and processes across agencies. All agencies should use the same application. Congress mandated that the General Services Administration create a common application but two years after the common form was released, not all agencies use it. Congress should require that the common form be used.

Some of the other working groups made additional recommendations to speed up the permitting process for 5G infrastructure and to ensure broadband networks reach all communities. I commend Chairman Pai for convening this Committee and I know he is committed to using all FCC's tools to promote broadband deployment and adoption.

Conclusion

Wireless broadband helps drive America's innovation economy and fuels the nation's economic future. The U.S. has always been the global leader in wireless broadband innovation, and private investment in wireless infrastructure is a big the reason for our success. Continuing to upgrade



Wireless
Infrastructure
Association

America's wireless infrastructure is a necessary component of connecting more Americans with broadband and to 5G deployment.

The move to 5G has the potential to unleash a wave of economic growth, job creation and greater global competitiveness in virtually every sector of the U.S. economy, bringing benefits well beyond the wireless industry. And wireless infrastructure will enable 5G. This enormous opportunity will only happen, however, if sound policies that encourage investment and innovation are enacted. Otherwise, the U.S. will fall behind the rest of the world and will not realize the full potential that next generation broadband will bring. That is why the leadership of this Subcommittee is so critical. You can make the difference by removing obstacles to deployment and improving Federal law to enable this industry to upgrade wireless networks.

We are deeply grateful for the bipartisan recognition of the importance of infrastructure by this Subcommittee, by Congress, by the FCC and the Administration. All have implemented policies to promote wireless broadband deployment, and all are working to build on recent successes.

Thank you, again, Chairman Blackburn and Ranking Member Doyle for holding this hearing and inviting me to testify. I look forward to continuing to work with you and the rest of the Committee to make additional progress on these very important issues.