Testimony of

Jonathan Adelstein
President and CEO, PCIA – The Wireless Infrastructure Association

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Chairman Walden, Ranking Member Eshoo, and members of the Subcommittee, thank you for holding this important hearing and for the opportunity to testify today on the urgent topic of promoting investment in broadband infrastructure. I am the President and CEO of PCIA – The Wireless Infrastructure Association (PCIA), the principal organization representing the companies that build, design, own, and manage telecommunications facilities in the U.S. and throughout the world. Our 220 members include wireless carriers, infrastructure providers, equipment manufacturers, and professional services firms. Our mission is to expand wireless broadband everywhere, helping our members provide wireless facilities that enable consumers to meet their growing mobile data needs anytime, anyplace.

Wireless Infrastructure Creates Jobs and Enables Wireless Broadband

When it comes to meeting the growing wireless data demands of Americans and users throughout the world, the wireless infrastructure industry plays an enormous role. Put simply, wireless infrastructure makes wireless work. Similar to roads and bridges, which carry physical traffic, wireless infrastructure is the essential platform for digital traffic that carries innovative applications like Uber, Instagram, Twitter, and YouTube, as well as life-altering broadband services like telemedicine, distance learning, improved public safety response, mobile banking, and a host of industrial and manufacturing functions. Continued investment in robust wireless infrastructure, which is the purpose of this hearing and the admirable goal of this Committee, will enable future innovation and will solidify and build upon America's historical competitiveness in the technology sector.

Furthermore, wireless infrastructure enables the economic growth and technological innovation that accompanies wireless broadband, including the Internet of Things, the app economy, and many future efficiencies and commercial opportunities that wireless broadband enables. A PCIA study found that private investments in wireless infrastructure between 2013 and 2017 are expected to generate as much as $1.2 trillion in economic growth and create 1.3 million net new jobs – nearly 30,000 of them directly attributable to wireless infrastructure. If such investment can be sustained, it will strengthen America's competitiveness and allow the U.S. to remain the global leader in wireless innovation.

This Committee has shown great leadership and deserves to be commended for its work to eliminate a number of barriers to infrastructure deployment. Most critically, for example, this Committee's work on Section 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012 has made an enormous difference in speeding the deployment of wireless infrastructure. Specifically, Section 6409(a) established a new Federal law governing state and local review of eligible requests for modification of existing wireless towers or base stations, including collocations for additional providers of wireless services. The Federal Communications Commission's (FCC) outstanding and aggressive implementation of this law grounded Congress' work with a clear regulatory framework that we are confident the courts will find legally sound. Our members report real progress on the speed, cost, and ease of their efforts to deploy 4G networks as a direct result of this Committee's work, so we are grateful for your visionary leadership.

Easing the Wireless Data Crunch

One of America's biggest economic and technological challenges is what I call the wireless data crunch. The wireless data crunch refers to a potential future gap between the nearly insatiable and increasing demand for wireless mobile data and the network's capacity to deliver it. To illustrate the potential capacity problem, Cisco projects that the demand for wireless data will increase 700 percent over the next five years. That's on top of the explosive growth we have already witnessed in the last five years. This tremendous growth is both encouraging and sobering at the same time. The challenge for the wireless infrastructure industry, the telecommunications sector at-large, and for this Committee is: how are we going to meet this demand? The projections should serve as a wake-up call that industry and government need to continue to work together in order to maintain the U.S.'s position as the global leader in wireless innovation, as this Committee has long recognized.

To prevent a potential gap between demand and capacity, we need to build and deploy all manner of wireless infrastructure including more traditional towers, small cells, distributed antenna systems, and Wi-Fi offload. This additional infrastructure, with more antennas closer to the end user, results in greater spectral efficiency. Reusing spectrum, a finite and limited resource, as efficiently as possible, allows more data to flow over existing frequencies.

Engineers recognize three basic ways to deliver more wireless data: (1) additional spectrum, (2) increased technological efficiency, and (3) expanded wireless infrastructure. I will address each in turn.

Additional Spectrum

Clearly, more spectrum must be made available—as much as we can get as fast as we can get it. And of course, spectrum is of great value. Thanks to the excellent work of this Committee, the FCC was able to auction 65 MHz of AWS-3 spectrum for over $45 billion. Let me put that in context. There were already 550 MHz of spectrum in commercial cellular use. Thus, we've just increased the amount by around 12 percent. The usefulness of this spectrum is affected by the lag time between when the spectrum is auctioned and when it is ready for use. This includes the need for the spectrum to actually be allocated and cleared, antennas and other infrastructure to be upgraded, and a whole generation of handsets to be swapped out. Significant amounts of time are needed before these bands begin to offload traffic from existing frequencies, and it will not be fully phased in for up to five years.

This Committee and the industry are carefully monitoring the next auction your legislation enabled—the incentive auction for broadcast spectrum. This auction does not even begin until next year, and will likely take over five years to yield any significant spectral relief. Beyond that, significant additional spectrum is hard to come by. Critical efforts are underway to clear unused Federal government spectrum for commercial use, including the commitment by the Obama Administration to clear 500 MHz by 2020. Notably, Senator Rubio recently reintroduced the Wireless Innovation Act (S. 1618), which seeks to identify and allocate Federal spectrum to commercial use. However, as you can imagine, it is extremely complicated, and expensive, to move Federal agencies off their current frequencies. Clearing and auctioning Federal spectrum is necessary, but it will not help ease the wireless data crunch in the very near future. We certainly need more spectrum, and I urge this committee to pursue policies to make more available for commercial use. Nevertheless, even under the most optimistic scenarios, the amount of new spectrum coming online in the next five years is nowhere near enough to accommodate the explosive growth rates that are predicted.

Technological Efficiencies

Technological efficiencies also help ease the wireless data crunch. Each new network generation brings with it new technologies, more network capacity for data per user, and the potential for better voice quality, lower latency and greater data throughput. For example, 4G is much more efficient than 3G, allowing for more economic use of allocated spectrum, and 4G LTE Advanced is yet more efficient. But even as we buildout 4G, traffic immediately diverted to these new and more efficient data channels—there's lag time here, too, with old 3G and even 2G handsets still

being used. Carriers can incentivize customers to use more efficient handsets, but this also takes time. Technological efficiencies are absolutely critical, and more is needed, both on the network layer and on the software or content layer. However, technological innovation alone will not enable the wireless industry to meet growing consumer demand, even when combined with new spectrum projected to come online.

Infrastructure

As noted, additional spectrum and technological efficiencies are necessary tools in our campaign to address the data crunch. The third critical resource is the rapid deployment of the physical network, the infrastructure that would carry any new spectrum and any new technological upgrades.

The physical wireless infrastructure now being deployed and upgraded is an off-the-shelf solution that is already working to alleviate the wireless data crunch. It consists of major investments of private capital that ushers this technology to market. 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. Wireless infrastructure has the power to transform a city in economic decline into an innovation hub. It can breathe new life into aging commercial zones by providing a rural downtown the ability to compete in the innovation economy.

Today, there are an abundance of choices available to network planners. The traditional tall towers effectively provide most of the coverage and capacity necessary. The industry is increasingly deploying small cells and distributed antennas systems to fill the gaps or overlaying capacity in high traffic markets. Further, the networks themselves are getting smarter. Self-optimizing networks and the combination of intelligent software and hardware design allows a network to anticipate usage and provide greater resources to areas of need on the fly, providing users with even greater service. Wi-Fi continues to play an important role in this system, offloading traffic to the wired network and providing greater headroom for cellular services.

This densification of wireless infrastructure plays a critical role in meeting wireless data demand. In fact, infrastructure appears poised to play the largest role of any of the available solutions in the next five years, and perhaps more, to address the wireless data crunch. Spectrum and network densification are fungible—roughly speaking, doubling the amount of spectrum in an area could provide a similar boost to network capacity as doubling the number of cell sites. The availability of network densification as an alternative to spectrum purchases puts a cap on the value of spectrum—and carriers regularly weigh them against one another. The mobile carriers paid high prices for spectrum in the AWS-3 auction, which is understandable because this could be one of the only available opportunities for significant new spectrum in the near future. In sum, today's

infrastructure will provide the cornerstone of the Internet of Things, 5G, and the applications, services, jobs that will make up the economy of tomorrow.

Training and Education

Another complementary way to promote investment in broadband infrastructure is to ensure that a properly trained workforce is available to build, upgrade, and maintain it. As networks continue grow in complexity, it is imperative that we build a modern workforce with the requisite skills to keep up with the rapid deployment in broadband infrastructure.

Last week, on July 15, the White House hosted the "Wireless Industry Workforce Development Summit," attended by over 60 leaders in the wireless industry, the Federal government, and representatives from the higher education system. Never before has such a diverse group of employers in the wireless industry gathered for the purpose of transforming our workforce. As the national trade association representing the wireless infrastructure industry, PCIA's goal is to improve the proficiency of every aspect of the skilled wireless infrastructure workforce. Representatives from carriers, infrastructure owners and developers, equipment manufacturers, and contractors, comprising the entire ecosystem that services wireless networks, took part in the Summit.

Today, wireless training programs are too often balkanized, ad-hoc solutions. That is why PCIA is assembling the industry's finest minds to develop best practices for training to meet our specialized needs. Our industry has emerged so quickly that the educational system and training efforts haven't kept up.

To change the very trajectory of wireless education, we have set three basic goals: first, we need to establish best-of-class training efforts, bringing together leading subject matter experts to establish model curricula; second, we need to establish superior apprenticeships through the Telecommunications Industry Registered Apprenticeship Program (TIRAP), which we helped to establish with other industry leaders; and third, we need to establish mechanisms to expand the diversity of our workforce to bring in more veterans, women, and minorities. We have partnered with Warriors 4 Wireless (W4W) and the Women's Wireless Leadership Forum (WWLF) in that effort.

All of these initiatives are designed by the industry for the industry. To bolster our strength, we're also partnering with the Federal government to assist us through the Department of Labor (DoL), the Department of Veterans Affairs, the Department of Defense, and the FCC, which have all championed our efforts to address safety and skills training for our workforce.

To date, we've made some real progress. PCIA has worked with TIRAP to develop DoL-credentialed apprenticeship programs available to qualified employers. TIRAP's mission is to

partner with stakeholders to promote safety, enhance quality, and enable education and advancement opportunities in the telecommunications workforce. PCIA has worked with W4W to accelerate its excellent efforts to bring veterans into our workforce. And PCIA has incubated WWLF to help women develop careers in our industry, so we can draw on the talents of our country to build a stronger workforce.

Congress' Role in Encouraging Broadband Infrastructure Deployment

Wireless infrastructure is the backbone of all wireless voice and data communications. The industry is constantly innovating with new wireless technologies. If we do not have sound regulations and policy at the local, state, and Federal levels, the innovation and competitiveness of the wireless industry will suffer.

We've seen how misinterpretations of congressional intent can cause delay. Too often, local jurisdictions have denied siting applications without full reasoning and accountability. This left capital tied up and broadband projects languishing or abandoned. Sadly, it took action by the Supreme Court in *T-Mobile v. Roswell* to resolve this roadblock. In January, the Supreme Court agreed with our assessment that the Telecommunications Act of 1996 requires localities to provide clear, written reasons when applications to build wireless facilities are denied. The Court sided with industry and found that wireless providers must be informed in a clear-cut and timely manner when siting applications are turned down. We were pleased with this ruling, but we should not have to petition the highest court in the land to resolve these types of delays in the name of broadband buildout and all that it enables.

One suggestion for Congress to consider that would alleviate roadblocks to wireless siting at the local level would be removing requirements that a provider demonstrate "proof-of-need" or show a "gap-in-service" when siting a wireless facility. Proof-of-need is used as a barrier to building new facilities because it is simple to reject an application based on a local government's subjective evaluation that the applicant failed to sufficiently demonstrate that a facility serves a purpose. Moreover, varied judicial interpretations of Sections 332 and 253 of the Telecommunications Act of 1996 (Telecom Act) allow a jurisdiction to deny an application on the basis that "sufficient" wireless coverage already exists in the area. The test is extremely subjective in practice, makes it more difficult to site wireless facilities, and prevents wireless facilities from alleviating data capacity constraints.

Both state and Federal policies require 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 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. Greater national certainty and clarity with respect to the rights of wireless attachers in these jurisdictions would spur further broadband deployment.

Congress can also encourage investment by passing bipartisan legislation to promote an open Internet. Only congressional action can give the certainty for broadband providers looking to invest. As Congress looks to enact open Internet legislation, it should provide the FCC the necessary legal authority to map out clear rules of the road for broadband providers while encouraging investment in broadband networks.

To promote broadband investment, Congress should streamline the process of siting wireless infrastructure on Federal lands. The Federal government owns or administers nearly thirty percent of all land in the United States, including thousands of buildings. Broadband providers currently face significant challenges when working to secure access to Federal lands and buildings to deploy infrastructure. Deploying wireless infrastructure on these properties is absolutely critical for public safety and economic development. Wireless facilities can be sited on Federal property in an environmentally responsible way that is sensitive to areas historic significance.

Predictability and consistency are vital to network planning and investment in any arena, but this need is amplified when deploying broadband on Federal property, which often requires burdensome interagency review and coordination. PCIA has been very active in working with agencies across the Federal government, Congress, and the White House to find ways to expedite the siting process. In 2012, Congress, behind the leadership of this Committee, put forward a framework to make it easier to site communications facilities on Federal lands and properties through standard applications and agreements. Also in 2012, President Obama issued Executive Order 13616 to promote infrastructure buildout on Federal lands and created a cross-agency working group charged with meeting the mandate of speeding deployment on Federal lands and properties.

Unfortunately, even with an Executive Order and direction from Congress, the process to site wireless infrastructure on Federal lands has not sufficiently improved. Legislation will help agencies work with the industry to bring broadband service to difficult-to-reach Federal lands and hard-to-access Federal buildings. As such, PCIA supports S. 1618 to address this very issue. We look forward to continuing to work with both chambers on legislation to streamline and expedite the process of siting broadband infrastructure on Federal property. By facilitating access, the Federal government can increase revenues through lease payments to the Treasury while at the same time improving broadband access for its citizens.

Better access to Federal lands and property will also help increase broadband availability in rural areas. The importance of expanding rural broadband should not be underestimated. Many of the lands and properties that would benefit from streamlined siting are by definition rural. It is important for the public and private sector to work together to ensure that buildout can accelerate in these areas. One mechanism to highlight are the loans that the Rural Utility Service (RUS) can offer for broadband buildout. These loans derive a significant portion of their funding from the Universal Service Fund (USF). For these funds to meet their intended purpose, there must be a predictable level of support to the USF so that loan recipients can plan, borrow, and invest in infrastructure. Lastly, the Connect America Fund (CAF) is an ideal and sustainable cost-recovery mechanism for rural areas where subscriber densities are too low to motivate providers to build infrastructure and offer service. CAF's wireless component, the Mobility Fund, is targeted at the expansion of mobile broadband networks. We think these programs will go a long way to accelerate the deployment of wireless broadband in rural communities.

Similarly, more work is needed to provide connectivity to native nations so that these communities can take advantage of the benefits that broadband provides. PCIA has long supported efforts to educate tribal leaders and communities about the opportunities for wireless broadband, including commenting in various dockets related to historic preservation and environmental protection. PCIA has also participated in the FCC's annual workshops on this topic, providing a platform for information exchange between industry and those representing native nations to better understand the cultural differences and shared experiences. However, in the spirit of collaboration, PCIA would urge a reexamination of certain tower siting processes at the FCC, whereby an application to site communications facilities in downtown Chicago triggers a full-day review and fees associated with an interest from a tribe many miles away. Our industry understands the critical nature of sovereignty and respect of a people's history, but there must be a more efficient and rational approach so that we may all benefit from a stronger network.

Another way to encourage investment in broadband infrastructure is to maintain our country's long standing tax policy allowing real estate investment trust (REIT) status for communication towers. Transmission tower companies lease vertical real estate—communications towers and the land beneath it—to multiple tenants. Tenants own the equipment and lease space on the towers. Transmission tower companies eliminate the need for each tenant to construct its own towers, which prevents overcrowding neighborhoods and communities with multiple towers. This model enhances competition in the wireless industry by lowering costs for new mobile wireless service providers and other tenants to enter new markets. Transmission tower companies allow these new entrants to operate without having to raise capital to build their own tower networks.

Today, the properties of tower companies play an integral role. Continued buildout of towers is essential to meeting the demand for new telecommunications technologies, and the current REIT structure promotes this necessary investment.

Conclusion

The wireless infrastructure industry is not just about the facilities we build; it's about what those facilities enable. Wireless infrastructure helps virtually every sector of the economy. Nearly every business in this country relies on wireless infrastructure to grow rapidly and operate efficiently. The mobile broadband revolution holds incredible promise for economic growth, job creation, and numerous other applications, such as education and healthcare. At the same time, there are warning signs on the road ahead that could lead to data demands that outstrip supply. We cannot ignore the warning signs of the looming wireless data crunch. To realize this promise of economic growth, job creation and technological innovation, infrastructure builders need the capital to invest—and we need regulators and Congress to help, as this Committee has long realized and as the purpose of this hearing recognizes.

Wireless broadband helps drive America's innovation economy and fuel 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 the reason why. To maintain this leadership, Federal policies should seek to encourage this continued investment by providing legal and regulatory certainty. Continuing to upgrade America's wireless infrastructure is a necessary component of connecting more Americans with broadband. Laws and regulations adopted by Congress and the Administration should reflect this laudable goal. We are deeply grateful for the bipartisan recognition of the importance of infrastructure by this Committee, by Congress, by the FCC and the Administration, and by the policies all have implemented to promote wireless broadband deployment.

Thank you again Chairman Walden and Ranking Member Eshoo for holding this hearing and inviting me to testify. I look forward to continuing to work with you and the rest of the Subcommittee to continue to make progress on these very important issues.