Written Testimony of
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Before the House of Representatives
Committee on Energy and Commerce
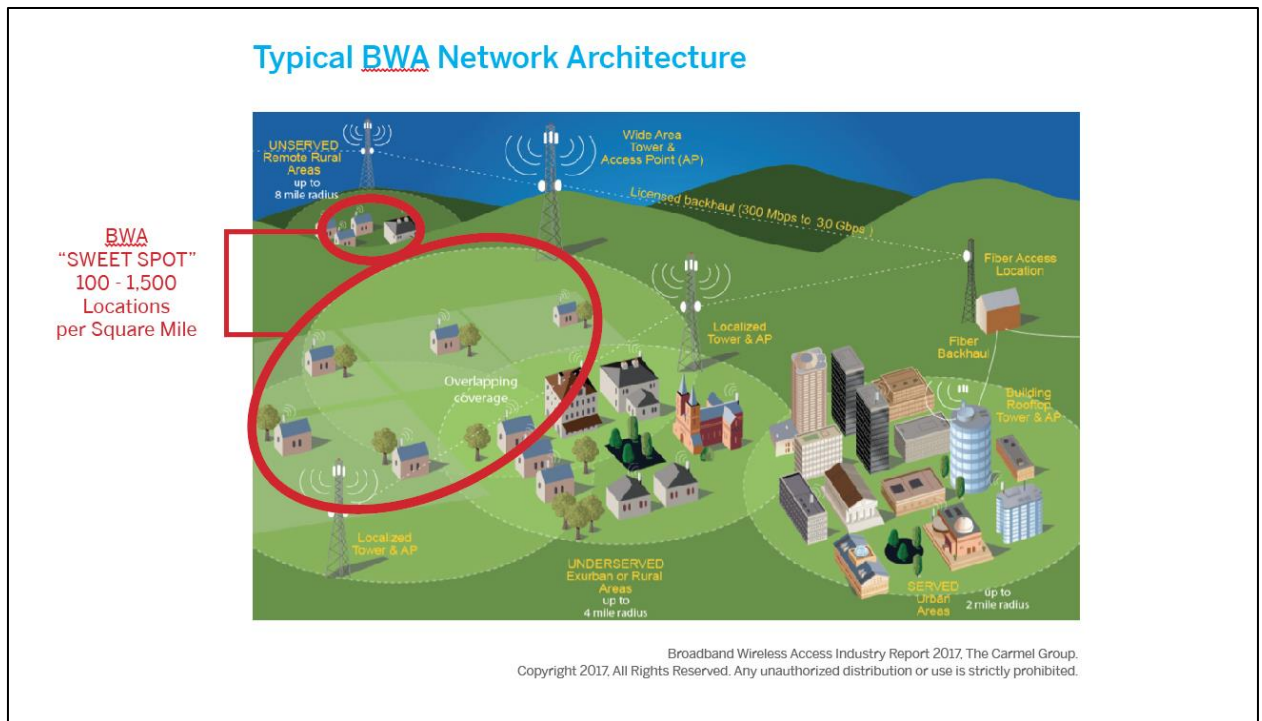**Subcommittee on Communications and Technology**

"Realizing the Benefits of Rural Broadband: Challenges and Solutions"

July 17, 2018
2123 Rayburn House Office Building
Washington, DC

Good morning, Chairman Blackburn, Ranking Member Doyle, and members of the

Subcommittee. I am Claude Aiken, President and CEO of WISPA, the Wireless Internet Service

Providers Association, which is a national trade association of fixed wireless broadband

providers and related businesses. I'm honored and pleased to offer my perspectives on how *fixed*

wireless communications is meeting the challenge of providing broadband service to rural

Americans.

About WISPA and Fixed Wireless Broadband

The U.S. fixed wireless industry is comprised of more than 2,000 mostly small businesses

that deliver reliable, affordable, high-speed broadband to customers in fixed locations such as

residences, businesses, and community anchor institutions. In a typical Wireless ISP (WISP)

network, middle-mile broadband transmissions are sent and received by the provider via fiber or

microwave connections. The last mile is covered via wireless transmitters on towers or other tall

structures like grain silos or water towers and even barns. Customers receive the content via

small antennas that are attached to their premises.

Typical BWA Network Architecture

Broadband Wireless Access Industry Report 2017, The Carmel Group.
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Our operator members serve more than 4 million people across our nation using a mix of unlicensed, lightly licensed, and licensed spectrum bands.[1] Many WISPs also rely on underground and aerial fiber to deploy hybrid wireless-fiber networks where it is economically feasible to do so. Typical download speeds are in the range of 5 to 50 Mbps, and those speeds will continue to improve as technology improves and equipment costs become more competitive. Speeds of up to 1 Gbps are possible with current technology.

Our industry is one of the most dynamic in all of broadband, characterized by rapid, cost-effective deployment, speedy technology innovation, and many credible new entrants. According to the FCC's *2017 Internet Access Report*, residential fixed wireless connections quadrupled

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[1] *See* The Carmel Group, *Ready for Takeoff: Broadband Wireless Access Providers Prepare to Soar with Fixed Wireless*, the BWA Industry Report (2017) ("Carmel Group Report"), *available at* http://www.wispa.org/Portals/37/Docs/Press%20Releases/2017/TCG's_2017_BWA_FINAL_REPORT.pdf (last visited July 5, 2018) ("Carmel Group Report"), at 5.

from June 2012 to June 2016, the largest increase of any terrestrial broadband technology.[2] To date, the WISP industry has served mostly rural and exurban areas where telephone and cable broadband deployments are not cost-effective, but WISPs are emerging as viable competitors in more populated areas as well.

According to our latest member survey, more than 75 percent of WISPA's operator members serve primarily rural areas and have fewer than 2,000 customers. More than half serve fewer than 1,000 customers. Significantly, almost all of our members have fewer than 25 employees, and almost 70 percent have 10 or fewer full-time employees. These are truly small, entrepreneurial companies with a local, rural, and small-town focus.

For reasons that I'll explain in moment, WISPs boldly go where other technologies and companies do not go. According to a 2017 report by the Carmel Group, WISPs can deploy fixed wireless service to residential consumers at about one-seventh the cost of fiber-to-the-premises (FTTP) and about one-fourth of the cost of cable.[3] These favorable economics enable WISPs to serve smaller and more remote communities where it is not cost-effective for wireline technologies to be deployed.

Allow me to give you a real-world example. One of our members with operations in rural Illinois and Missouri estimates the cost of fiber deployment to 100 customers to be about $928,600. Based on an average customer service fee of $69 per month, it would take 11 years for a fiber deployment to deliver a return on investment. However, in the same area, to deliver broadband via fixed wireless technology, our member's cost to deploy to 100 customers is approximately $37,500 – an almost $900,000 savings – and at an average service fee of $39 per

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[2] *See* "Internet Access Services: Status as of June 30, 2016," Industry Analysis and Technology Division, Wireline Competition Bureau (April 2017) ("*2017 Internet Access Report*"), at 18, Fig. 16 (speeds of at least 3 Mbps downstream and 768 kbps upstream as reported on FCC Form 477).
[3] *See* Carmel Report at 12, Fig. 6.

month for speeds up to 150 Mbps, they are in the black in just 10 months. The economics for both the provider *and* the consumer make much better sense.

Moreover, fixed wireless can be deployed much more quickly than wireline alternatives. The basic network elements are a tower or tall building, commercially available radio transmitters and consumer-premises equipment, and, of course, *spectrum.* There's no need to trench or lash fiber or install hundreds of low-power radios on vertical infrastructure, which can be hard to find in many parts of rural America. And WISPs don't need thousands of subscribers to make a business case; often, only a handful of potential customers will justify deployment to an area. That is true of most. WISPs have typically built their networks with their own capital and are profitable and sustainable in a short period of time without government subsidies or incumbent-protecting regulations.

Challenges

Given this industry profile, WISPA members are deeply concerned about – and working actively to address – the challenge of delivering broadband to those 24 million mostly rural Americans who have no broadband choices today. According to the FCC's *2018 Broadband Deployment Report*, 16 percent of rural Americans lack access to fixed broadband service at 10/1 Mbps (the lowest speed tier evaluated by the FCC), and just over 30 percent of rural Americans lack access to 25/3 Mbps service, which is the Commission's benchmark for assessing whether a fixed service provides "advanced telecommunications capability."[4] According to the U.S.

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[4] *2018 Broadband Deployment Report*, 33 FCC Rcd 1660, 1686 (2018); *Id.* at 1667-68, ¶ 21.

Department of Agriculture, 85 percent of persistent poverty counties – those that have been high in poverty for at least 30 years – are in rural areas.[5] Chairman Pai recently summed it up:

> If you live in rural America, you are much less likely to have high-speed Internet service than if you live in a city. If you live in a low-income neighborhood, you are less likely to have high-speed Internet access than if you live in a wealthier area. The digital divide in our country is real and persistent.[6]

As the above statistics and statements confirm, rural consumers are less likely to have access to affordable residential broadband service than their urban counterparts. And this urban-rural digital divide has very negative social and economic impacts on thousands of rural communities, including many represented by the members of this Committee.

A primary reason for the urban-rural digital divide is that wired technologies such as FTTP and cable broadband cannot be cost-effectively deployed in areas with sparse population density.[7] Last year, the *Wall Street Journal* reported that "[r]ural America can't seem to afford broadband: Too few customers are spread over too great a distance. The gold standard is fiber-

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[5] *The Economic Report of the President*, White House Council of Economic Advisors, March 2014 at 233 *available at*
http://www.whitehouse.gov/sites/default/files/docs/full_2014_economic_report_of_the_president.pdf
(last visited July 11, 2014), *citing to* The United States Department of Agriculture, Geography of Poverty *available at* http://www.ers.usda.gov/topics/rural-economy-population/rural-poverty-well-being/geography-of-poverty.aspx#.UurSXhBdXA0 (last visited July 11, 2014).

[6] Remarks of Chairman Ajit Pai at the American Enterprise Institute, "The First 100 Days: Bringing the Benefits of the Digital Age to All Americans," May 5, 2017, at 2. Chairman Pai also recently noted that "[i]n urban areas 98% of Americans have access to high-speed fixed service. In rural areas, it's only 72%. 93% of Americans earning more than $75,000 have home broadband service, compared to only 53% of those making less than $30,000." Remarks of FCC Chairman Ajit Pai at "Broadband for All" Seminar, Stockholm, Sweden, June 26, 2017, at 1.

[7] *See, e.g.*, *Google Curbs Expansion of Fiber Optic Network, Cutting Jobs*, New York Times, Oct. 25, 2016, *available at* http://www.nytimes.com/2016/10/26/technology/google-curbs-expansion-of-fiber-optic-network-cutting-jobs.html?_r=0, ("In June [2016], Google Fiber announced that it was acquiring Webpass, a company that beams high-speed internet into apartment buildings using a fiber-connected antenna. This and other wireless technologies provide a quicker and less expensive way to expand access to faster web speeds"); Hal Singer, *Assessing the Impact of Removing Regulatory Barriers on Next Generation Wireless and Wireline Broadband Infrastructure Investment*, (June 2017) ("Singer Infrastructure Report"), at 32 (estimating that, even if infrastructure barriers are removed, only 71 percent of the nation's premises will be economically viable for fiber).

optic service, but rural internet providers say they can't invest in door-to-door connections with such a limited number of subscribers."[8] A 2017 report provides the following example:

> To illustrate, consider a neighborhood of 100 homes requiring a [fiber] network of 1,000 feet. If the average labor and materials for the labor was $20/foot, then this network would cost $20,000 to build, or $200 per home passed. Now, consider the same neighborhood with 10 homes, but still has the same network requirements to reach them all – the cost per home increases to $2,000, a decidedly less profitable and economically feasible arrangement. *Unless the cost structure or the revenue potential of an area changes, then all else equal, a more rural area will not be built with fiber.*[9]

Clearly, our nation's large FTTP and cable broadband providers cannot be reasonably expected to have the bottom-line interest to provide fixed broadband service to most rural communities that lack access. The numbers just don't work.

But the numbers *do* work for fixed wireless broadband providers. And thus we respectfully submit to you that government policy needs to be modernized and re-balanced to make more room at the table for fixed wireless.

Another aspect of our industry's profile is that we are sensitive to the burdens of intrusive government regulation. Our members are small business, with small workforces, working mostly with their own private capital. Too often, they have been saddled with regulations designed to restrain large telecom providers – regulations that they are ill-equipped to handle and which divert scarce, private capital to compliance efforts that are disproportionate to the problem.

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[8] Jennifer Levitz and Valerie Bauerlein, *Rural America is Stranded in the Dial-Up Age*, Wall Street Journal, June 16, 2017 at A1. The article estimates that it costs $30,000 per mile to install optical fiber.
[9] Singer Infrastructure Report at 14 (emphasis added).

Solutions

How can we be a part of the solution to these challenges? If policymakers want to see more broadband service and choices in rural areas – and more competition and innovation in all areas – we respectfully suggest that the most important thing this Subcommittee can do is support more flexible, shared, and lightly licensed use of under-utilized spectrum bands, which will unleash the power of fixed wireless economics. We also urge you to be vigilant and ensure that regulations designed for large telecom companies are not imposed in the same fashion on small companies.

Thankfully, this Subcommittee has been part of the solution. We commend the work that the Subcommittee has undertaken to lower barriers to infrastructure deployment, streamline regulations, and open up a spectrum pipeline. We applaud the AIRWAVES Act, which would preserve General Authorized Access (GAA) spectrum in the CBRS band, modernize mid-band spectrum policy, and set aside some auction revenues for rural wireless broadband deployment.

Likewise, the Rural Spectrum Accessibility Act begins to address a significant problem that we hear from our members constantly: that secondary markets for spectrum do not work. The ACCESS BROADBAND Act also could help our small businesses that want subsidies, have more streamlined access to them. And, of course, the RAY BAUM'S Act took action on a number of issues that would improve the operation of the FCC and increase our national understanding of broadband deployment and adoption patterns, particularly among groups like our veterans and Tribes.

WISPA also commends the FCC for moving forward on rulemaking proceedings that could – and should – make more spectrum available for rural broadband deployment.

However, a critical spectrum policy matter that is of vital importance to the future of rural broadband remains unresolved in the Citizens Broadband Radio Service band (CBRS, 3550-3700 MHz). In 2015, the FCC adopted innovative rules that opened up 100 megahertz of the CBRS band for commercial users to share with incumbent government users and satellite earth stations. This band is adjacent to the 3650-3700 MHz band that WISPs have used heavily since 2008, and thus it represents a tremendous opportunity for WISPs to expand and upgrade service. The 2015 rules were designed specifically to encourage deployments in rural areas and in a variety of use cases all over the country.

More than 60 percent of our surveyed operator members tell us they have made investments in their networks in reliance on the 2015 rules and the prospect of expanding their reach to more rural consumers. But last summer, at the urging of the mobile wireless industry, the FCC re-opened the rules in a way that could essentially convert the band from one that is available to small businesses serving rural communities to one that would favor only the large mobile companies. Our member survey showed that 60 percent had curtailed investment based on the threat of new rules that would undo many of the benefits that the FCC adopted just three years ago.

Specifically, proposals to greatly enlarge the size of license areas in the CBRS band would be devastating to the WISP industry and would greatly affect the ability of businesses that can make the economics of delivering broadband to rural America work. Large license areas would require local businesses wishing to serve their neighbors to compete against very large companies seeking to serve much larger areas. In other words, a small WISP would need to acquire a license covering huge areas of a state – like a cellular market area or partial economic area – when all it wants and needs is a census tract. It would be like requiring an entrepreneur

who wants to open a kiosk to purchase an entire shopping mall. If we go in that direction, no small businesses will be able to enter the CBRS band; it will become useful for mobile wireless only; and rural consumers will remain on the wrong side of the digital divide.

A more balanced spectrum policy would keep the existing GAA spectrum allocation intact; would reject the idea of using giant geographic areas for all the licenses; and would maintain a role for small, census-tract-sized license areas. This approach would allow a variety of business cases to thrive in this band, including rural broadband, Industrial Internet of Things, private venues and, yes, even mobile wireless and 5G.

Another spectrum band where we are encouraged that the FCC is seeking comment and where we need an inclusive, innovative approach is the C-band, a 500-megahertz swath in the 3700-4200 MHz band. This band is currently severely underutilized by satellite receive stations and can be shared responsibly with fixed terrestrial users. Last year, WISPA helped form the Broadband Access Coalition, representing a broad variety of potential users. We filed a petition for rulemaking with the FCC, seeking to share a large portion of this band with commercial broadband providers, with a goal of promoting gigabit-speed broadband to rural Americans. That's a potential game-changer of critical importance to millions of Americans, and we're pleased that the FCC just last week adopted a Notice of Proposed Rulemaking seeking comment on our proposal, as well as proposals to clear a portion of the band for mobile services. We think the FCC has a golden opportunity to create a "win-win-win" solution here: more spectrum for fixed wireless in rural areas, more spectrum for 5G where it is needed, and protection of existing C-band communications.

We are also pleased that the FCC is looking at making spectrum in the 4940-4990 MHz band available for commercial purposes on a shared basis with public safety and utilities. Again,

this is an underutilized band that can be more efficiently zoned to facilitate rural broadband deployment. We therefore do not agree that auctioning this spectrum would be good public policy. That is a prescription for putting more spectrum in the hands of a few companies and keeping it out of reach of public safety entities and small providers that are willing to invest their private capital now to extend more and better services to rural areas.

Here's another great reason why balanced spectrum policy is so important. Because fixed wireless technology can be deployed at a fraction of the cost of the traditional wireline alternatives, it can reduce the burden on the federal government and the states to provide billions of dollars in subsidies to support build-out. It's easy to see that if service can be deployed at one-fourth to one-seventh the cost, then there is much less need for doling out subsidies to large carriers to offset their much higher costs. With the right spectrum policy, access to private capital for small providers will become easier, and expansion of fixed wireless in rural and small-town America will accelerate. Thus, you can think of modernized, balanced spectrum policy as a much better substitute for costly subsidies.

Speaking of subsidies, WISPA believes that if subsidies are necessary, they should be made available in a technology-neutral and provider-neutral manner. A number of WISPs are participating in the FCC's ongoing Connect America Fund auction, which will make available more than $2 billion to help close the digital divide. But, too often, small WISPs that are serving areas that other providers will not serve without subsidies, are overbuilt by providers receiving state or federal subsidies. To get and keep those subsides, companies with just a handful of employees are stuck with meeting compliance obligations that are designed for much larger companies. We need to work together to find solutions that will prevent small companies that have invested private capital from facing competition from large companies backed with

government subsidies. Fixed wireless technologies can make scarce federal and state dollars go further, and local WISPs are willing and able to deploy in their communities; let's help them do so.

In closing, let me also take this opportunity to commend the Congress and FCC for their continued work on infrastructure reform. That work is critical to ensuring that our members are able to deploy fixed wireless infrastructure in a timely fashion. Less red tape and more partnerships with state and local governments will help ensure that WISPs are able to deploy broadband to more people, and sooner, not later.

Thank you for the opportunity to testify here today, and I look forward to your questions.