Written Testimony of James G. Carr,
on behalf of the Wireless Internet Service Providers Association

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Chairman Wicker, Ranking Member Schatz, and Members of the Committee: My name is Jimmy Carr, and I am the State Outreach Chair of WISPA, the Wireless Internet Service Providers Association. WISPA is the trade association for wireless Internet service providers, or "WISPs." WISPA represents more than 800 providers of fixed wireless Internet service operating in every state in the Nation. I am also the Chief Executive Officer of All Points Broadband, a hybrid-fiber-wireless ISP based in Ashburn, Virginia, serving customers in Virginia, Maryland and West Virginia. I am honored to be here today to share with you WISPA's views on the future of the Connect America Fund (CAF).[1]

Background

Some 2,500 WISPs provide fixed Internet access to approximately 3,000,000 Americans. The vast majority of WISPs operate in rural communities and other sparsely populated areas that wireline providers have declined to serve. In many rural areas, WISPs provide the only source of terrestrial Internet access. Of the 48 percent of rural Americans that have only one option for fixed "advanced telecommunications capability," the local WISP may well be that sole provider.[2]

[1] My testimony does not address the Federal Communications Commission's Mobility Fund, which subsidizes mobile wireless service.

[2] *See 2016 Broadband Progress Report*, FCC 16-6, GN Docket No. 15-191 (rel. Jan. 29, 2016) at 38. The *2016 Broadband Progress Report* also found that 13 percent of rural Americans have multiple options for fixed "advanced telecommunications capability."

Where there is no Internet connectivity, a WISP can provide it, and where there is no competition, a WISP can create it. We compete with Fortune 100 companies and other subsidized incumbents on the basis of customer service and price. Unlike the vast majority of large ISPs that bundle Internet access with video and entertainment services, most WISPs provide standalone Internet service. We provide the connectivity that enables rural customers to take advantage of teleworking, telemedicine, online education, and services like Netflix that are having a disruptive and consumer-friendly impact in the content marketplace. The principal value proposition WISPs offer customers is virtually unlimited data. For example, the median user on my company's most popular residential package downloads more than 100 GB of data each month. This volume of data is unavailable on satellite services and would cost in excess of $700 per month on a mobile hotspot offered by a large wireless carrier.

WISP networks are typically designed with a hub-and-spoke architecture, in which the spoke, or "last-mile" connection between a customer's home and a fiber-optic connection to a major data center is made wirelessly between transmitters at fixed locations. Though a number of WISPs are now deploying in licensed spectrum where it is available, necessary to provide quality service, and cost-efficient for their business, WISPs transmit primarily over unlicensed spectrum in various bands, including 900 MHz, 2.4 GHz, and 5 GHz, as well as the "lightly-licensed" 3.65 GHz band. Using unlicensed and lightly-licensed spectrum substantially reduces our costs of deployment and enables us to expand rapidly to meet consumer demand. Significantly, WISPs are able to provide affordable broadband service to rural and remote areas that cannot be cost-effectively served by wired technologies because the relatively low population density does not support the capital expense of fiber-to-the-home, cable, and other wireline platforms.

Over the past few years, manufacturers of fixed wireless technology have dramatically increased the speed and capacity of equipment, while improving unit economics. The global equipment ecosystem is stronger and more dynamic than it has ever been. Companies like Cambium, Ubiquiti, Mimosa and Adaptrum are revolutionizing the space. They are targeting a huge market – the 2/3rds or so of the global population who have never been served by a wire, and never will. Fixed wireless operators in America are the beneficiaries of massive global R&D spending on improved fixed wireless capabilities.

Under any definition, nearly all of WISPA's members – including my company – are small businesses. Our smallest members are individual owner/operators that are providing connectivity to their friends and neighbors in a previously unserved rural area. America's largest WISP is Rise Broadband, with 800 employees serving approximately 200,000 customers in sixteen states. My company, All Points Broadband, is somewhere in the middle, with twenty employees serving approximately 3,500 customers.

In many ways, my company is also an example of the evolution that is taking place in the fixed wireless industry. As a result of the continuous and exponential improvements in the capability of fixed wireless equipment over the past few years, operators can now realize significant economies of scale, which in turn enables us to expand our coverage areas and continuously reinvest in our networks. More than ever before, WISPs of all sizes are attracting private capital to address what policymakers at every level and across the political spectrum agree is a critical need for our nation – closing the digital divide.

All Points Broadband commenced operations in the mid-Atlantic in November of 2014, and has invested more than $6.5 million to upgrade and expand our network in our first 14 months of operations. We have built our subscriber base through acquisitions, organic growth

and better service, such as faster speeds that support our customers' desire to stream video through over-the-top services such as Netflix and Hulu. We serve fixed wireless customers from several hundred access points that are located on large commercial towers, municipal water tanks, commercial buildings, grain silos, and other vertical infrastructure. While fixed wireless is our primary access technology, before we make any major capital investment, All Points Broadband considers whether another technology, such as fiber-to-the-home will be cost-effective over the deployment lifetime, and we are beginning to install fiber in more suburban areas where our existing customer base and market projections justify the investment The same trend is occurring throughout our industry. The number of WISPs that are investing to convert wireless customers to fiber is growing every day.

The vast majority of WISPs, including All Points Broadband and the companies we acquired, have built their networks without the benefit of any federal subsidies – no Universal Service Fund (USF) support from the FCC, no broadband stimulus funding from NTIA or USDA, no Rural Utilities Service support. The primary reasons for this are three-fold. First, with respect to USF, the FCC has interpreted the Communications Act to limit eligibility to providers of "telecommunications" – in other words, providers of voice service that met certain federal and state requirements. Second, until recently, the FCC has made the policy choice to favor incumbent carriers for billions of dollars in funding. Third, the reporting obligations and administrative burdens associated with government programs have a disproportionate impact on smaller, entrepreneurial companies, many of which simply do not have the resources to participate in, and comply with, regulatory and subsidy schemes with origins in a bygone era when the only service was voice, which was only provided by wireline monopolies.

In November 2011, the FCC transformed its USF rules. In the four years since those rules became effective, the FCC has pledged and provided billions of dollars of support to a single class of "telecommunications" providers – the price cap carriers, the largest of the large telephone companies. The FCC's stated rationale for this decision was that "[m]ore than 83 percent of the approximately 18 million Americans that lack access to residential fixed broadband at or above the Commission's broadband speed benchmark [of 4 Mbps down/1 Mbps up] live in areas served by price cap carriers."[3]

At first glance, there is logic to directing support to areas where upgrades were most needed; but consider the signal this sends to decision-makers and to the capital markets. In effect, the program is rewarding those multi-billion dollar, legacy monopolies for their unwillingness or inability to deploy fixed broadband in the very areas where they already have plant and customers, giving them a huge advantage over potential competitors. Meanwhile, smaller telephone companies, cooperatives, WISPs and others were left on the sidelines and at an even greater competitive disadvantage. The program is subsidizing and entrenching incumbent monopolies at the expense of innovation and competition.

The Rural Broadband Experiment Program

Last year, the FCC implemented the Rural Broadband Experiment program that made up to $100 million in support available to broadband providers pledging to provide voice and broadband services to unserved areas of the country.[4] The support was awarded to those companies that pledged to meet prescribed voice and broadband speed, latency, usage and

[3] *Connect America Fund*, 26 FCC Rcd 17663, 17673 (2011) ("*USF/ICC Transformation Order*"). In the *2016 Broadband Progress Report*, the FCC found that 34 million Americans lack access to fixed broadband speeds of at least 25 Mbps down/3 Mbps up. *See 2016 Broadband Progress Report* at 33.

[4] *See Connect America Fund*, 29 FCC Rcd 8769 (2014) ("*Rural Broadband Experiment Order*").

pricing criteria, in the most cost-effective manner, and without regard to the specific access technology to be used. Of the nine companies that have been authorized to receive support through this one-time program, two were WISPs that will be deploying networks that use *unlicensed* or lightly-licensed spectrum to serve customers. One of these, a company called Skybeam that is part of Rise Broadband, has been designated to receive almost $17 million to support 10 projects in rural, unserved areas of Illinois, Iowa, Kansas, Nebraska and Texas. Skybeam committed to offer voice and broadband at speeds of 25 Mbps down/5 Mbps up over a network capable of 100 Mbps down/25 Mbps up. The other WISP is First Step Internet, which was awarded more than $400,000 to provide 10 Mbps down/1 Mbps up service in portions of rural Washington state and Idaho. WISPs account for more than half of the funds that have thus far been allocated to program recipients.[5] Other recipients include small telephone companies, cooperatives and electric utilities.

In addition to having their technical proposals fully vetted by the FCC's engineers, winning bidders also had to submit letters of credit from an insured, investment-grade top-100 bank for the full amount of the support level received to date. A number of bidders were unable to obtain letters of credit and the FCC did not approve waivers seeking additional time to provide the letter of credit or to relax the requirements. Winning bidders also were required to apply for and be designated as eligible telecommunications carriers (ETCs) through a state approval process. By requiring only winning bidders to become ETCs – and thus "telecommunications" providers eligible for Rural Broadband Experiment support – unsuccessful bidders were rightly spared from having to spend time and money to become ETCs, and state public utility

[5] *See 2016 Broadband Progress Report* at 55 (noting that as of December 11, 2015, the FCC had authorized approximately $34 million in Rural Broadband Experiment support).

commissions did not have to waste administrative resources processing applications from unsuccessful bidders.

The FCC intended the Rural Broadband Experiment program to provide real-world data that would inform future policy decisions,[6] and despite some problems with eligibility requirements, the program has so far been a success. There are indeed several lessons from the program that WISPA believes should be taken into account as the FCC finalizes the Connect America Fund Phase II competitive bidding process. The most important conclusion is that fixed wireless broadband delivered over unlicensed and lightly licensed spectrum is a cost-effective way to provide universal broadband service at the FCC's thresholds. Another important conclusion is that by working with industry, the FCC can develop reasonable gating and financial eligibility requirements that will promote greater competition in the auction without increasing the risk to the American taxpayer.

The CAF Program – Recommendations

Before explaining our specific recommendations, I first want to acknowledge the FCC's Wireline Competition Bureau for their transparency in briefing stakeholders about their suggestions for the CAF auction and their willingness to work with WISPA in considering changes to the framework that will benefit small businesses and encourage greater competition. We also appreciate the engagement WISPA has had with the FCC Commissioners and their staff.[7]

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[6] *See Rural Broadband Experiment Order* at 8770 ("We will use these rural broadband experiments to explore how to structure the Phase II competitive bidding process in price cap areas and to gather valuable information about interest in deploying next generation networks in high-cost areas").

[7] *See, e.g.*, Letter from Stephen E. Coran, Counsel to WISPA, to Marlene H. Dortch, FCC Secretary, WC Docket No. 10-90 (filed Nov. 23, 2015) ("WISPA Ex Parte Letter"). A copy of this letter is included with my testimony.

The CAF competitive bidding process will award up to $175 million per year to eligible bidders to support broadband deployment in areas where price cap carriers have declined support, and WISPA's members have expressed interest in participating. We understand the FCC is working on an order that will establish the framework for the auction and will, later this year, open a proceeding to establish auction rules and procedures. WISPA has been engaged in the process and will continue to do so on behalf of our members. In considering our recommendations, we hope the FCC will honor the promise it made in the 2011 *USF/ICC Transformation Order*: "If the incumbent [price cap carrier] declines that opportunity in a particular state, support to serve the unserved areas located within the incumbent's service area will be awarded by competitive bidding, *and all providers will have an equal opportunity to seek USF support*."[8]

Cost-Effective and Technology-Agnostic

The principal objective of the Connect America Fund should be connecting as many unserved Americans as possible in the most cost-effective way possible. That is, the limited resources available to the FCC should be allocated in a way that will provide a threshold level of broadband service to as many end users as possible that currently do not have access. According to the *2016 Broadband Progress Report* that the FCC released less than a week ago, "[t]here is also a significant disparity between rural and urban areas, with more than 39 percent of Americans living in rural areas lacking access to 25 Mbps/3 Mbps advanced telecommunications capability, as compared to 4 percent of Americans living in urban areas."[9] Further, "25 percent of rural Americans lack access to 10 Mbps/1 Mbps fixed terrestrial broadband services compared

[8] *USF/ICC Transformation Order* at 17731 (emphasis added).

[9] *2016 Broadband Progress Report* at 33-34.

to 2 percent of urban Americans, and 19 percent of rural Americans lack access to 4 Mbps/1 Mbps fixed terrestrial broadband service compared to 2 percent of urban Americans."[10] With a well-conceived framework for CAF Phase II, WISPs and other competitive providers can do more to help bridge this urban-rural divide.

WISPA's primary concern is that the FCC's framework must not favor one technology over another, but rather encourage maximum competition among all bidders that can meet uniform thresholds for broadband speed, latency, usage and pricing, without regard to the specific technology that the bidder plans to deploy. Anything less would be inconsistent with the FCC's promise that all bidders will have an "equal opportunity."

Based on information that the Wireline Competition Bureau has shared with WISPA and other stakeholders, we understand that FCC staff has recommended that CAF Phase II support be divided into three categories. *Category 1* would be reserved exclusively for bidders proposing to deploy fiber-to-the home. *Category 2* would be for bidders whose deployments will meet, in general terms, each of the following three criteria: speeds of at least 25 Mbps down and 3 Mbps up, round-trip latency of 100 milliseconds or better and high data caps, *and* whose deployments will use licensed spectrum. In the unlikely event there is any funding remaining from the first two categories, *Category 3* would be for bidders who use unlicensed spectrum, or who meet only two of three requirements for speed, latency and data set out in Category 2.

WISPA has two significant concerns regarding the proposed structure of the reverse auction, which will be shared by anyone who believes that limited resources should be allocated as efficiently as possible.

[10] *Id.* at 34 n.242.

First, the proposed requirement that Category 2 bidders use licensed spectrum will exclude the vast majority of fixed wireless providers from competing in the auction and will foreclose participation by those who can deploy in the most cost-effective manner, meaning that the limited number of other bidders will receive more support to serve fewer unserved locations. For many years, WISPs have successfully used unlicensed and lightly licensed spectrum to provide service to millions of Americans. Most operate in rural areas where there is sufficient and uncongested unlicensed spectrum that can be used to connect Americans to the Internet. What better use of this public resource is there than connecting rural and unserved Americans in a cost-effective manner? Unlicensed spectrum is a public resource that is already available, and is already being used to achieve this public purpose. What sense does it make to exclude from the toolkit for the CAF auction? The funding provided by the FCC to Skybeam and First Step Internet in the Rural Broadband Experiment program is an excellent case in point. Both of these companies' technology platforms were vetted by FCC technical staff who concluded that unlicensed spectrum could be used to meet the requirement of providing 100% coverage in the relevant service areas. In fact, price cap carriers that have accepted CAF funds are not bound to any particular technology – they can deploy cost-effective unlicensed fixed wireless technology if they want, so long as they provide 10 Mbps down/1 Mbps up and meet other technology-agnostic performance criteria.[11]

WISPA's second concern is the possibility that the FCC will adopt a "waterfall" funding structure, in which all Category 1 bids are awarded before any funds are made available to Category 2 bidders, and then all Category 2 bids are awarded before any funds are made available to Category 3 bidders.

[11] *See Connect America Fund*, 29 FCC Rcd 15644, 15649 (2014).

The purpose of the CAF auction should not be promoting one access technology over another, but rather advancing the objective of ensuring that all Americans have access to adequate service. Fiber is indeed an excellent access technology – All Points Broadband and many other WISPs rely on fiber to serve their customers, and are accelerating their fiber-to-the-home deployments. However, relatively speaking, fiber is a very expensive technology, and in an environment where resources are finite, the goal of providing service that meets the FCC's definition of "advanced telecommunications capability" to as many Americans as possible, on the one hand, and of providing fiber-to-the-home to as many locations as possible, on the other, are mutually exclusive – this is an undeniable economic reality. Further, a structure that prioritizes fiber-to-the-home may disadvantage the most rural locations and communities, where the economics of this technology are frequently the most challenging. Where "advanced telecommunications" as interpreted by the FCC can be delivered via fixed wireless or another technology at a lower cost than fiber, the auction structure should not stack the deck before bidding has even begun. Rather, the auction should provide support for the group of bidders that can meet the FCC's performance criteria and serve the most Americans in the most cost-effective manner. The FCC successfully used this approach in the Rural Broadband Experiment program, and there is no reason to deviate from that practice.

Auction Eligibility

Another key aspect of the competitive bidding framework is the pre-auction eligibility criteria. The FCC staff explained that it would be recommending that bidders must submit audited financial statements as a pre-condition to participating in the auction. But, as WISPA has pointed out, many small businesses do not have audited financial statements, and should not be required to spend $25,000 or more for an audit on a speculative basis *before* the auction, just

to participate. To address this problem, WISPA and others believe the FCC should establish a means by which small providers with fewer than 25,000 broadband connections will be permitted to certify before the auction that they will provide audited financial statements within a certain period *if and after* being selected for support. This is similar to the approach that the FCC took with regard to ETC designation in the Rural Broadband Experiment program. WISPA agrees that winning bidders that are unable to provide the audited financials within a reasonable period of time after being selected for support should be subject to reasonable monetary forfeitures.

Post-Auction Financial Requirements

The FCC required Rural Broadband Experiment recipients to submit a letter of credit from a federally insured top-100 bank with a BBB- credit rating. If a bidder defaults on a build-out or other program requirements, the FCC can suspend support and draw on the letter of credit to cover the amount of disbursed support. As a threshold matter, the requirement to maintain a letter of credit to protect the taxpayer is certainly reasonable. However, applying lessons from the Rural Broadband Experiment, WISPA is urging the FCC to modify the specifics of the letter of credit requirement for the CAF II reverse auctions.

Letters of credit have annual carrying costs (around four percent) and appear as liabilities on a company's balance sheet – essentially, they are viewed as a loan that limits a support recipient's borrowing capacity on a dollar-for-dollar basis, although the winning bidder never receives the letter of credit proceeds. In the Rural Broadband Experiment program, a recipient is required to maintain a letter of credit for the entire amount of support it received and for the entire term of the support, regardless of progress towards build-out. This structure increases the recipient's expenses and reduces its debt capacity for the entire life of the funded project –

despite the fact that the risk to the taxpayer decreases as the recipient draws support and satisfies its build-out requirements. Once build-out is complete, there is no benefit to the taxpayer by continuing to increase expenses and limit the borrowing capacity of a support recipient that has satisfied its obligations to the fund. We believe the letter-of-credit requirements for the CAF process should be modified to address this unnecessary constraint on support recipients.

Here are WISPA's specific proposals with respect to the letter of credit requirement:

First, the FCC should expand the list of eligible banks to enable greater participation by smaller broadband providers in a manner that does not compromise the integrity of the CAF program. WISPA and the American Cable Association have developed a detailed proposal and look forward to discussing it with the FCC in the very near future.

Second, the FCC should give winning bidders at least six months to obtain and submit the letter of credit.

Third, the amount required to be covered by the letter of credit should decline over time as the amount of remaining support declines. This will reduce the recipient's liabilities and increase its borrowing power to invest in network expansion and upgrades.

Fourth, the letter of credit should not be required to be maintained beyond the date on which build-out requirements have been met.

Adopting these recommendations will assure the FCC's interest in recovering support funds in the unlikely event of a default and will increase participation in the auction, especially among small providers.

Auction Design

WISPA's detailed views on the design of the auction are not yet fully formed, but there are a few high-level principles that should apply. First, the selection criteria should prioritize

cost-effectiveness – which bidder can serve the greatest number of unserved locations in the geographic area at the lowest cost. Second, the areas available for bid should be determined by information reported on the FCC Form 477 that is as close to the beginning of the auction as possible. This will mitigate the problem that arises when old information is used and support is provided to areas that are already served by unsubsidized providers. If there is one thing that policymakers, taxpayers, and investors of private capital should agree on, it is that Federal subsidies should not be awarded to fund overbuilding of privately funded networks that are already providing service. Third, the bidding process should be simple and short. A complicated process requiring an army of economists, lawyers and game theorists to navigate will not promote participation by entrepreneurial providers, and will expose bidders to a long anti-collusion period that will chill transactional activity. And fourth, geographic areas should be right-sized – no smaller than a census block, no larger than a county.

WISPA looks forward to providing its further and more specific input to the FCC when staff engages stakeholders to share and discuss their ideas and suggestions for a successful reverse auction.

Ongoing Support for Price Cap Carriers

In August 2015, the price cap carriers made their elections to accept $1.5 billion annually in CAF Phase II support over the next six years – $9 billion in total. The areas where that support is available are mostly set, and the FCC generally will not alter the support over the six-year term even if unsubsidized carriers subsequently serve the areas identified for funding. This acts as a disincentive to private investment, network expansion and competition in the broadband market. Unsubsidized providers will be reluctant to expand service into areas designated for support, even though the subsidized incumbent may not intend to build out to the area for several

years. And in cases where the unsubsidized provider does expand into funded areas, they will be competing with a large carrier that has the benefit of federal support. The CAF program has created enough perverse incentives—it should not continue to perpetuate monopolies and discourage competition.

To address these anti-competitive market effects, WISPA suggests that the FCC commence a proceeding to consider whether CAF support provided to price cap carriers should be scaled back based on post-election service by an unsubsidized competitor. The FCC could rely on FCC Form 477 and re-visit its initial support determination at regular intervals. In lieu of funding served areas, the FCC would reclaim the allocated support and restore those funds to the universal service fund for later distribution through the Remote Areas Fund or another program.[12]

Remote Areas Fund

Regarding the Remote Areas Fund, in November 2011 the FCC allocated up to $100 million for fixed broadband deployment to "extremely high cost" areas. The FCC has taken no action to implement rules for this fund, which would support broadband deployment to those areas that are deemed to be the most expensive to serve. Through fixed wireless technology, WISPs are well-equipped to deploy to these areas. We urge the FCC to propose rules for the Remote Areas Fund at the earliest opportunity.

[12] In 2014, the FCC acknowledged that there may be variances between the number of unserved locations its model predicted and the actual number of unserved locations in a given area. *See Connect America Fund*, 29 FCC Rcd 15644, 15659 n.88 (2014). The FCC asked price cap carriers to inform FCC staff if it discovered any differences. WISPA notes and appreciates Frontier's recent letter to the FCC identifying supported areas where there are fewer unserved locations than the FCC's model, which will result in adjustment of Frontier's service targets and a pro rata reduction in funding. *See* Letter from Michael Golob, Frontier Senior Vice President, Network and Engineering Integration, to Marlene H. Dortch, FCC Secretary, WC Docket No. 10-90 (filed Dec. 30, 2015).

Bringing the Communications Act into the 21st Century

Finally, the most important and effective step that could be taken to improve availability and competition in the broadband market, and to foster greater innovation, is within Congress' power. The Communications Act is long overdue for an overhaul. The current framework draws distinctions on the basis of which access technology is used to provide the service. In an all-IP world, these distinctions make no sense and create ripples in the regulatory environment that have unintended and illogical results, many of which are playing out in the Connect America Fund process.

For example, almost half of American households choose not to subscribe to a landline phone service, and yet, as a society we are using a requirement that voice and broadband service be available on the same bill from the same provider to determine where to allocate billions of dollars of subsidies, and who will receive them. This makes no sense. As everyone knows, if you have an Internet connection, you can have phone service. What's more, if you don't like the phone service your ISP offers, you can use Vonage, Magic Jack, or dozens of other providers who are competing with one another to earn your business every day.

It is time to re-write the Communications Act to eliminate these accidents of history and treat functionally equivalent services in the same way. And if rewriting the Communications Act is too much to achieve in the near term, WISPA asks this Committee and the Congress to eliminate the voice requirement or to establish a standalone broadband fund that does not have a voice requirement and allows all providers and technologies to participate on an equal footing. We stand ready to work with you to craft appropriate legislation.

Thank you, and I look forward to your questions.