WISPA – *Broadband Without Boundaries* thanks the Subcommittee on Communications and Technology for holding today's hearing, "Strengthening American Leadership in Wireless Technology."

WISPA represents the interests of hundreds of small and medium-sized fixed wireless internet service providers. WISPA members deliver broadband connectivity to approximately 10 million consumers, businesses and industrial users, first responders, and community institutions, often in areas of the country where other providers have declined to invest. To provide their reliable broadband services, fixed wireless providers frequently use unlicensed, shared and exclusive-use licensed spectrum at low-band, mid-band and high-band frequencies, predominantly in rural, unserved, and underserved areas. In many rural and remote areas, these providers offer the only terrestrial source of fixed broadband access. In areas with other broadband options, they provide a community-based alternative that benefits customers by fostering competition, thereby lowering costs and improving the quality of broadband services.

The Subcommittee notes in its hearing memo that "*Spectrum is a finite resource, meaning we cannot create more spectrum in the atmosphere. As technology advances, however, spectrum frequencies can be utilized more efficiently and effectively."* WISPA could not agree more. To that end, WISPA offers the following statement to help the Subcommittee understand the importance of maintaining a proper balance of exclusively licensed, licensed-by-rule and unlicensed spectrum to strengthen America's leadership in wireless technology.

WISPA members use every tool to deliver internet access, including fixed wireless over licensed and unlicensed spectrum, fiber and LEOs. With respect to wireless spectrum, WISPA policy priorities have centered on the following goals:

- Ensuring a balanced spectrum approach that makes spectrum available on a licensed, unlicensed, and shared approach, with an increasing emphasis on shared spectrum managed by databases or dynamic spectrum coordination systems to ensure incumbents are protected from harmful interference.
- Where licenses are exclusive via auction, making spectrum available in smaller geographic lots and smaller spectrum segments to provide meaningful opportunities for smaller companies to acquire spectrum.
- Fostering opportunistic use when and where spectrum is not being used.

Fixed Wireless Access (FWA) networks create broadband connectivity via radio spectrum. A provider places a radio/transceiver, which is connected to the internet, on a tower or other elevated infrastructure, and then directs it to a residence or group of residences that are fitted with small transceivers to complete the two-way connection. Spectrum carries data traffic to and from customers, avoiding significant cost, time to deployment and complexity associated with

wiring each residence individually. In fact, the capital cost to deploy FWA networks can be as little as one-tenth of the cost of fiber and be deployed in a matter of weeks to months, instead of years for fiber networks.

FCC data show that there are approximately 1,200 WISPs delivering reliable broadband service to rural, under-resourced and Tribal parts of the country. Core tools in their arsenal include unlicensed fixed wireless access (ULFW) – largely operated in the 900 MHz, 2.4 GHz, 5 GHz, 6 GHz and 60 GHz bands – and licensed-by-rule/shared spectrum in the Citizens Broadband Radio Service (CBRS)/3.5 GHz band and 6 GHz band. Reliable fixed wireless broadband connectivity – from 100/20 Mbps to symmetric gigabit speeds – is widely available and in everyday use throughout America's WISP networks.

The following are key points for policymakers to consider regarding ULFW and licensed-by-use (such as CBRS):

1. Unlicensed spectrum can be more reliable than licensed spectrum

The fact that the FCC has allocated a license to a provider does not mean that the provider will have unfettered and continuous access to the spectrum band during the license term. Frequency agility across a large amount of spectrum enables providers to find "clean" channels, which is not possible with licensed channels that have more limited channel sizes bounded by specified upper and lower frequency edges.

Furthermore, licensed and unlicensed equipment often use the same Software Defined Radio. Broadband service using entirely unlicensed spectrum has the flexibility to move to other channels/frequencies, whereas broadband service using licensed spectrum has very little flexibility. If there is clutter, terrain, environmental or other noise issues, licensed service cannot freely move to "clean" frequencies. Lastly, several effective mitigation techniques used by unlicensed spectrum have not been incorporated into licensed bands.

2. Reliability is a function of network design, not whether spectrum is licensed or unlicensed

Ten million Americans obtain broadband service over FWA. Low churn rates in FWA networks – both licensed and unlicensed illustrate reliability and is a key performance indicator for the unprecedented amount of private capital that has fueled FWA expansion in the several years. The FCC has made, and will continue to make, unlicensed spectrum available for fixed wireless service, creating "cleaner" spectrum to meet present and future demand.

In addition, rural areas are less "noisy" and thus less susceptible to harmful interference. When interference to and from unlicensed networks exists, providers employ a toolbox of solutions for management, including frequency agility, which enables providers to find "clean" open

channels; network densification, in which the provider uses all or almost all the unlicensed spectrum in a given market; antenna use and directionality, noise cancellation, among others.

3. A CBRS-like spectrum sharing model/automated sharing techniques should be used to free up limited spectrum elsewhere

The CBRS model shares limited spectrum with incumbents already in the band through a three-tiered operation scheme that protects incumbents while opening the band to other commercial uses. CBRS is technology neutral, allowing for the right solution for each unique environment.

CBRS is designated by the FCC as:

- Priority Access Licensee (PAL) licensed in frequencies 3550-3650 MHz
- Generally Authorized Access (GAA), licensed by rule in frequencies 3550-3700 MHz (with 3650-3700 MHz exclusively GAA).

Sharing is achieved through Shared Access System (SAS) technology. The SAS manages spectrum allocation and interference protection dynamically, assigning spectrum based on priority and availability.

- Ensures that Tier 1 incumbents are protected and coordinate between PAL and GAA users.
- Continuously monitors and adjusts spectrum usage based on real-time conditions.
- SAS systems interact with Environmental Sensing Capability (ESC) sensors, which detect incumbent activity (e.g., Navy radar) and notify the SAS.
- The SAS reassigns frequencies or adjusts power levels for other users to prevent interference.

4. Smaller Spectrum Blocks and License Areas Are Key to the Successful CBRS Model

Without access to additional spectrum, small-to-medium sized businesses – like WISPs – may be precluded from bridging the digital divide. The CBRS model provides a foundation for smaller-sized auction areas, such as counties or census tracts, but preserves license-like attributes.

The CBRS auction design brought more than 270 applicants, with 228 winning bidders, 70 of which were WISPA members. Exclusive licenses were auctioned in 10-megahertz spectrum blocks by county. This contrasts with typical spectrum auctions, which are much larger and more expensive – such as 20-megahertz spectrum blocks covering Partial Economic Areas or larger – which favor large, national providers who serve primarily dense urban-to-exurban marketplaces.

In addition, allowing for true spectrum sharing between federal and non-federal users empowers small broadband providers to deploy robust services to unserved and underserved areas. It also demonstrates the ability to fully utilize spectrum rather than leave much of it lying fallow – as has occurred in many prior spectrum allocations.

Americans have become safer, more prosperous and more deeply connected to each other from the benefits of commercially available spectrum. With little useable greenfield spectrum available, it is incumbent on Congress to guide policy which identifies new spectrum and/or avenues to access fallow spectrum, and then expeditiously work with all public and private stakeholders to unleash its full potential.

WISPs have played an inestimable role in bringing reliable broadband to millions of Americans in, or adjacent to, the digital divide. Meaningful access to more spectrum puts more tools in the hands of WISPs and the communities they serve. Congress can achieve this through a proper balance between exclusively licensed, licensed-by-rule and unlicensed spectrum regimes. WISPA appreciates the opportunity to provide this statement to the Subcommittee and looks forward to working with Congress to ensure that all Americans have access to fast, reliable broadband, no matter where they live.