Before the  
Federal Communications Commission  
Washington, D.C. 20554

In the Matter of )
) GN Docket No. 12-354
Amendment of the Commission’s Rules with )
Regard to Commercial Operations in the )
3550-3650 MHz Band )

To: The Commission

REPLY COMMENTS OF  
THE WIRELESS INTERNET SERVICE PROVIDERS ASSOCIATION

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TABLE OF CONTENTS

Summary ........................................................................................................................................ iii
Discussion ....................................................................................................................................... 2
I. THE COMMISSION SHOULD DEFINE “USE” BASED ON A MINIMUM THRESHOLD OF ACTUAL END-USER DATA TRANSMISSION .............................................. 2
II. THE COMMISSION SHOULD ALLOW LEASING, PARTITIONING AND DISAGGREGATION OF PALS UPON NOTIFICATION TO THE SAS ...................... 6
III. THE COMMISSION SHOULD RIGHT-SIZE EARTH STATION PROTECTION ZONES TO ENABLE MORE EFFICIENT SPECTRUM SHARING ................................................................. 11
Conclusion .................................................................................................................................... 12
Summary

The Wireless Internet Service Providers Association (“WISPA”) submits these Reply Comments to address the initial Comments filed in response to the Second Further Notice of Proposed Rulemaking in this proceeding.

First, the Commission should adopt WISPA’s engineering-based definition of Priority Access “use” to determine when and where opportunistic General Authorized Access use can occur. Specifically, WISPA continues to believe that the Spectrum Access System (“SAS”) can enforce a “use” definition predicated on a minimum of 300 packets for each five-minute time interval. Other proposals would unwisely authorize warehousing by “license-savers” or, worse, would sanction exclusive non-use – the antithesis of the regulatory scheme the Commission adopted for the Citizens Broadband Radio Service.

Second, the Commission should enable Priority Access licensees to lease, partition and disaggregate their licenses under streamlined notification procedures that will not burden the Commission’s scarce administrative resources. Those few commenters opposing secondary market transactions seek to reduce flexibility and instead insert their predictive and premature view that creating smaller geographic or spectrum units would negate the benefits of leasing, partitioning or disaggregation.

Third, WISPA believes that the Appendix D methodology is a good starting point for defining FSS earth station protection zones, and that the additional SAS inputs can further refine contour parameters. WISPA also believes that the Wireless Innovation Forum’s Spectrum Sharing Committee can also contribute to this process. The Commission should not, however, require End-User Devices to communicate directly with the SAS and should not restrict End-User Devices to a prescribed maximum deployment radius from the CBSD, a result that would be both unnecessary and costly to implement.
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The Wireless Internet Service Providers Association (“WISPA”), pursuant to Sections 1.415 and 1.419 of the Commission’s Rules, hereby submits these Reply Comments in response to the initial public input the Commission has received concerning its April 21, 2015 Second Further Notice of Proposed Rulemaking (“FNPRM”).

On July 15, 2015, WISPA, along with about two dozen other parties, filed Comments addressing three discrete issues upon which the Commission sought additional input in the FNPRM. WISPA urged the Commission to adopt rules (1) defining “use” by Priority Access licensees based on an objective and measurable engineering standard, (2) permitting secondary market leasing, partitioning and disaggregation of Priority Access License (“PAL”) spectrum subject only to appropriate notification requirements, and (3) conforming and “right-sizing” FSS protection zones across the 3550-3700 MHz band. This combination of rules would ensure greater flexibility and spectrally efficient use of the entire 150 megahertz band by PALs and

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GAA users without increasing the potential for harmful interference to incumbents. As further
described below, the record established by initial commenters strongly supports most of these
positions, and the Commission therefore should adopt each of them.²

Discussion

I. THE COMMISSION SHOULD DEFINE “USE” BASED ON A MINIMUM
THRESHOLD OF ACTUAL END-USER DATA TRANSMISSION

In the Report & Order, the Commission made plain its conclusion that “Priority Access
Licensees should not be permitted to exclude other authorized users unless and until their
networks are in use.”³ In the FNPRM, it sought further input on how such “use” should actually
be defined.⁴

A majority of the commenters addressing this key issue support the view that an
engineering definition of “use” is appropriate.⁵ For example, Microsoft states that “the

² In its Comments, IEEE 802.11 complains that, because of exclusion zone restrictions and
uncertainty over LTE-U/LAA development, “the additional spectrum cannot be used by the
WLAN community to provide the hundreds of millions of WLAN users with a viable solution to
congestion in existing unlicensed spectrum.” Comments of IEEE 802.11, GN Docket No. 12-
354 (filed July 13, 2015) at 4. By contrast, the record demonstrates strong interest in the band
from WISPs, mobile wireless providers, potential newcomers like Google and the public interest
community, and shows that the purported barriers to technology development will not impede
those that plan to rely on proprietary equipment or standards outside of IEEE 802.11’s
specialized interest.

³ Report & Order at 25 (¶ 73).

⁴ See FNPRM at 123 (¶ 419).

⁵ See Comments of the Dynamic Spectrum Alliance, GN Docket No. 12-354 (filed July 15,
seq.; Comments of InterDigital, Inc., GN Docket No. 12-354 (filed July 15, 2015) at 3-4;
Wireless Comments”) at 6-7; Comments of Microsoft Corporation, GN Docket No. 12-354 (filed
July 15, 2015) (“Microsoft Comments”) at 2-5; Comments of the Open Technology Institute and
Public Knowledge, GN Docket No. 12-354 (filed July 15, 2015) (“OTI/PK Comments”) at 3-8;
Comments of Sony Electronics Inc., GN Docket No. 12-354 (filed July 15, 2015) at 1-2;
Comments of the Wi-Fi Alliance, GN Docket No. 12-354 (filed July 15, 2015) (“Wi-Fi Alliance
Commission’s definition of ‘use’ of Priority Access channels should be engineering-based and one that promotes maximum opportunistic access in the 3.5 GHz band, where the Spectrum Access System (“SAS”) plays the central role.6 Federated Wireless adds that “use of a SAS-based engineering definition will facilitate greater flexibility and continued innovation in the band.”7

WISPA’s particular proposal would consider a PAL channel to be available for opportunistic GAA use based on both temporal and geographic criteria. A channel would be considered available, i.e., not “in use,” when a registered PAL CBSD has not received 300 end-user data packets within a five-minute interval.8 To determine where within a census tract GAA use would then be permitted, the SAS would establish a polygon identifying the expected coverage area where the PAL is being used based on the engineering data (EIRP, antenna gain and pattern, etc.) that each CBSD provides to the SAS.9

Several other commenters advance proposals that have a similar premise, rooted in the concept that use must be measured in terms of actual data transmission to end-users.10 These proposals have several distinct advantages over other suggested approaches that are based on interference protection, economic considerations, or mere notice of intent to use spectrum.

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6 Microsoft Comments at 2.
7 Federated Wireless Comments at 6.
8 See WISPA Comments at 2-3; see also FNPRM at 124, citing Comments of WISPA, GN Docket No. 12-354 (filed July 14, 2014) at 17.
9 See 47 C.F.R. § 96.39(c).
10 See, e.g., Wi-Fi Alliance Comments at 3 (“Unless there is a current report that radiofrequency (“RF”) energy is being actively transmitted or received on PAL channels, those channels should be available for GAA use”); OTI/PK Comments at 6-7 (referencing the WISPA proposal); InterDigital Comments at 3.
Because these proposals are based on measurable traffic from actual end-user devices over a defined time interval, they ensure that “license-savers,” which are registered with the SAS but do not actually provide service by exchanging data traffic with end-users, do not foreclose spectrum-resource-maximizing GAA use. As Federated Wireless notes in its Comments, “the functionality of the SAS, and the data it collects, would provide the Commission with an effective mechanism to identify and challenge claims of ‘use’ that are effectively license savers.”\(^{11}\) In addition, the transmission-based approach encourages PALs to be placed in operation and not warehoused for future use,\(^ {12}\) consistent with the Commission’s objective of prohibiting the arbitrary exclusion of other authorized users.\(^ {13}\) PALs should provide an opportunity for unfettered use, but not convey an absolute right to a licensee to preclude others from using valuable spectrum when such opportunities exist.

Several other filers discuss somewhat different engineering-based methods to help define PAL usage. For example, both Federated Wireless and Google focus their comments on establishing criteria for protection against aggregate interference. Although controlling interference is an important element in effective spectrum sharing, the definition of a protection area is based on a presumption that there is a “use” in the first instance that requires interference protection, but it does not help determine when or where a PAL user is actually making use of a licensed frequency by delivering service. A CBSD that is exchanging actual end-user data packets with one or more customer end-user devices (point-to-multipoint) or one other CBSD

\(^{11}\) Federated Wireless Comments at 5.

\(^{12}\) See, e.g., Federated Wireless Comments at 4 (“applying the proposed engineering definition will enable the Commission to monitor and address potential spectrum warehousing, and ensure unused PAL spectrum is efficiently made available for GAA use”).

\(^{13}\) See Report & Order at 25 (¶ 73).
(point-to-point) is the best example of actual “use,” a principle that WISPA’s proposal recognizes.

At the same time, there is virtually no support in the record for either of the alternative approaches to an engineering definition that are outlined in the \textit{FNPRM}, either an economic definition or a hybrid approach. Federated Wireless, the lone previous proponent of a hybrid engineering/economic approach identified in the \textit{FNPRM}, now states that it “strongly believes that an engineering definition should be adopted for purposes of determining when PAL spectrum is in use.”\textsuperscript{14}

A final group of commenters, led by CTIA, actually rejects the very notion of defining use in the first instance, arguing that a PAL frequency should simply be considered to be in “use” throughout the entire licensed area once the Priority Access licensee notifies an SAS or requests access from an SAS.\textsuperscript{15} This notion is fundamentally in conflict with the \textit{FNPRM}, which states plainly the Commission’s intent that GAA be permitted when “spectrum is not \textit{actually is use} by a Priority Access licensee … on a local and granular basis.”\textsuperscript{16} Blanket declarations of intent or

\textsuperscript{14} Federated Wireless Comments at 1-2 n.2. Key Bridge LLC (“Key Bridge”) says that it “shares the Commission’s curiosity” regarding Dr. William Lehr’s economic definition of use proposal, but ultimately acknowledges that it may “prove too radical for Commission adoption.” Comments of Key Bridge LLC, GN Docket No. 12-354 (filed July 15, 2015) (“Key Bridge Comments”) at 10 & 12.

\textsuperscript{15} See Comments of CTIA – The Wireless Association, GN Docket No. 12-354 (filed July 15, 2015) (“CTIA Comments”) at 1 & 3. While CTIA “agrees there is merit in defining use from an economic view,” it ultimately argues that the Commission should not define “use” at all. \textit{Id.} at 8. See also Comments of AT&T, GN Docket No. 12-354 (filed July 15, 2015) at 3 (“AT&T believes that the Commission will best achieve its objectives by adopting a bright line rule providing that, once a PAL begins to offer service in a Census Tract, the SAS will block GAA use in that Census Tract for the licensed frequencies”); Comments of Qualcomm Incorporated, GN Docket No. 12-354 (filed July 15, 2015) at 2 (“The FCC should implement a clear cut rule that ensures Priority Access Licensees have exclusive access to their licensed spectrum when they want to use it”).

\textsuperscript{16} \textit{FNPRM} at 123 (¶ 419).
planned use would encourage spectrum warehousing across an entire license area and would allow PAL holders to claim “use” before any CBSDs have been deployed and are delivering service to actual end users in the field. Moreover, some commenters’ assertion that “exclusive” access should be afforded to PALs holders based on initiation of service is contrary to the licensing regime adopted in the Report & Order, which is premised on priority, not exclusive access. By contrast, WISPA’s proposal would require a deployed CBSD to log into the SAS and report actual end-user packet data transmission statistics, a more trustworthy indication of actual PAL frequency use.

As WISPA stated in its initial Comments, the Commission should draw clear distinctions among 1) actual use of a frequency to deliver service versus interference to a licensed user of a frequency, 2) actual use of a frequency to deliver service versus “affirmatively requesting access” from the SAS to use a PAL, and 3) actual use of a frequency to deliver service versus advising a GAA user to stop using a frequency. The record demonstrates the benefits of WISPA’s engineering approach founded on actual, measurable use, and exposes the serious flaws inherent in other proposals that, if adopted, would improperly authorize exclusivity for spectrum non-use, hoarding and warehousing.

II. THE COMMISSION SHOULD ALLOW LEASING, PARTITIONING AND DISAGGREGATION OF PALS UPON NOTIFICATION TO THE SAS

Notwithstanding the Commission’s acknowledgment in the FNPRM that secondary market opportunities “will increase liquidity as well as reduce costs and increase flexibility of use…, regarding partitioning and disaggregation,” the Commission’s “initial view is to prohibit

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17 See, e.g., Report & Order at 25 (¶ 72) (“We believe the record demonstrates the benefits of allowing GAA users some degree of opportunistic access to ‘unused’ [not just “unlicensed”] Priority Access channels”).

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such further segmentation of PALs given their relatively small size (census tracts) and limited
duration (three years) as well as the availability of significant GAA spectrum in all license
areas.”18 The Commission did not specifically state its position on spectrum leasing for PALs.

In contrast to the Commission’s tentative view, there is significant support across a broad
spectrum of commenters for permitting the subdivision of PALs where market forces warrant via
leasing, partitioning and/or disaggregation.19 CTIA, for example, argues that “the marketplace
should determine the extent to which PAL spectrum is assigned, transferred, leased, partitioned
or disaggregated.”20 AT&T adds that “there are numerous scenarios in which permitting such
partitioning would yield public interest benefits justifying any potential regulatory
complexities.”21 And Professor Jon Peha notes that specific spectrum users may want access for
just a few days or even minutes.22 Accordingly, the Commission should let the marketplace
decide, and should not prejudge whether the geographic size, duration of use, or availability of
co-frequency spectrum on a secondary GAA basis might undermine the demand for secondary
market availability of PAL spectrum.

18 FNPRM at 128 (¶ 434).
19 See AT&T Comments at 3-6; Comments of Cantor Telecom Services, L.P., GN Docket No.
12-354 (filed July 15, 2015) at 8-10; CTIA Comments at 9; Comments of the Information
3-4; Key Bridge Comments at 3, et seq.; Comments of Jon M. Peha, GN Docket No. 12-354
(filed July 15, 2015) (“Peha Comments”) at 4; Comments of Rajant Corporation, GN Docket No.
12-354 (filed July 15, 2015) (“Rajant Comments”) at 2-4; Qualcomm Comments at 3-4; Verizon
20 CTIA Comments at 9.
21 AT&T Comments at 4.
22 See Peha Comments at 4.
WISPA noted in its initial Comments that many large rural census tracts may cover thousands of square miles.\(^{23}\) As Key Bridge observes, there may be many “instances where only a small subset of the described geographic area may be of interest to a particular PAL holder and where access rights for the rest of the PAL census tract could be resold and put to use by another party.”\(^{24}\) AT&T adds that a particular PAL “may wish to make spectrum available to an area comprising a very discrete portion of the license area – say a hospital or a university – requiring the partition of a license.”\(^{25}\) Rajant indicates that it is working with partners to serve areas as small as public stadiums.\(^{26}\) And Verizon notes that some licensees “may want to engage in a spectrum transaction involving a collection of spectrum assets along lines that do not directly correspond to census tracts.”\(^{27}\) Without the ability to lease or partition PAL areas for these types of specialized uses, unused PAL spectrum would be available only for opportunistic GAA use, which could afford insufficient protection to make the intended use viable.

Only a few commenters affirmatively oppose the availability of leasing, partitioning or disaggregation for PALs. For example, the Wi-Fi Alliance contends that allowing a secondary market for PAL spectrum would permit “licensees to divert potential GAA use to lessees through secondary markets [which] is contrary to the public interest.” It argues that the SAS would

\(^{23}\) The Commission has noted that census tracts have an “optimum population of 4,000,” and that the largest census tract in the continental U.S. covers approximately 40,000 square miles. See Public Notice, “Commission Seeks Comment on Licensing Models and Technical Requirements in the 3550-3650 MHz Band,” GN Docket No. 12-354, FCC 13-144, at 7 n.38 (rel. Nov. 1, 2013); Report & Order at 33 n.224. More than 450 U.S. census tracts are larger than 1,000 square miles. See Peha Comments at 4, citing U.S. Census, Geography Division, Census Tracts – Square Mileage, March 30, 2011.

\(^{24}\) Key Bridge Comments at 13.

\(^{25}\) AT&T Comments at 4.

\(^{26}\) See Rajant Comments at 3.

\(^{27}\) Qualcomm Comments at 4.
effectively perform the role of a secondary market by allowing GAA use of spectrum that is unused by the Priority Access Licensee; however, it doesn’t explain how it would harm the public interest for an entity requiring greater certainty of access or interference protection to bargain with a PAL holder for partial or time-limited use of its spectrum instead of relying on the potential availability of GAA. Similarly, no support has been provided for Microsoft’s contention that permitting secondary market transactions “would encourage companies to obtain far more Priority Access spectrum than they need, in the hope of making a profit on that spectrum.”\(^{28}\) As actual demand for secondary market access to PAL spectrum is not well established and likely to vary significantly based on both time and location, there would not appear to be any clear benefit to be gained from purchasing additional licenses beyond those necessary to execute a CBRS licensee’s actual business plan, especially when PAL spectrum, where purchased but not used, would then be available for GAA use.

Federated Wireless has a different view, arguing that the Commission should allow “streamlined and flexible secondary use of PAL spectrum … without applying the Commission’s Secondary Markets Rules,” but nonetheless takes the seemingly contradictory view that the Commission should affirmatively prohibit partitioning and disaggregation of PAL spectrum.\(^ {29}\) While this view seems to be based at least in part on a belief that “disaggregation of PALs into smaller spectrum blocks likely would not be useful,”\(^ {30}\) the crux of Federated Wireless’s concern appears to be that the Commission’s current rules require any spectrum partitioning or disaggregation to go through a formal approval process to divide the existing license for

\(^{28}\) Microsoft Comments at 6.

\(^{29}\) Federated Wireless Comments at 14 & 21-22.

\(^{30}\) Id. at 22.
purposes of assignment or lease. It thus contends that “partitioning and disaggregation of PALs would prove both administratively burdensome and unnecessary.”

WISPA agrees with Federated Wireless that the application of the Commission’s existing secondary markets approval process for leasing, partitioning and disaggregating PALs would be unduly burdensome, but as WISPA has recommended in its Comments, there is no reason to apply these existing requirements, which are geared to long-term licenses and extended leasing arrangements, to the CBRS, a service with much shorter term licenses that may cover smaller geographic areas. Instead, the Commission should adopt WISPA’s proposal to streamline the administrative approval requirements contained in the existing secondary markets rules applicable to larger spectrum blocks, and simply allow a PAL holder to notify the SAS if it enters into a lease, partition or disaggregation agreement. By notifying the SAS and not the Commission, the agency should have very few administrative burdens. As Google observes, “supporting transfers of PAL protection rights, in whole or in part, will introduce only the minor additional complexity of verifying that claimed PAL protections reflect transactions in the secondary market.” Any incremental burden occasioned by this approach would be significantly outweighed by the flexibility afforded to Priority Access licensees and third parties, especially in larger rural census tracts where CBRS spectrum is more likely to be useful to more than one WISP to deploy fixed broadband service and not small cells.

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31 Id.
32 See WISPA Comments at 8.
33 As articulated in WISPA’s initial Comments, the notice would provide contact information for the non-licensee, the expiration date of the agreement, partitioned area or spectrum disaggregated (as applicable) and other basic information, in addition to the registration information that the SAS requires. See WISPA Comments at 8; see also ITI Comments at 3; Rajant Comments at 3.
34 Google Comments at 18.
Finally, to the extent that some parties may believe that the smaller geographical size or bandwidth of PALs would negate any benefit of partitioning or disaggregation,\textsuperscript{35} WISPA believes that the secondary market should be permitted to evolve based on market forces and not on mere predictive assumptions. Whether or not there proves to be significant secondary market demand for PALs spectrum, no compelling argument has been made to prohibit this option at this point in the inception of the service.

\section*{III. THE COMMISSION SHOULD RIGHT-SIZE EARTH STATION PROTECTION ZONES TO ENABLE MORE EFFICIENT SPECTRUM SHARING}

In its Comments, WISPA reiterated its view that the Appendix D formula could be used across the 3550-3700 MHz band in a consistent fashion.\textsuperscript{36} Other commenters, including the Satellite Industry Association (\textquotedblleft SIA\textquotedblright) and Google, agreed that Appendix D could be the basis for protecting FSS earth stations, but that certain operational parameters of the earth stations should be included.\textsuperscript{37} To the extent this information is included in the SAS via the reports that earth station licensees will file pursuant to the \textit{Report & Order}, WISPA believes that these complements to the Appendix D methodology can be used to better define protection zones on an individualized basis.

SIA also asks that the SAS be required to account for aggregate harmful interference that \textquotedblleft prioritizes incumbent protection and is required to swiftly resolve any interference that arises.\textquotedblright\textsuperscript{38} WISPA does not object to this position generally as a preferred regulatory model over

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\textsuperscript{35} \textit{See, e.g.}, Federated Wireless Comments at 22.
\textsuperscript{36} \textit{See} WISPA Comments at 9-10.
\textsuperscript{37} \textit{See} Comments of the Satellite Industry Association, GN Docket No. 12-354 (filed July 15, 2015) (\textquotedblleft SIA Comments\textquotedblright) at 3.
\textsuperscript{38} \textit{Id.} at 6.
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protection zones that are premised on “worst-case” interference environments. Ultimately, WISPA believes that significant progress in defining protection criteria for FSS incumbents is being made, and will continue to be made, in the Wireless Innovation Forum’s Spectrum Sharing Committee.39

The Commission should not, however, as SIA suggests, require End-User Devices to communicate directly with the SAS40 and should not adopt the alternative proposal to restrict End-User Devices to a prescribed maximum deployment radius from the CBSD.41 Direct communication capability would drive up the cost of End-User Devices and would be unnecessary given that all End-User Devices are required to operate within the control of a CBSD. Defining a maximum distance between a CBSD and End-User Devices would be particularly onerous in rural areas where higher-power CBSDs may transmit over many miles.

Conclusion

The record reflects support for an engineering definition of “use” that will ensure spectrum-efficient, opportunistic use of GAA spectrum alongside PALs, with appropriate measures to prevent warehousing and to protect incumbents and PALs. The record also shows support for secondary market transactions, which can be accomplished through streamlined procedures without imposing administrative burdens on Commission staff. WISPA does not object to better defining FSS exclusion zones based on information reported to the SAS so long as such information is provided by licensees, and suggests that the Wireless Innovation Forum

39 See Google Comments at 20-21.
40 See SIA Comments at 7.
41 See id. at 8.
multi-stakeholder deliberations will yield more specific protection parameters. The Commission should not, however, adopt SIA’s proposal to impose new requirements on End-User Devices.

Respectfully submitted,

WIRELESS INTERNET SERVICE PROVIDERS ASSOCIATION

August 14, 2015

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