

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

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

REPLY COMMENTS OF FEDERATED WIRELESS, INC.

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EXECUTIVE SUMMARY

Federated Wireless, Inc. appreciates the opportunity to submit these reply comments in response to the Second Further Notice of Proposed Rulemaking with respect to the 3550-3700 MHz band (the “Citizens Band”). In this filing, Federated Wireless emphasizes the following: (1) There is widespread industry support for applying an engineering methodology to define when Priority Access (“PAL”) spectrum is in use; (2) Arbitrary or discretionary geographic buffer zones are not required to protect PAL spectrum from harmful interference, when using an engineering definition, because the Spectrum Access System will use an aggregate interference threshold to protect the service contours of active PAL spectrum; (3) Commenters also widely support permitting streamlined and flexible secondary use of PAL spectrum without applying the Federal Communications Commission’s existing Secondary Markets Rules; (4) The record reflects that independent spectrum exchanges are not necessary to facilitate secondary uses of PAL spectrum, and would cause needless complexity and delay in the Citizens Band; and (5) The Commission should take a careful look at the Google proposal for a process that would categorize better-performing devices with regard to out-of-band emissions, which Federated Wireless notionally supports, but only if it will not result in delays for the Citizens Band.

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REPLY COMMENTS OF FEDERATED WIRELESS, INC.

Federated Wireless, Inc. offers these reply comments in the above-captioned proceeding,¹ emphasizing the following: (1) There is widespread industry support for applying an engineering methodology to define when Priority Access (“PAL”) spectrum is in use; (2) Arbitrary or discretionary geographic buffer zones are not required to protect PAL spectrum from harmful interference, when using an engineering definition, because the Spectrum Access System (“SAS”) will use an aggregate interference threshold to protect the service contours of active PAL spectrum; (3) Commenters also widely support permitting streamlined and flexible secondary use of PAL spectrum without applying the Federal Communications Commission’s (the “Commission” or “FCC”) existing Secondary Markets Rules; (4) The record reflects that independent spectrum exchanges are not necessary to facilitate secondary uses of PAL spectrum, and would cause needless complexity and delay in the 3550-3700 MHz band (the “Citizens Band”); and (5) The Commission should take a careful look at the Google proposal for a process that would categorize better-performing devices with regard to out-of-band emissions, which Federated Wireless notionally supports, but only if it will not result in delays for the Citizens Band.

¹ See *Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, GN Docket No. 12-354, Report and Order and Second Further Notice of Proposed Rulemaking, 30 FCC Rcd 3959 (2015). The Report and Order portion of this item hereinafter is referred to as the “3.5 GHz Order.” The Second Further Notice of Proposed Rulemaking portion is referred to as the “2nd FNPRM”.

I. THERE IS WIDESPREAD INDUSTRY SUPPORT FOR APPLYING AN ENGINEERING METHODOLOGY TO DEFINE WHEN PAL SPECTRUM IS IN USE.

A broad range of commenters, including Google Inc., Dynamic Spectrum Alliance, InterDigital, Microsoft Corporation, Sony Electronics, the Wi-Fi Alliance, the Open Technology Institute, and Public Knowledge, agree with Federated Wireless that the Commission should apply an engineering methodology to define when PAL spectrum is in use, thereby ensuring availability of unused PAL spectrum for use by others.² While industry stakeholders will need to reach a consensus on various algorithmic aspects of how the engineering methodology should be implemented, commenters agree that applying an engineering definition based on actual use of PAL spectrum – rather than an economic-based definition – is the best way to prevent spectrum warehousing and ensure that unused PAL spectrum is efficiently made available for General Authorized Access (“GAA”) use.

As Google emphasizes, “an engineering definition based on actual deployment conditions will maximize availability for [GAA] users while protecting [PAL] holders.”³ Google agrees with Federated Wireless that the engineering definition should be implemented by leveraging the SAS to

² See, e.g., Comments of Federated Wireless at 1-13 (filed July 15, 2015); Comments of Google Inc., at 1 (filed July 15, 2015) (“The Commission should adopt an engineering-based definition of ‘use,’ rather than an economic definition.”); Comments of Dynamic Spectrum Alliance at 1 (filed July 15, 2015) (“First, the Commission should use engineering criteria to determine whether a [PAL] holder has placed spectrum ‘in use,’ such that [GAA] users are excluded.”); Comments of InterDigital at 3 (filed July 15, 2015) (“InterDigital believes that an engineering definition of spectrum use is feasible within the CBRS framework, and it is a preferred way to determine the spectrum use.”); Comments of Microsoft Corporation at 2 (filed July 15, 2015) (“...[T]he 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.”); Comments of Open Technology Institute at New America and Public Knowledge at 4 (filed July 15, 2015) (“OTI and PK support an engineering definition of actual ‘use’ that ... ‘effectively leverag[es] the SAS to define a boundary that would forbid GAA access near Priority Access CBSDs.”); Comments of Sony Electronics at 1 (filed July 15, 2015) (“...Sony agrees with those commenters that have endorsed what the Commission describes as an ‘engineering’ definition of use, and urges the Commission not to adopt the alternative economic definition.”); Comments of Wi-Fi Alliance at 3 (filed July 15, 2015) (“Wi-Fi Alliance supports employing an engineering-based approach for allowing opportunistic access to unused PAL channels.”).

³ Comments of Google Inc., at 1.

protect PAL licensees and their affiliated end users from aggregate interference based on actual use of the PAL spectrum.⁴ GAA users, in turn, should be permitted to use PAL spectrum “within or near a PAL license area, provided that such operations do not interfere with operations the [PAL] licensee has deployed in its protected area.”⁵

Google and other commenters, including Dynamic Spectrum Alliance, the Wireless Internet Service Providers Association (“WISPA”), the Open Technology Institute, and Public Knowledge, further agree with Federated Wireless that an economic-based definition of PAL use should not be adopted because it will encourage warehousing and hoarding of PAL spectrum.⁶ As Google explains, “because an economic definition places no obligation on the PAL holder actually to use PAL spectrum, it increases the likelihood of spectrum hoarding or warehousing. . . . By decoupling the ability to exclude other users from a requirement to make productive use of spectrum, an economic definition allows and may even encourage licensees to bid on licenses even if they have little or no intention of deploying service.”⁷ In contrast, applying an engineering definition based on actual use will enable the Commission to monitor and address potential spectrum warehousing while ensuring unused PAL spectrum is available for GAA use.⁸

⁴ See Comments of Google Inc., at 2-3; *see also* Comments of Federated Wireless at 7.

⁵ Comments of Google Inc. at 4.

⁶ See Comments of Federated Wireless at 3-5; *see also, e.g.*, Comments of Google Inc., at 19; Comments of Dynamic Spectrum Alliance at 1 (“The Commission should not adopt an economic definition of use, which would enable spectrum warehousing.”); Comments of WISPA at 6 (“The economic definition proposed by William Lehr also should be rejected. . . . Lehr’s options approach would vest in licensees the ability to hoard and warehouse spectrum.”); Comments of Open Technology Institute at New America and Public Knowledge at 8 (“[G]iving PAL holders the option to pay to keep spectrum fallow is directly contradictory to the animating spirit of the three-tier Citizen’s Broadband Radio Service framework, which is the admonition in the 2012 report of the President’s Council of Advisors on Science and Technology (PCAST) that ‘[t]he essential element of this new Federal spectrum architecture is that the norm for spectrum use should be sharing, not exclusivity.’”).

⁷ Comments of Google Inc., at 19-20.

⁸ See Comments of Federated Wireless at 4; Comments of Google Inc., at 20.

Verizon also urges the Commission to protect PAL licensees based upon areas where their service is operational by adopting rules “ensuring that each PAL holder can define the contours of its service area where its operations receive protection from harmful interference, leaving the rest of its license area available for opportunistic use by [GAA] users.”⁹ Verizon proposes that the Commission “allow each PAL holder to directly input into the [SAS] database the coverage contours that require protection from GAA operations.”¹⁰ Federated Wireless agrees with Verizon that the PAL licensee is best suited to determine where exactly spectrum is in use based on actual and not assumed operational information. To ensure that PAL licensees do not seek interference boundaries that are too wide, Verizon proposes that the Commission take steps such as monitoring the spectrum use data provided to the SAS and requiring PAL licensees to certify that the data it inputs to the SAS is for already-constructed sites.¹¹ Although the approaches proposed by Google and Verizon differ in terms of mechanics and how they should be implemented, both companies join Federated Wireless in urging the Commission to adopt a definition of PAL use that utilizes the SAS to protect PAL service contours from harmful interference and efficiently make unused PAL spectrum available for opportunistic GAA use.¹²

In contrast, a small number of commenters advocate for definitions of PAL spectrum use that are, in reality, not engineering definitions.¹³ These proposals should be rejected because they are directly contrary to the Commission’s goal of maximizing efficient use of spectrum in the Citizens Band by both PAL and GAA users. For example, one commenter urges the Commission

⁹ Comments of Verizon at 1 (filed July 15, 2015).

¹⁰ *Id.*

¹¹ *See id.* at 2.

¹² *See* Comments of Federated Wireless at 1-13.

¹³ *See, e.g.,* Comments of CTIA – The Wireless Association at 3 (filed July 15, 2015); Comments of AT&T Services, Inc., at 3 (filed July 15, 2015); Comments of Qualcomm Incorporated at 2-3 (filed July 15, 2015).

to adopt a bright line rule providing that, once a PAL begins to offer services in a Census Tract, the SAS will block GAA use in that Census Tract for the licensed frequencies.¹⁴ Another commenter argues that once a PAL licensee provides notice that it intends to use its licensed channel within a certain period of time, any opportunistic use of the channel by a GAA user should be prohibited within the licensed area until the PAL licensee releases the channel.¹⁵

Such proposals are not engineering-based and are entirely inconsistent with the opportunistic use of spectrum in the Citizens Band envisioned by the Commission. As the Commission found in the 3.5 GHz Order, “permitting opportunistic access to unused [PAL] channels would maximize the flexibility and utility of the 3.5 GHz Band for the widest range of potential users. By allowing opportunistic GAA users to access bandwidth that is not used by [PAL licensees], [the Commission] can ensure that the band will be in consistent and productive use.”¹⁶ The proposals for non-engineering definitions would have the opposite effect, barring opportunistic GAA use of PAL spectrum even when PAL spectrum is not actually in use. As Federated Wireless and the majority of commenters pointed out with respect to proposed economic-based definitions, allowing PAL licensees to exclude GAA users regardless of whether PAL spectrum is actually in use would encourage spectrum warehousing and lead to fallow spectrum in the Citizens Band.¹⁷ Adoption of an engineering definition will prevent this outcome.

¹⁴ See Comments of AT&T Services, Inc., at 3.

¹⁵ See Comments of Qualcomm Incorporated at 2-3 (filed July 15, 2015).

¹⁶ 3.5 GHz Order, ¶ 72.

¹⁷ See Comments of Federated Wireless at 3-4.

II. ARBITRARY OR DISCRETIONARY GEOGRAPHIC BUFFER ZONES ARE NOT REQUIRED TO PROTECT PAL SPECTRUM FROM HARMFUL INTERFERENCE, WHEN USING AN ENGINEERING DEFINITION, BECAUSE THE SAS WILL USE AN AGGREGATE INTERFERENCE THRESHOLD TO PROTECT THE SERVICE CONTOURS OF ACTIVE PAL SPECTRUM.

In its initial comments, Federated Wireless stated that, depending on how the equipment ecosystem evolves in the Citizens Band, there may be some scenarios in which “guard bands,” managed by SASs, could be needed to satisfy the co-channel and adjacent channel protection criteria established in the 3.5 GHz Order.¹⁸ The concept of guard bands described by Federated Wireless in its initial comments, however, is different from the concept of guard bands described by some commenters as a PAL channel that would be kept vacant by the PAL licensee in order to protect its spectrum from GAA interference. For example, Verizon asserts that a PAL licensee “may be legitimately using a channel even if it is not actively operating on it,” such as a “guard band” or “reserve channel” used for “occasional periods of peak demand.”¹⁹ The “engineering definitions” suggested by some commenters would result in arbitrary and discretionary exclusion zones, which is not in keeping with the Commission’s goal of efficient spectrum use in this proceeding. Even if the Commission accepted that these approaches are based on engineering methods, there is no protection of actual “use” based on aggregate interference. Instead, these suggested approaches are arbitrary and discretionary ways of protecting PAL uses, not grounded in engineering analysis about actual use and protecting legitimate service contours.

Federated Wireless clarifies that, if an engineering definition of PAL use is implemented, it is not necessary to set aside vacant PAL channels, statically defined, as guard bands to protect PAL spectrum that is in use from harmful interference. Instead, as proposed by Federated Wireless, the

¹⁸ See Comments of Federated Wireless at 10.

¹⁹ Comments of Verizon at 2-3.

SAS will use an aggregate interference threshold to protect the service contours of spectrum when it is in use by a PAL licensee.²⁰ Once the SAS has established the protected service contours of the PAL Citizens Broadband Radio Service Devices (“CBSDs”), GAA access to PAL spectrum will be authorized where the PAL spectrum is not in use, such that the aggregate interference at all locations within the PAL protected service contour will not exceed the aggregate interference threshold. The protected separation between PAL spectrum that is in use and GAA users will be a function of the specific conditions of use by GAA operations and the SAS’s application of the aggregate interference threshold for the PAL. The protected separation between the PAL service contour and nearby GAA operations constitutes spectrum that is “in use” as it serves the purpose of protecting the PAL deployment. The extent of this protected separation will vary according to the aggregate interference requirement and the specifics of GAA uses (*e.g.*, low power indoor use versus higher power outdoor use). Thereby, vacant PAL channels, which are fixed in their geographic extent, will not be needed to protect PAL operations if an engineering definition is adopted, as recommended by Federated Wireless.

Other commenters agree that the Commission should not adopt a definition of PAL use that would allow PAL licensees to use vacant PAL channels as guard bands. For example, InterDigital, Inc. states that “vacating channels to serve as guard bands for [PALs] will not result in efficient use of spectrum, and will potentially lead to areas where the channels may lay fallow.”²¹ Additionally, Microsoft “disagrees with any suggestions that a vacant 3.5 GHz channel should serve as a guard band. Allowing geographically and/or spectrally adjacent channels to serve as a guard band for a

²⁰ Federated Wireless proposed in its initial comments that the Commission adopt an initial aggregate interference threshold of -80 dBm/10 MHz. This threshold can then be reviewed and modified periodically by a multi-stakeholder body as use of the Citizens Band evolves. *See* Comments of Federated Wireless at 7.

²¹ Comments of InterDigital, Inc., at 4.

[PAL] channel would undercut the innovative Part 96 technical rules, such as received signal strength limits and reception limits which promote spectral flexibility and efficient.”²²

III. COMMENTS REFLECT BROAD SUPPORT FOR PERMITTING STREAMLINED AND FLEXIBLE SECONDARY USE OF PAL SPECTRUM WITHOUT APPLYING EXISTING SECONDARY MARKET'S RULES.

Commenters widely agree with Federated Wireless that the Commission should adopt a more streamlined and flexible framework for third parties to use PAL spectrum without applying the Commission's existing Secondary Markets Rules.²³ As Key Bridge LLC explains:

The Commission's existing spectrum leasing and transfer apparatus and reporting requirements are designed for traditional wireless services in traditionally licensed bands, none of which apply in the 3.5 GHz band where GAA and PAL users are free to innovate and may deploy whichever type of wireless service their needs may require, within a fairly limited set of technical operating constraints. Accordingly, the Commission should determine that 47 C.F.R. § 1.913 does not apply to PAL users in the 3.5 GHz band and should not require extensive transaction reporting such as through FCC Form 603. Because participants in a secondary spectrum market will be pre-registered and pre-qualified there the Commission should also not require prior approval of each and every PAL exchange transaction.²⁴

Verizon also urges the Commission not to apply existing Secondary Markets Rules to secondary uses of PAL spectrum, emphasizing that, in similar contexts where streamlined transfer procedures are in the public interest (e.g., *pro forma* transfers of commercial mobile service licenses), the Commission has determined that streamlined procedures would “promote competition” and “eliminate a significant and unnecessary expenditure of carrier and Commission resources. ...

Streamlined PAL transferability in the 3.5 GHz band would similarly enhance competition and

²² Comments of Microsoft Corporation at 4-5.

²³ See Comments of Federated Wireless at 14; see also, e.g., Comments of Verizon at 3; Comments of Key Bridge LLC at 8 (filed July 15, 2015); Comments of Rajant Corporation at 3 (filed July 15, 2015); Comments of WISPA at 7; Comments of AT&T at 5 (explaining the Commission should “find a way to reduce transaction costs between lessors and lessees [in the Citizens Band] and create a mechanism for regulatory approvals of such transactions that is very rapid (or even instant).”).

²⁴ Comments of Key Bridge LLC at 8 (internal citation omitted). 47 C.F.R. § 1.913 is part of the Commission's existing Secondary Markets Rules and requires that parties apply for and obtain prior Commission approval for assignments, transfers or leases of spectrum. See 47 C.F.R. §§ 1.9001-1.9080.

reduce administrative costs, given the potentially hundreds of thousands of PALs to be issued.”²⁵

In its initial comments, Federated Wireless urged the Commission to establish a streamlined user certification process under which an entity could apply to the Commission to be certified once as eligible to formally use (as opposed to opportunistically use) PAL spectrum.²⁶ Thereafter, the certified user would be free to use PAL spectrum nationwide as long as (1) the certified user obtains each PAL licensee’s consent; and (2) the certified user provides notice of its PAL use to a SAS Administrator. Federated Wireless further proposed that a standardized electronic certification process could be established so that PAL licensees could provide users with electronic consent, perhaps with a secure verification key or certificate, and the user could then submit the electronic consent and verification key to the SAS.²⁷

A number of commenters expressed support for this type of pre-certification mechanism.²⁸ Key Bridge LLC, in particular, states that “[f]ollowing a registration and qualification process, individual 3.5 GHz market participants should not be required to seek advance Commission permission to engage in a PAL transaction nor should they be required to directly file reports to the Commission.”²⁹ Many commenters, however, also urged the Commission to require only notification of secondary uses of PAL spectrum without any pre-certification requirements. For example, Rajant Corporation states that the Commission “should allow secondary markets [in the

²⁵ Comments of Verizon at 5.

²⁶ See Comments of Federated Wireless at 16-17.

²⁷ See *id.*

²⁸ See, e.g., Comments of Cantor Telecom Services, L.P. at 12 (filed July 15, 2015) (supporting a “registration or precertification process” that would allow entities to participate in real-time transactions to acquire PALs in the secondary market “without holding up applications for extend periods of review.”); Comments of Jon M. Peha at 4 (“The FCC can help by making sure that PAL-holders are not required to seek permission before leasing a PAL. If lessees require some form of authorization, then they should be preauthorized once for an extended period, such as a year, so there is no need to do so with every transaction.”).

²⁹ Comments of Key Bridge LLC at 9.

Citizens Band] but do so consistent with its goals for simplicity and flexibility, and require notice only of secondary spectrum transactions.”³⁰ WISPA similarly urges the Commission to adopt its proposal “to allow PAL holders to provide written notification to the SAS if it enters into a lease, partition or disaggregation agreement.”³¹ Federated Wireless supports the certification and notice process proposed in its initial comments and believes the Commission will want to maintain a record of the qualifications and identities of all users of PAL spectrum in the Citizens Band. However, to the extent the Commission determines such a pre-certification process is unnecessary, Federated Wireless certainly supports the notice-only procedures advocated for by Rajant Corporation and WISPA.

Furthermore, Federated Wireless clarifies that it supports permitting partitioning and disaggregation of PAL spectrum, using the certification or notice procedures described above, to the extent those terms are used by commenters to refer to secondary uses of PAL spectrum for less than a full census tract or less than a full 10 MHz of PAL spectrum without needing to obtain prior Commission approval.³² In its initial comments, Federated Wireless opposed permitting partitioning and disaggregation because, pursuant to current Commission rules, those processes would entail applying for, and obtaining, Commission approval to formally segment PALs into smaller service areas or blocks of spectrum smaller than 10 MHz.³³ Engaging in that formal process would prove both administratively burdensome and unnecessary. However, if commenters merely are advocating for secondary uses of PAL spectrum for less than a full census tract (partitioning) or less than the

³⁰ Comments of Rajant Communications at 4.

³¹ Comments of WISPA at 8.

³² *See, e.g.*, Comments of Rajant Corporation at 3 (“[T]he FCC should allow secondary markets through disaggregation and partitioning of PALs through notice only, and not require prior approval through application to the FCC.”); Comments of WISPA at 7 (“The Commission should allow leasing, partitioning and disaggregation of PALs upon notification to the Commission and the SAS.”).

³³ *See* Comments of Federated Wireless at 21.

full 10 MHz of PAL spectrum (disaggregation), by using a certification or notice procedure rather than submission of formal Commission applications for partitioning or disaggregation, then Federated Wireless agrees.

IV. THE RECORD REFLECTS THAT INDEPENDENT SPECTRUM EXCHANGES ARE NOT NECESSARY AND WOULD CAUSE NEEDLESS COMPLEXITY AND DELAY IN THE CITIZENS BAND.

A number of commenters urge the Commission to permit the establishment of “spectrum exchanges” to facilitate secondary uses of PAL spectrum. For example, Cantor Telecom Services, L.P., a firm that develops and operates electronic exchanges, urges the Commission to develop a spectrum exchange in the Citizens Band that would be managed by an independent third party.³⁴ AT&T and Verizon also express support for the development of spectrum exchanges for the purpose of facilitating a robust secondary market for PAL rights.³⁵ However, none of the comments urging the authorization of spectrum exchanges explain why a separate spectrum exchange is needed to perform functions that already are authorized to be provided by a certified SAS Administrator.

As Federated Wireless and others have emphasized, the SAS can effectively function as a spectrum exchange and manage secondary uses.³⁶ Although Verizon advocates for permitting spectrum exchanges in its comments, it also points out, consistent with Federated Wireless’s position, that the SAS is already fully equipped to implement and monitor secondary uses of PAL spectrum on its own:

The tools needed to support a robust secondary market will be present as soon as the sharing regime is in place. The rules already require SAS databases to keep track, on a

³⁴ See generally Comments of Cantor Telecom Services, L.P.

³⁵ Comments of AT&T at 4; Comments of Verizon at 4.

³⁶ See Comments of Federated Wireless at 20; Comments of InterDigital, Inc., GN Docket No. 12-354, at 22 (July 8, 2014) (“The SAS could even act as a spectrum exchange to deal with the secondary markets, as suggested by the Commission.”).

real-time basis, not only of each PAL in all 74,000 census tracts, but also every PAL user's specific operations within its service territory, every GAA user's location anywhere in the country, and the shifting locations of incumbents' operations. The same sophisticated databases can also keep track of (and report to the Commission) changes in PAL ownership.³⁷

Furthermore, as Federated Wireless explained in its initial comments, only a fully functional SAS will have sufficient knowledge of the radio environment and spectrum utilization to confirm whether a proposed secondary use transaction, and the associated technical parameters, meets the conditions necessary to operate.³⁸ A spectrum exchange would not be able to provide a reasonable guarantee that the PAL spectrum to be acquired for use truly meets the intended service requirements (*e.g.*, coverage, capacity throughput, performance, etc.) without first obtaining that information from the SAS.

Given that an independent spectrum exchange is not functionally necessary to facilitate secondary use of PAL spectrum, the record provides no justification for the administrative burden, extra complexity, and significant delay that a separate spectrum exchange would cause. Cantor Telecom, for example, urges the Commission to solicit detailed proposals from prospective spectrum exchange operators.³⁹ Cantor Telecom further envisions that the selected spectrum exchange operator would “work with the Commission to establish framework regulations for the operation of a spectrum exchange and develop a rulebook and relevant agreements that would apply to exchange participants.”⁴⁰ Establishing this type of independent spectrum exchange, and a new set of rules and regulations that would govern it, would add an entirely new, lengthy administrative process that would have to be implemented and maintained by the Commission. This would cause

³⁷ Comments of Verizon at 4.

³⁸ Comments of Federated Wireless at 21.

³⁹ *See* Comments of Cantor Telecom Services, L.P., at 6.

⁴⁰ *Id.*

significant delay in the Citizens Band when the Commission’s goal should be to create a frictionless process for secondary use of PAL spectrum, not to mire it in more regulatory processes and delays. Moreover, inserting an independent third party to manage a separate spectrum exchange would only cause further unnecessary complications and delay in the band.

V. THE COMMISSION SHOULD TAKE A CAREFUL LOOK AT THE GOOGLE PROPOSAL FOR A PROCESS THAT WOULD CATEGORIZE BETTER PERFORMING DEVICES WITH REGARD TO OUT-OF-BAND EMISSIONS, WHICH FEDERATED WIRELESS NOTIONALLY SUPPORTS, BUT ONLY IF IT WILL NOT RESULT IN DELAYS FOR THE CITIZENS BAND.

In its initial comments, Google urges the Commission to adjust its hardware certification process to allow devices with superior out-of-band emission performance to access additional spectrum.⁴¹ In particular, Google explains that when a device is tested for certification today, “its out-of-band emissions are measured only to confirm that they comply with the limits established in the Commission’s service rules . . . rather than the actual emission levels at all frequencies as measured in the test lab.”⁴² In order to enable better-performing devices to take advantage of additional spectrum access in the Citizens Band, Google urges the Commission to make a number of changes to its certification procedures for CBSDs, such as requiring that certification reports specify the actual levels of out-of-band emissions between 3700 MHz and 4200 MHz that are measured during testing, and that certification reports state the minimum level, in dB, by which the device improves upon regulatory limits.⁴³ Google further urges the Commission’s test lab to categorize devices within a class based on how much they reduce out-of-band emissions beyond what is required by regulations.⁴⁴

⁴¹ See Comments of Google Inc., at 28.

⁴² *Id.* at 29.

⁴³ See *id.*

⁴⁴ See *id.*

Federated Wireless agrees with Google that equipment vendors should be strongly encouraged to provide this additional technical information regarding their CBSDs. Such information would assist the SAS in calculating spectrum availability. However, mandating that such information is disclosed by changing the certification procedures, if that is what Google suggests, could require the Commission to conduct an additional rulemaking to modify its equipment certification requirements, which, in turn, could result in further delay in commercializing the Citizens Band.⁴⁵ To the extent new certification procedures would cause delay, Federated Wireless suggests that the Commission should encourage equipment vendors to voluntarily submit this information during the equipment certification process rather than requiring disclosure by changing the certification procedures.

However, it is possible that Google's helpful proposal for a process to categorize better-performing devices could be achieved by modifying the Part 96 rules to state that, when equipment makers demonstrate conformance of CBSDs and end user devices pursuant to other rule parts, they should provide the supporting data to demonstrate conformance rather than just a pass/fail result. This approach would not require a total overhaul of the rules, but rather a requirement that supports a specific need for the Citizens Band with regard to out-of-band emissions. Accordingly, this approach would not result in delays for the Citizens Band, and Federated Wireless would support this proposal.

VI. CONCLUSION.

Federated Wireless commends the Commission on its tremendous progress to create the Citizens Band. Resolution of a very few issues will clear the way for further work by multi-

⁴⁵ In fact, the Commission already is examining various proposed updates to the current equipment authorization rules in a Notice of Proposed Rulemaking in a separate proceeding. *See Amendment of Parts 0, 1, 2, 15 and 18 of the Commission's Rules Regarding Authorization of Radiofrequency Equipment*, ET Docket No. 15-170, Notice of Proposed Rulemaking, FCC 15-92 (2015).

stakeholder industry groups such as the WINnForum to develop and conclude important standards work for the band. To that end, the Commission should adopt rules that take note of the widespread support for both an engineering definition of PAL use, and permitting streamlined and flexible secondary use of PAL spectrum without applying the Commission's existing Secondary Markets Rules. Neither discretionary geographic buffer zones nor using vacant PAL spectrum as guard bands are required, when using an engineering definition, to protect PAL spectrum that is in use. Independent spectrum exchanges also are not necessary to facilitate secondary uses of PAL spectrum and would, in fact, cause needless complexity and delay. Finally, the Commission should take a careful look at the Google proposal for a process that would categorize better-performing devices with regard to out-of-band emissions, which Federated Wireless notionally supports, but only if it will not result in delays for the Citizens Band.

Respectfully submitted,

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