

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, DC 20554

In the Matter of )  
 )  
Promoting Investment in the ) WC Docket No. 17-258  
3550-3700 MHz Band )  
 )

**REPLY COMMENTS OF MOBILE FUTURE**

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Mobile Future submits these reply comments in response to the above-captioned Notice of Proposed Rulemaking<sup>1</sup> seeking comment on proposed changes to the Citizens Broadband Radio Service (“CBRS”) rules governing the 3550-3700 MHz (“3.5 GHz”) band. The Commission must move quickly to better align the service rules for the 3.5 GHz band with other spectrum targeted for 5G. Doing so will provide much needed certainty, drive significant investment, and accelerate the introduction of innovative 5G services to the benefit of American consumers.

Consistent with Mobile Future’s initial comments and the views of numerous other commenters, the Commission should: (1) Extend the license term for Priority Access Licenses (“PALs”) from three to ten years; (2) provide an expectation of renewal; (3) increase the geographic license area for PALs from census blocks to Partial Economic Areas (“PEAs”); and (4) allow PAL licensees to partition and disaggregate their licenses in secondary market transactions. These targeted changes will greatly increase the likelihood of successful deployment of new services in the already complex 3.5 GHz band. And contrary to the claims of some commenters, these modest adjustments will not strand investments made in reliance on the

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<sup>1</sup> *Promoting Investment in the 3550-3700 MHz Band*, Notice of Proposed Rulemaking and Order Terminating Petitions, 32 FCC Rcd 8071 (2017) (“*NPRM*”).

current rules, nor will they delay or disrupt CBRS deployments or foreclose opportunities for use of the band by smaller entities. In fact, several recent announcements demonstrate that CBRS stakeholders – large and small – are moving full speed ahead, even as the Commission considers potential changes to the CBRS rules. Just this month, for example, rural provider Telrad Networks and SAS provider Federated Wireless announced a multi-year deal to deliver LTE fixed wireless solutions using CBRS spectrum.<sup>2</sup>

## **I. MODIFICATION OF THE PAL FRAMEWORK WILL FOSTER A WIDE RANGE OF SERVICES AND USES IN THE 3.5 GHZ BAND.**

### **A. Modifications to 3.5 GHz PALs Are Critical for 5G.**

The transition from 4G to 5G promises to “increase national competitiveness, benefit the environment, and improve our quality of life.”<sup>3</sup> 3.5 GHz spectrum is a key element of the “all-of-the-above” spectrum strategy necessary to ensure those possibilities are realized. As the Commission has explained elsewhere, mid-band spectrum like the 3.5 GHz band is particularly “well-suited for next-generation wireless services,” with propagation characteristics more favorable than high-band spectrum (above 24 GHz) and wider channel bandwidth compared to low-band spectrum.<sup>4</sup> This unique combination of capacity and coverage is expected to enable robust network deployments, particularly in dense urban and suburban markets.<sup>5</sup> Moreover,

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<sup>2</sup> Monica Allevan, *Telrad, Federated Wireless strike multiyear CBRS deal*, FierceWireless (Jan. 18, 2018), <https://www.fiercewireless.com/wireless/telrad-federated-wireless-strike-multi-year-cbrs-deal>.

<sup>3</sup> White House National Security Strategy, at 19 (Dec. 2017), <https://www.whitehouse.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905.pdf>.

<sup>4</sup> See *Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz*, Notice of Inquiry, 32 FCC Rcd 6373, 6375 ¶ 6 (2017) (“*Mid-Band NOI*”).

<sup>5</sup> 5G Americas, *Spectrum Landscape for Mobile Services*, at 30, 32 (Nov. 2017), [http://www.5gamericas.org/files/8415/1018/3549/5G\\_Americas\\_Whitepaper\\_Spectrum\\_Landscape\\_For\\_Mobile\\_Services.pdf](http://www.5gamericas.org/files/8415/1018/3549/5G_Americas_Whitepaper_Spectrum_Landscape_For_Mobile_Services.pdf).

because the 3.5 GHz band is contiguous to other 5G bands, “the potential of combining PALs with the nearby 3.7 to 4.2 GHz band for mobile services may permit limitless opportunities for manufacturers and wireless providers, to the benefit of American consumers.”<sup>6</sup>

Not surprisingly, the 3.5 GHz frequencies are increasingly being targeted for commercial 5G deployments – both here in the U.S. and abroad. For example, Verizon recently collaborated with Ericsson, Qualcomm, and Federated Wireless to use the 3.5 GHz band in an LTE advanced carrier aggregation demonstration.<sup>7</sup> And AT&T last month applied to expand 5G testing in bands including 3.5 GHz.<sup>8</sup> However, the speed at which 5G services come to market using 3.5 GHz spectrum depends largely on smart government policies that promote investment. Mobile Future therefore urges the Commission to modify PALs as proposed in the *NPRM* to ensure the U.S. leads the world in the race to 5G.

**B. Lengthening the License Term from Three to Ten Years, With Renewal Expectancy, Will Incentivize Greater Investment in PALs.**

The record demonstrates a broad recognition among stakeholders that lengthening the license term from three to ten years will strengthen the business case for investing in PALs.<sup>9</sup>

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<sup>6</sup> *Mid-Band NOI*, 32 FCC Rcd at 6391.

<sup>7</sup> See Colin Gibbs, *Verizon, Ericsson, Qualcomm and Federated team for carrier aggregation in CBRS band 48*, FierceWireless (Aug. 28, 2017), <https://www.fiercewireless.com/wireless/verizon-ericsson-qualcomm-and-federated-team-for-carrier-aggregation-cbrs-band-48>.

<sup>8</sup> See Monica Allevan, *AT&T files to conduct 3.5 GHz tests in Washington, D.C., with Ericsson gear*, FierceWireless (Dec. 20, 2017), <https://www.fiercewireless.com/wireless/at-t-files-to-conduct-3-5-ghz-tests-washington-d-c-ericsson-gear>.

<sup>9</sup> See, e.g., Comments of AT&T Services, Inc., GN Docket No. 17-258, at 3 (Dec. 28, 2017) (“AT&T Comments”); Comments of CTIA, GN Docket No. 17-258, at 4 (Dec. 28, 2017) (“CTIA Comments”); Comments of Ericsson, GN Docket No. 17-258, at 5 (Dec. 28, 2017) (“Ericsson Comments”); Comments of Mobile Future, GN Docket No. 17-258, at 5-6 (Dec. 28, 2017) (“Mobile Future Comments”); Comments of Nokia, GN Docket No. 17-258, at 2 (Dec. 28, 2017) (“Nokia Comments”); Comments of the Telecommunications Industry Association, GN Docket No. 17-258, at 2 (Dec. 28, 2017) (“TIA Comments”); Comments of T-Mobile USA, Inc.,

Numerous service providers and manufacturers observed that the present “truncated” license unnecessarily encumbers investment.<sup>10</sup> For example, Ericsson correctly observes that “operators and other potential users of the band require certainty *well beyond* the three-year, non-renewable terms envisioned in the initial order.”<sup>11</sup> Instead, “[l]onger license terms, along with a renewal expectancy, will increase incentives for future investment by creating greater operational stability for licensees.”<sup>12</sup>

In particular, a longer renewable license term will better account for the “multi-year” PAL network deployment process. As explained by T-Mobile, opening new bands for network deployment, such as the 3.5 GHz band, generally includes “standardizing a new frequency band, developing and certifying equipment, introducing a new band into end-user devices, and deploying infrastructure.”<sup>13</sup> Given the need for standards development, equipment certification and production, and network deployment, deploying the PAL infrastructure will require

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GN Docket No. 17-258, at 3-4 (Dec. 28, 2017) (“T-Mobile Comments”); Comments of Union Pacific, GN Docket No. 17-258, 6-8 (Dec. 28, 2017); Comments of United States Cellular Corporation, GN Docket No. 17-258, at 9 (Dec. 28, 2017) (“US Cellular Comments”); Comments of Verizon, GN Docket Nos. 17-258 & 12-354, at 4-5 (Dec. 28, 2017) (“Verizon Comments”); Joint Comments of National Rural Telecommunications Cooperative and the National Rural Electric Cooperative Association, GN Docket No. 17-258, at 3-4 (Dec. 28, 2017).

<sup>10</sup> AT&T Comments at 4 (“[O]nly by extending the current truncated license terms can the Commission encourage investment by PALs, equipment manufacturers, and end users alike”); *see also* CTIA Comments at 4 (asserting that “a shortened license term fails to account for the challenges associated with standards development, equipment certification and production, network deployment, and addressing backhaul capacity needs, let alone the siting approval process”); TIA Comments at 2 (observing that “current three-year PAL term with no renewal rights significantly undermines incentives for operators to invest in the band”); US Cellular Comments at 10 (explaining that “existing PAL term falls far short of providing licensees with the time they require to deploy networks and realize reasonable returns on their investments”).

<sup>11</sup> Ericsson Comments at 5 (emphasis added).

<sup>12</sup> Verizon Comments at 5.

<sup>13</sup> T-Mobile Comments at 4.

substantial effort and time, particularly as initial deployments are launched. As AT&T notes, utilizing PALs will require a network design more akin to large-scale, macro wireless networks, in contrast to General Authorized Access (“GAA”) infrastructure.<sup>14</sup> These structural differences necessitate a longer timeline for PAL deployment and logically, a corresponding lengthening in PAL license terms.<sup>15</sup> Allowing for a ten-year license term would be consistent with the Commission’s rules “in bands ranging from the 600 MHz band through the 40 GHz band,” including other bands identified for 5G.<sup>16</sup> A ten-year term is the appropriate choice for the 3.5 GHz band.

Further, the CBRS “use-or-share” regime will ensure consistent and productive spectrum use and there is little evidence to support claims that longer PAL license terms will create incentives for spectrum warehousing. As Commissioner O’Rielly noted, the *NPRM* “preserves GAA and does not seek any modifications to those rules.”<sup>17</sup> Thus, regardless of any changes to the rules governing PALs, GAA users will still be able to access the entire 150 megahertz in the band on frequencies not in use by PAL licensees.<sup>18</sup> If a PAL licensee offers service only in a portion of its licensed area, then the remaining area is open to GAA users on a noninterfering basis. Opportunistic GAA access thus largely eliminates the opportunities for foreclosure.<sup>19</sup>

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<sup>14</sup> AT&T Comments at 4.

<sup>15</sup> *Id.* at 4-5.

<sup>16</sup> Verizon Comments at 4; *see also* US Cellular Comments at 11 (“A ten-year, renewable license term also would be consistent with the Commission’s proven approach in many other bands, including the mmW bands, which also will be used for the deployment of 5G networks.”).

<sup>17</sup> *NPRM*, 32 FCC Rcd at 8110.

<sup>18</sup> *Id.* at 8073 n.13; 47 C.F.R. § 96.35(a).

<sup>19</sup> Ericsson Comments at 6; Verizon Comments at 7.

Evidence in the record also suggests there is little to be gained from spectrum warehousing where, as here, “the opportunity cost of unused spectrum is very high.”<sup>20</sup>

**C. Census Tract Licensing Will Depress Investment and Innovation in the Band.**

The geographic licensing area for PALs should be increased from census tracts to PEAs. As an initial matter, PEA-based licensing will not foreclose participation by rural carriers. Rather than create a digital divide,<sup>21</sup> “PEA-based licensing would provide opportunities for providers interested in serving smaller geographic areas,”<sup>22</sup> a finding the Commission has made in other proceedings.<sup>23</sup> When compared to larger license areas, PEAs “enable smaller and rural carriers to bid on portions of EAs to obtain more efficiently sized spectrum licenses.”<sup>24</sup> Indeed, “PEAs are themselves a compromise” – balanced to incentivize entrants looking to roll out a localized service while also supporting broader deployments.<sup>25</sup> Further, as Mobile Future has

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<sup>20</sup> Comments of Daniel R. Vincent, “Secondary Markets, License Terms and Priority Access Licenses” (Prepared for Verizon Communications), at 3 (Dec. 29, 2017) (“Daniel Vincent Comments”).

<sup>21</sup> *See generally* Comments of the Wireless Internet Service Providers Association, GN Docket No. 17-258, at 9 (Dec. 28, 2017).

<sup>22</sup> US Cellular Comments at 7.

<sup>23</sup> *See Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 29 FCC Rcd 6567, 6603 ¶ 80 (2014) (concluding that “PEAs are small enough to allow bidders to acquire a limited coverage area—often only a few counties—which should enable small businesses and rural carriers to compete with larger carriers in these areas”). *See also Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, et al.*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 8014, 8046 ¶ 82 (2016) (explaining that “PEAs are smaller than BTAs or EAs, and therefore are more realistically obtainable by smaller bidders, yet are larger than counties which various commenters deem too small”).

<sup>24</sup> AT&T Comments at 6 (quoting Letter from Rebecca Murphy Thompson, Competitive Carriers Association, to Marlene Dortch, Secretary, FCC, GN Docket No. 12-268, at 2 (Nov. 27, 2013)).

<sup>25</sup> *See* T-Mobile Comments at 10; US Cellular Comments at 7.



demonstrated, smaller entities have been abundantly successful in securing licenses at recent auctions.<sup>26</sup> And if the Commission were to allow partitioning and aggregation of PALs as discussed below, the secondary market would also work to provide protected spectrum to carriers that do not win PALs at auction. Finally, licensing by PEA will facilitate the development and deployment of 5G and other innovative services by harmonizing requirements across low-, mid-, and high-band spectrum.

Numerous commenters share Mobile Future's concerns that licensing PALs on a census tract basis will unnecessarily increase auction complexity, administrative burdens, and interference risks, ultimately depressing auction participation and revenues.<sup>27</sup> In addition to diverting Commission time and resources, an auction involving the large number of license areas estimated under a census tract approach would burden auction participants, particularly those seeking larger license footprints.<sup>28</sup> According to one study in the record: "With so many licenses sold at a time, more bidder resources are going to be devoted simply to getting bids in on time and correctly verifying them rather than to fully optimizing bid targets and strategies."<sup>29</sup> As such, license areas smaller than PEAs may ultimately depress auction participation and revenues. After auction, the administrative burden of using census tracts will not decrease, but instead would continue to be costly to administer and would require burdensome management of

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<sup>26</sup> See Mobile Future Comments at 8-9.

<sup>27</sup> See, e.g., AT&T Comments at 5-7; CTIA Comments at 8-9; TIA Comments at 3 (agreeing that "licensing PALs on a census tract basis creates a 'far more complicated licensing scheme than is necessary'" (quoting CTIA, Petition for Rulemaking, GN Docket No. 12-354, at 6-9 (June 16, 2017)); T-Mobile Comments at 9; US Cellular Comments at 4-6; Verizon at 8-12.

<sup>28</sup> US Cellular Comments at 4 (warning that "auctions of census tract-based PALs will be exceedingly complex, and thus, burdensome").

<sup>29</sup> Daniel Vincent Comments at 6 (Dec. 29, 2017).

interference risks along a large number of border areas.<sup>30</sup> And, these costs would be “especially burdensome” in population-rich areas.<sup>31</sup>

Unlike the concerns raised regarding PEAs, concerns regarding census tracts cannot be addressed through leasing and secondary market transactions or GAA access. Contrary to claims made by some commenters, aggregating census tracts at auction is not a workable solution for carriers that plan to deploy service on a larger geographic scale. Evidence in the record demonstrates that when the license area size is too small, “there is the incentive for sellers to hold out to be the last traders in the secondary market to capture the larger incremental gains.”<sup>32</sup> This result is unacceptable, as the speedy reallocation of licenses will be essential to meeting growing demands for finite spectrum. The Commission should also reject claims that the ability to shift from Priority Access to GAA mitigates the above concerns. GAA operations not only fail to provide interference protection, but also may not accommodate a former PAL holder’s operations.<sup>33</sup>

**D. Enabling Secondary Market Transactions Will Ameliorate Concerns Related to Inefficient Spectrum Use.**

Commenters largely support the Commission’s proposal to allow licensees to partition or disaggregate their PALs.<sup>34</sup> This market-driven solution will alleviate concerns raised with

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<sup>30</sup> CTIA Comments at 8-9.

<sup>31</sup> Nokia Comments at 4 (“Assuming each census block targets a population of approximately 4,000 people, serving regions with urban centers and populous suburbs would be especially burdensome.”).

<sup>32</sup> Daniel Vincent Comments at 5.

<sup>33</sup> US Cellular Comments at 12.

<sup>34</sup> *See, e.g.*, AT&T Comments at 7-8, Comments of the Blooston Rural Carriers, GN Docket No. 17-258, at 11-12 (Dec. 28, 2017) (“Blooston Rural Carriers Comments”); Comments of Cantor Telecom Services, L.P., GN Docket No. 17-258, at 10 (Dec. 28, 2017); Comments of the City of

respect to the other proposed changes, including that PEA-based licensing will result in underutilized spectrum in rural areas. As explained by the Blooston Rural Carriers, “secondary market transactions such as leases and partitioning/disaggregation could be a useful tool to ensure robust and targeted use of the spectrum throughout the license area.”<sup>35</sup> Indeed,

Encouraging the sale of licenses on a secondary market will help ensure that smaller entities with a plan to serve a small area – say, a particular community ... – will be able to invest locally in places where bigger players may not see a large enough return on investment to make the effort worthwhile.<sup>36</sup>

Verizon states that it “engages in dozens of spectrum transactions every year, often with small and rural entities.”<sup>37</sup> In fact, through its LTE in Rural America program, Verizon is currently leasing 700 MHz and AWS-1 spectrum to 21 different rural carriers.<sup>38</sup> This and other evidence in the record belie claims that the secondary market is only a vehicle for large operators to consolidate spectrum.<sup>39</sup>

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New York, GN Docket No. 17-258, 4 (Dec. 28, 2017) (“City of New York Comments”); Comments of Federated Wireless, Inc., at 4 (Dec. 28, 2017); Comments of Motorola Solutions, Inc., GN Docket No. 17-258, at 7 (Dec. 28, 2017); Comments of Rajant Corporation, GN Docket No. 17-258, at 7 (Dec. 28, 2017); CTIA Comments at 9-10; Nokia Comments at 4-5; T-Mobile Comments at 12.

<sup>35</sup> Blooston Rural Carriers Comments at 12.

<sup>36</sup> City of New York Comments at 4.

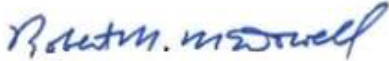
<sup>37</sup> Verizon Comments at 14.

<sup>38</sup> See Verizon, *Verizon’s LTE in Rural America (LRA) Program Celebrates Five Years of Delivering Advanced Wireless Services to Rural Customers* (May 15, 2015), <http://www.verizonwireless.com/news/article/2015/05/verizons-lte-in-rural-america-lra-program-celebrates-five-years-of-delivering-advanced-wireless-services-to-rural-customers.html>; Verizon, *Verizon: All 21 LTE in Rural America Carrier Partners Have Launched Service* (Oct. 15, 2015), <http://www.fiercewireless.com/story/verizon-all-21-lte-rural-america-carrier-partners-have-launched-service/2015-10-15>.

<sup>39</sup> See, e.g., Comments of Google LLC, GN Docket No. 17-258, at 19-20 (Dec. 28, 2017) (citing *FCC Spectrum Auctions and Secondary Market Policies: An Assessment of the Distribution of*

## II. CONCLUSION

Relying on a robust record of support, the Commission should revise the service rules for PALs consistent with the foregoing to ensure investment and innovation in the band and U.S. leadership in the deployment of 5G services.



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*Spectrum Resources Under the Spectrum Screen*, at 19 (Nov. 2013), <http://mobilefuture.org/wp-content/uploads/2013/11/Paper-Distribution-of-Spectrum-Resources.pdf>); Comments of NTCA–The Rural Broadband Association, GN Docket No. 17-258, at 6 (Dec. 28, 2017).