

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

In the Matter of)	
)	
Wireless Telecommunications Bureau and)	GN Docket No. 14-177
Office of Engineering and Technology Seek)	GN Docket No. 17-183
Comment Pursuant to the Spectrum Pipeline)	GN Docket No. 17-258
Act of 2015)	GN Docket No. 15-319

COMMENTS OF CTIA

CTIA¹ respectfully responds to the Public Notice issued by the Wireless Telecommunications Bureau and Office of Engineering and Technology of the Federal Communications Commission (“Commission”) seeking input for the Commission’s report to Congress on specific steps the Commission is taking to facilitate new commercial wireless uses.²

I. INTRODUCTION.

The Spectrum Pipeline Act of 2015 directs the Commission to issue a report to Congress by November 2, 2018 that provides an analysis of the results of the 2015 rule changes in 3550-3650 MHz (part of the 3.5 GHz band) and an analysis of proposals for additional spectrum bands that could be shared under such rules, including the identification of at least one gigahertz between 6 GHz and 57 GHz for such use.³ In 2018, any review of mid-band and high-band

¹ CTIA® (www.ctia.org) represents the U.S. wireless communications industry and the companies throughout the mobile ecosystem that enable Americans to lead a 21st century connected life. The association’s members include wireless carriers, device manufacturers, suppliers as well as apps and content companies. CTIA vigorously advocates at all levels of government for policies that foster continued wireless innovation and investment. The association also coordinates the industry’s voluntary best practices, hosts educational events that promote the wireless industry and co-produces the industry’s leading wireless tradeshow. CTIA was founded in 1984 and is based in Washington, D.C.

² *Wireless Telecommunications Bureau and Office Of Engineering And Technology Seek Comment Pursuant To The Spectrum Pipeline Act Of 2015*, Public Notice, DA 18-841 (rel. Aug. 10, 2018) (“Public Notice”).

³ Spectrum Pipeline Act of 2015, Pub. L. No. 114-74, § 1008, 129 Stat. 621, 625 (2015), as amended by the RAY BAUM’S Act of 2018, Pub. L. 115-141, § 614, 132 Stat. 1080, 1109 (2018).

spectrum issues must consider the nation's interests in the global race to 5G and, as described further below, CTIA commends the Commission for its commitment to facilitating the deployment of this next generation of connectivity. Spectrum will play a critical role in this deployment, and the Commission's steps to ensure investment-friendly policies are in place for mid-band and high-band spectrum are integral to ensuring the economic and social benefits of wireless leadership are retained in the U.S.

II. THE COMMISSION'S ACTIONS TO MAKE ADDITIONAL SPECTRUM AVAILABLE FOR NEXT-GENERATION CONNECTIVITY ARE A KEY ELEMENT TO THE RACE TO 5G.

Since adoption of the Spectrum Pipeline Act in 2015, the race to 5G has emerged as nations vie to capture the millions of new jobs and billions of dollars in economic growth that will flow from leading the transition to next-generation wireless.⁴ 5G will rely on a variety of spectrum bands, including both mid- and high-band spectrum as referenced in the Spectrum Pipeline Act.⁵ Other countries, from Asia to Europe, are moving aggressively to lead the world in 5G and are actively working to make spectrum available for 5G in both mid-band and high-band spectrum ranges. China, for example, reserved spectrum in the 3.3-3.6 GHz band for 5G use in 2017 and has committed two gigahertz of high-band spectrum for each major wireless

⁴ See, e.g., Testimony of Meredith Atwell Baker, CTIA, before the U.S. Senate Committee on Commerce, Science & Transportation (July 25, 2018), <https://api.ctia.org/wp-content/uploads/2018/07/Testimony-of-Meredith-Attwell-Baker.pdf>.

⁵ 5G will also use low-band spectrum, but for the purposes of commenting on the questions in the Spectrum Pipeline Act and Public Notice, we limit our discussion here to the mid- and high-bands.

operator.⁶ South Korea has already completed auctions for the 3.6-3.7 GHz and 28 GHz bands.⁷ Likewise, Canada, Germany, Japan, the United Kingdom, and other countries are moving forward with 5G plans in both the mid- and high-bands.⁸ As described below, the United States is also moving forward aggressively by considering policies that will identify and allocate new spectrum resources for terrestrial wireless services.

The Commission's work in freeing up high-band spectrum for terrestrial wireless services has been admirable, and CTIA encourages the Commission to continue on this path. And it is more important than ever for the Commission to make mid-band spectrum available as well. In short, wireless carriers in the United States need access to mid-band spectrum in the near term to maintain and improve America's position in the global 5G race. CTIA is encouraged that reforms proposed in the 3.5 GHz and 3.7-4.2 GHz bands, as well as the forthcoming study of the 3450-3550 MHz band by the National Telecommunications and Information Administration ("NTIA"), will lead the way.

⁶ See Letter from Scott K. Bergmann, CTIA, to Marlene H. Dortch, FCC, GN Docket Nos. 17-183, 18-122 (filed July 9, 2018) ("CTIA July Letter"); *The Global Race to 5G*, CTIA (Apr. 2018), <https://api.ctia.org/wp-content/uploads/2018/04/Race-to5G-Report.pdf>.

⁷ See CTIA July Letter; Monica Allevan, *South Korea wraps 5G auction for 3.5, 28 GHz*, FIERCEWIRELESS (June 20, 2018), <https://www.fiercewireless.com/wireless/south-korea-wraps-5g-auction-for-3-5-28-ghz>.

⁸ See, e.g., David Abecassis, Chris Nickerson and Janette Stewart, *Global Race to 5G—Spectrum and Infrastructure Plans and Priorities*, ANALYSYS MASON (Apr. 2018), https://api.ctia.org/wp-content/uploads/2018/04/Analysys-Mason-Global-Race-To-5G_2018.pdf.

A. The 3.5 GHz Band and Other Mid-Band Spectrum Will Play an Essential Role in 5G.

Only in the past decade have policymakers and stakeholders seriously considered spectrum above 3 GHz for mobile wireless services.⁹ Indeed, in 2012 the *3.5 GHz Notice of Proposed Rulemaking* observed that “[w]ireless service providers and organizations [have been] somewhat restrained as to the usefulness of the 3.5 GHz Band for traditional, macrocell mobile broadband.”¹⁰ But less than three years later, the *2015 3.5 GHz Order* – the “2015 rule changes” referenced in the Spectrum Pipeline Act – reflected a technological and spectrum policy breakthrough for mobile wireless services, finding that the band’s “physical characteristics [] make it particularly well-suited for mobile broadband employing small cell technology. . . [adding] much-needed capacity to meet the ever-increasing demands of wireless innovation.”¹¹ The Commission, NTIA, and stakeholders embraced the technological advancements making it possible for small cells to support mobile broadband networks above 3 GHz.

The rules as adopted in 2015 launched a path to where we are today. These rules created the Citizens Broadband Radio Service (“CBRS”) and adopted a novel, three-tiered sharing regime that will protect federal incumbents and support exclusive use Priority Access Licenses

⁹ See, e.g., Comments of CTIA, ET Docket No. 10-123, at 13 (filed Apr. 22, 2011) (“[While bands above 3 GHz] may not be available for a greenfield mobile broadband build in the near-term, heterogeneous buildout may be possible for these bands in the future via the use of femtocells and picocells. CTIA encourages the Commission, NTIA, and the wireless industry to continue exploring options for this spectrum.”).

¹⁰ *Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Notice of Proposed Rulemaking and Order, 27 FCC Rcd 15594, 15611 ¶ 46 (2012).

¹¹ See *Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Report and Order and Further Notice of Proposed Rulemaking, 30 FCC Rcd 3959, 3961 ¶ 1 (2015) (“2015 3.5 GHz Order”); *Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Order on Reconsideration, Report and Order, 31 FCC Rcd 5011 (2016).

(“PALs”) and General Authorized Access (“GAA”) for non-licensed users. For the first time, access to the band will be directed by Spectrum Access Systems (“SASs”) charged with coordinating real-time interference protection for incumbents and PAL licensees. Throughout the proceeding, CTIA has demonstrated its firm support for the 3.5 GHz band as an important opportunity for small cell deployments that can help address the expanding demand for mobile broadband, and a commitment to making this novel framework a success.¹²

Nevertheless, the *2015 3.5 GHz Order* did not contemplate that the band would be suited for 5G. CTIA therefore supports targeted reforms to the current 3.5 GHz PAL rules to help unlock the benefits that 5G will bring to the U.S. economy – benefits that were not foreseen when this proceeding was originally undertaken.¹³ These targeted reforms include a 10-year standard license term with an expectancy of renewal and larger geographic areas for PAL spectrum.¹⁴ CTIA urges the Commission to move forward swiftly on the pending *Notice of Proposed Rulemaking* to advance 5G and investment and innovation in the CBRs band.¹⁵

More broadly, to address the mid-band spectrum shortage in the United States, the Commission should continue to look for solutions in the pending rulemaking that seeks comment on repurposing the 3.7-4.2 GHz band for flexible use, including mobile broadband.¹⁶ The 3.7-

¹² In addition, the 3.5 GHz band may also be used to backhaul growing mobile broadband traffic from cell sites to the network.

¹³ See Letter from Kara Graves, CTIA, to Marlene H. Dortch, FCC, GN Docket No. 17-258 (filed Aug. 13, 2018).

¹⁴ See e.g., CTIA Petition for Rulemaking, GN Docket No. 12-354 (filed June 16, 2017).

¹⁵ *Promoting Investment in the 3550-3700 MHz Band*, Notice of Proposed Rulemaking, 32 FCC Rcd 8071 (2017).

¹⁶ See *Expanding Flexible Use of the 3.7 to 4.2 GHz Band, et al.*, Order and Notice of Proposed Rulemaking, FCC 18-91 (rel. July 13, 2018).

4.2 GHz band provides the last opportunity to make available a large amount – up to 500 megahertz – of mid-band spectrum that is critical for 5G. Licensed spectrum blocks of at least 100 megahertz per operator are essential for delivering on the promise of 5G. CTIA also commends NTIA and Assistant Secretary David Redl for launching a study of the 3450-3550 MHz band for repurposing to commercial services.¹⁷ CTIA reiterates its request that the Commission preserve the promise of this 100-megahertz swath of spectrum by adopting a freeze on the acceptance, processing, or grant of any non-federal applications in the 3450-3550 MHz band.¹⁸

B. The Commission Has Moved Aggressively to Repurpose Spectrum Between 6 GHz and 57 GHz.

CTIA commends the Commission for its global leadership and continued ongoing commitment to repurpose high-band spectrum for 5G, Internet of Things, and other advanced wireless services. In 2015 when Congress adopted the Spectrum Pipeline Act, lawmakers, the Commission, and stakeholders had a strong interest in exploring high-band spectrum for wireless broadband. Eight months later, the Commission adopted the initial *Notice of Proposed Rulemaking* in the *Spectrum Frontiers* proceeding and since then, the Commission has adopted three orders and is currently seeking comment on two additional further notices of proposed rulemaking.¹⁹

¹⁷ Remarks of David Redl, Free State Foundation Tenth Annual Telecom Policy Conference (Mar. 27, 2018), <https://www.ntia.doc.gov/speechtestimony/2018/remarks-assistant-secretary-redl-free-state-foundation-telecom-policy>.

¹⁸ See Letter from Scott Bergmann, CTIA, to Marlene H. Dortch, FCC (filed Apr. 27, 2018).

¹⁹ See *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, et al.*, Notice of Proposed Rulemaking, 30 FCC Rcd 11878 (2015); *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 (2016) (“*Above 24 GHz R&O and FNPRM*”); *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*,

To date, the Commission has adopted rules to repurpose approximately 5.55 gigahertz of high-band spectrum for licensed wireless broadband²⁰ and is seeking comment on repurposing up to 6.55 gigahertz more – all between 24 GHz and 51 GHz.²¹ And the *Spectrum Frontiers* proceeding has committed a total of 14 gigahertz between 57-71 GHz for unlicensed uses. Thus, since 2015, the Commission has acted on far more than just one gigahertz between 6 GHz and 57 GHz as suggested by the Spectrum Pipeline Act.

Notably, the *Spectrum Frontiers* proceeding created a new radio service, the Upper Microwave Flexible Use Service (“UMFUS”), under a new Part 30 of the Commission’s rules. The technical rules for the service are well suited for the provision of 5G services. While the Commission explored whether bands above 24 GHz could benefit from adopting rules modeled on the 3.5 GHz CBRS regime, it appropriately determined that utilizing that approach in these bands was neither necessary nor recommended.²² The Commission concluded that adopting a

et al., Second Report and Order, Second Further Notice of Proposed Rulemaking, Order on Reconsideration, and Memorandum Opinion and Order, 32 FCC Rcd 10988 (2017) (“*Above 24 GHz Second R&O and FNPRM*”); *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, et al.*, Third Report and Order, Memorandum Opinion and Order, and Third Further Notice of Proposed Rulemaking, FCC 18-73 (rel. June 8, 2018) (“*Third Further Notice*”); *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, et al.*, Fourth Further Notice of Proposed Rulemaking, FCC 18-110 (rel. Aug. 3, 2018) (“*Fourth Further Notice*”).

²⁰ See *Above 24 GHz R&O and FNPRM* (providing 3.85 gigahertz in the 28 GHz band and 37-40 GHz band for 5G services, with shared access in the 37-37.6 GHz band); see also *Above 24 GHz Second R&O and FNPRM* (allocating an additional 1.7 gigahertz in the 24.25-24.45 GHz, 24.75-25.25 GHz, and 47.2-48.2 GHz bands).

²¹ *Above 24 GHz R&O and FNPRM* ¶¶ 389, 420 (proposing allocation of 3.8 gigahertz in the 31.8-33.4 GHz and 50.4-52.6 GHz bands); *Third Further Notice* ¶¶ 52, 76 (proposing allocation of 2.75 gigahertz in the 25.25-27.5 GHz and 42-42.5 GHz bands).

²² See, e.g., *Above 24 GHz R&O* at 8028 ¶¶ 30-32 (rejecting a SAS framework in the 28 GHz band in order to expedite use of the band and concluding that “geographic area licensing for this band is also consistent with our goal of adopting a balanced licensing approach that includes licensed, unlicensed, and innovative sharing approaches across a variety of bands”); *id.* at 8046 ¶ 79 (rejecting as SAS approach in the 39 GHz band because “the presence of incumbent geographic area licenses in a large part of the country renders the . . . band a poor candidate for implementing an SAS-based sharing model”); *Above 24*

use-or-share regime in the Part 30 bands could “discourage investment and delay deployment.”²³ CTIA strongly supports this decision and the UMFUS licensing approach in high-band spectrum.

Finally, CTIA commends the Commission’s decision to launch the 28 GHz auction this November, with the 24 GHz auction to immediately follow.²⁴ And Chairman Pai has announced plans to hold an auction for the 37 GHz, 39 GHz, and 47 GHz bands in 2019.²⁵ These auctions, as well as an auction of the 3.5 GHz band next year, will go a long way towards ensuring our nation’s competitiveness in the race to 5G.

GHz Second R&O at 10998 ¶ 29 (concluding that the 24 GHz band “does not require the functionality of a SAS to enable or enhance meaningful spectrum use”); *id.* at 11004 ¶ 50 (concluding that the 47.2-48.2 GHz “band does not involve sharing among multiple classes of primary users, [and] that is not necessary to develop the functionality of an SAS”).

²³ *Above 24 GHz Second R&O* at 11063 ¶ 226; *id.* at 11063 ¶ 225 (noting that the decision declining to adopt a use-or-share approach does not limit or prejudice any actions the Commission may take concerning sharing mechanisms with Federal users in shared bands).

²⁴ *See Auctions of Upper Microwave Flexible Use License for Next Generation Wireless Services; Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments, and Other Procedures for Auctions 101 (28 GHz) and 102 (24 GHz)*, Public Notice, FCC 18-109 (rel. Aug. 3, 2018).

²⁵ *See* FCC Chairman Ajit Pai, *Coming Home*, FCC BLOG (July 11, 2018); *see also* *Spectrum Frontiers Third Report and Order*, Statement of Chairman Ajit Pai; *id.*, Statement of Commissioner Michael O’Rielly; *id.*, Statement of Commissioner Jessica Rosenworcel.

III. CONCLUSION.

CTIA commends the Commission for diligently seeking to make additional spectrum available for terrestrial wireless use consistent with the Spectrum Pipeline Act and looks forward to continued work with the Commission and policymakers across the government to ensure we are 5G ready.

Respectfully submitted,

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