U.S. DEPARTMENT OF COMMERCE
NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION

In the Matter of	)	
	)	
Development of a National Spectrum Strategy	)	Docket No. 230308-0068
	)	

COMMENTS OF THE 5G FOR 12 GHz COALITION

The 5G for 12 GHz Coalition welcomes the opportunity to submit these comments in response to the National Telecommunications and Information Administration's ("NTIA") *Request for Comment* on the development and implementation of a National Spectrum Strategy for the United States.[1] According to the *Request*, NTIA "endeavors to identify at least 1,500 megahertz of spectrum for in-depth study to determine whether that spectrum can be repurposed to allow more intensive use."[2] The Coalition urges NTIA to include the 12.2-12.7 GHz ("12 GHz band") and 12.7-13.25 GHz bands ("Upper 12 GHz band"), both the subject of active proceedings at the Federal Communication Commission ("FCC" or "Commission"), in its portfolio of spectrum bands to be studied for repurposing to meet future requirements for more intensive non-federal use.

I. THE 12.2-12.7 GHz BAND IS IDEALLY SUITED FOR MORE INTENSIVE USES, INCLUDING NEXT GENERATION CONNECTIVITY, AND SHOULD BE EXPANDED FOR GREATER CONSUMER CHOICE AND TO PRESERVE U.S. GLOBAL COMPETITIVENESS

The 5G for 12 GHz Coalition is a multilateral coalition of 5G leaders whose mission is to unleash the power of 5G by making the 12.2-12.7 GHz band available for terrestrial wireless

[1] *Development of a National Spectrum Strategy*, Request for Comment, Docket No. 230308-0068 (rel. Mar. 15, 2023) ("*Request*").

[2] *Request* at 4.

services.[3] The various stakeholders in the Coalition, including public interest organizations, trade associations, and private companies, have a shared goal of unlocking licensed mid-band spectrum in order to secure U.S. global leadership, spur competition, and provide next-generation connectivity for all Americans. Currently, the band is allocated on a co-primary basis to Direct Broadcast Satellite ("DBS"), Fixed Satellite Service limited to non-geostationary orbit systems ("NGSO FSS") and Multi-Channel Video and Data Distribution Service ("MVDDS"). When making these allocations, the FCC demonstrated an early willingness to maximize the efficiency of the band subject to certain limits that prevent harmful interference. In an effort to protect DBS, the Commission adopted "very conservative" technical requirements for MVDDS, "including prohibitions on using MVDDS spectrum for two-way communications and offering mobile service, stringent limitations, and extensive and exhaustive coordination procedures."[4] These requirements, which no longer reflect the technological developments surrounding spectrum sharing, have constrained MVDDS providers' efforts to offer service using the band (despite significant outlays for licenses and operations). Since 2021, in response to a FCC *Notice of Proposed Rulemaking* seeking comment on how to expand the band for more

[3] The 5G for 12 GHz Coalition consists of 36 diverse and prominent public interest groups, trade associations, and companies in the telecommunications sector, calling on the FCC to act swiftly to allow the 12 GHz band to unlock the power of 5G for all Americans. The Coalition has steadily grown since its formation and now consists of the following members: A Side Technology, Airspan, AtLink, Benton Institute for Broadband & Society, BroadbandOne, Cambridge Broadband Networks Group, Center for Educational Innovation, Center for Rural Strategies, Ceragon, Computer & Communications Industry Association, DISH, Dell Technologies, Etheric Networks, Federated Wireless, Geolinks, Globtel, Go Long Wireless, Granite, Incompas, MMwave Tech LLC, MVD53, Mavenir, Mixcomm, New America, NextLink, Public Knowledge, RS Access, Resound Networks, Rise Broadband, Rural Wireless Association, Starry, VM Ware, WeLink, White Cloud, X Lab, and Xiber. *See* 5G for 12 GHz Coalition, *available* at www.5gfor12ghz.com

[4] MVDDS 5G Coalition Petition for Rulemaking, RM-11768 (filed Apr. 26, 2016), at 5.

flexible use, the 5G for 12 GHz Coalition has urged the Commission to maximize the potential of the band by modernizing its rules and opening up the 12 GHz band in order to unleash the power of terrestrial 5G, fixed wireless and other opportunistic uses.[5] The Coalition has demonstrated repeatedly that reallocating the band for such flexible uses would represent a "win-win" for terrestrial and satellite interests, as well as American consumers.

As NTIA and the FCC work to identify more mid-band spectrum resources to accelerate the deployment of next-generation services, the 12 GHz Band represents an immediate opportunity to add 500 megahertz of ideal spectrum to the spectrum pipeline with zero federal encumbrances, that can quickly be brought to market, without an auction, and at no cost to consumers. With the Commission's spectrum auction authority expiring in early March,[6] the only current avenue available to the agency to bring new spectrum to market is to identify bands, like 12 GHz, which are ripe for expanded use and that can take advantage of spectrum sharing practices and technologies in order to bring new services to consumers.

The Coalition has submitted a technical study from Roberson and Associates in the FCC's 12 GHz proceeding on the physical characteristics of the band and its suitability for 5G services that shows this spectrum is ideal for 5G deployment. In the study, the Coalition found that the band "combines the propagation characteristics and coverage advantages of lower mid-

[5] *Expanding Flexible Use of the 12.2-12.7 GHz Band, Expanding Flexible Use in Mid-Band Spectrum Between 3.7-24 GHz*, Notice of Proposed Rulemaking, 36 FCC Rcd 606 (rel. Jan. 15, 2021) ("*12 GHz Notice*").

[6] *See* FCC, *Chairwoman Rosenworcel Statement on the Expiration of FCC Spectrum Auction Authority*, Press Release (Mar. 10, 2023), *available at* https://www.fcc.gov/document/chairwoman-rosenworcel-expiration-spectrum-auction-authority.

band spectrum with the high capacity and throughput of the millimeter-wave ("mmW") bands."[7] The 12 GHz spectrum band maintains significant advantages with respect to signal range and coverage area over mmW bands which carry significant cost advantages, as fewer towers would be necessary for providers to deploy terrestrial services. As DISH notes, "it is the mid-band spectrum that allows spectrum reuse, densification, and high bandwidth capacity at relatively low cost," positioning the country with the largest reserves of mid-band spectrum "to win the 5G race."[8]

The Coalition and other stakeholders in the FCC's 12 GHz proceeding have also demonstrated how a new mobile allocation will meet the statutory standards for flexible use under section 303(y) of the Communications Act—which requires that such a reallocation avoid harmful interference among users, be in the public interest, and not deter investment in the communications services and systems, or technology development.

With respect to making changes to the band in a manner that would allow current users to avoid harmful interference, the record in this proceeding clearly shows that opening the 12 GHz band for terrestrial use for two-way communications is technically possible and that incumbent license holders can "successfully coexist" in the 12 GHz band.[9] In fact, two

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[7] *See* Roberson and Associates, LLC, The 12 GHz Band: Analysis of Physical Characteristics and Applicable Technologies (July 7, 2021) ("Roberson Report"), appended to Reply Comments of RS Access, LLC, WT Docket No. 20-443, GN Docket No. 17-183 (filed July 7, 2021). Based on these findings, the study's authors were able to conclude that "[n]etwork architectures, spectrum deployment techniques, and equipment development standards currently used for 5G in other bands can readily extend to the 12 GHz band. Given that these are adjacent bands, the Coalition is confident that the 12.7-13.25 GHz band shares these technical characteristics.

[8] Comments of DISH Network Corporation, WT Docket No. 20-443, GN Docket No. 17-183, 11-13 (filed May 7, 2021) ("DISH Comments").

[9] RKF Engineering Solutions, LLC, *Assessment of Feasibility of Coexistence between NGSO FSS Earth Stations and 5G Operations in the 12.2-12.7 GHz Band* (May 2021) ("RS Access

technical studies, the first submitted by RS Access and prepared by RKF Engineering Solutions, and the second submitted by DISH under the direction of former FCC Chief Wireless Engineer Tom Peters,[10] as well as a number of reconciliation studies submitted over the course of the proceeding thoroughly demonstrates that coexistence is possible without harmful interference. The RS Access Coexistence Study was the only newly commissioned technical analysis that was submitted during the comment portion of the proceeding. The study demonstrates and definitively concludes that coexistence in the 12 GHz band between 5G and NGSO FSS is feasible and readily achievable, showing that the band is suitable for 5G. With its updated technical study, DISH and Mr. Peters reaffirm that a two-way terrestrial mobile service can be managed and configured to protect DBS receivers. These studies, as well as the various reconciliation studies submitted to address late-coming NGSO FSS interference concerns, prove that claims of possible interference in the band are outdated and fail to take into account technical advances in satellite architecture and spectrum management.

RS Access and others in the record have shown that updating the Commission's rules in the 12 GHz band would result in a win-win scenario because terrestrial services can co-exist with incumbent services as the three systems occupying the space can continue to operate exactly as they do today without interfering with each other. As RS Access explains, technical developments that have transpired since the Commission's last review of the rules in 2002 have opened new sharing opportunities in the 12 GHz band.[11] As a result, "the Commission is not

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Coexistence Study"), appended to Comments of RS Access, LLC, WT Docket No. 20-443, GN Docket No. 17-183 (filed May 7, 2021) ("RS Access Comments").

[10] *See* Declaration of Tom Peters ("Peters Declaration") at 1, appended to DISH Comments.

[11] *See* RS Access Comments at 44-45 (describing robust antenna discrimination and how this technique helps to "isolate terrestrial transmissions from satellite transmission").

faced with an either-or, zero-sum choice between terrestrial and satellite uses. Encouraging coexistence between terrestrial and NGSO systems would maximize public interest benefits for consumers by allowing for the greatest use (and reuse) of the 12 GHz band."[12] The significant technological advances in spectrum sharing and band co-existence in the 12 GHz band should give the Commission confidence that it can increase opportunities for shared use of the band while protecting incumbents from harmful interference given that the original petitioners have detailed the development of spectrum-related innovations and substantiated how co-existence in the band between satellite-based and terrestrial services is now practicable.[13] As the Coalition's public interest partners explain, this conclusion is important because "the Commission does not need to adopt an either/or approach to the 12 GHz band. Instead it should adopt policies that allow both mobile and satellite providers to access the spectrum they need to compete."[14]

Opening the 12 GHz band for terrestrial use for two-way communications is not only technically feasible, but it is also in the public interest. Modifying the band will expand the 5G economy, enhance our global leadership in 5G and national security, promote competition, bridge the nation's digital divide, and enable opportunistic access to unused capacity. According to proponents of Commission action to make the band available for

[12] *Id*. at 23.

[13] *Id*. at 3, 34, 45. *See also* Comments of MVDDS Licensees, WT Docket No. 20-443, GN Docket No. 17-183 (filed May 7, 2021) at 12 ("MVDDS Licensees Comments") ("The MVDDS Licensees endorse the RS Access position that, with proper coordination and cooperation, MVDDS and NGSO licensees can coexist without causing harmful interference to one another."); DISH Comments at 3; Joint Comments of INCOMPAS and Computer & Communications Industry Association, WT Docket No. 20-443, GN Docket No. 17-183 (filed May 7, 2021) at 8-9 ("INCOMPAS-CCIA Comments").

[14] Comments of New America's Open Technology Institute, Public Knowledge, et al., WT Docket No. 20-443, GN Docket No. 17-183 (filed May 7, 2021) at 8 ("PIO Comments").

more intensive uses, "expanding access to spectrum for terrestrial broadband use in the currently very underutilized 500 megahertz [in the 12 GHz band] can promote the deployment of 5G services, promote competition, enhance the benefits of next generation Wi-Fi, spur innovation, and help to address the digital divide in underserved communities."[15] And according to RS Access, "[t]he NPRM asks whether releasing more mid-band spectrum for terrestrial 5G serves the public interest. The answer is unequivocal: yes."[16]

5G Economy: The proponents of expanding the flexible use of the 12 GHz band have demonstrated why updating the Commission's rules is critical for the 5G economy. As noted above, the 500 megahertz of spectrum from 12.2-12.7 GHz is ideally suited for 5G.[17] As the need for more 5G spectrum continues to grow, the 12 GHz band represents a unique opportunity for the U.S. to enhance its leadership in the race to 5G,[18] and there is broad consensus that the deployment and use of 5G networks will create a major boon to the U.S. economy.[19] According

[15] PIOs Comments at 1-2.

[16] RS Access Comments at 5 (contending that making the 12 GHz band available is "essential to advancing U.S. 5G leadership, which will serve broader economic and national security interests").

[17] *See* DISH Comments at 10-16 (asserting that the 12 GHz band is a prime candidate for spectrum reuse, "which in turn is important for densification and securing the high bandwidth capacity necessary for 5G" and citing the following factors for why the band could be an important mid-band resource for 5G: (1) the band has no federal government incumbents that need to be moved; (2) the 500 megahertz of available contiguous spectrum will allow for high-peak data transmission rates; (3) the near-global Mobile Service allocation allows for potentially harmonized global use of the band; (4) the existing manufacturing ecosystem for the 12 GHz band will help reduce the production costs for new 5G equipment in the band; (5) the band is not balkanized by being apportioned among a large number of licensees; and (6) co-frequency sharing among existing licensees is feasible, subject to safeguards that need not threaten the viability of each service).

[18] *Id*. at 7.

[19] RS Access Comments at 6 (citing an Accenture study estimating that 5G will add $1.5 trillion to U.S. GDP and create up to 16 million jobs).

to DISH, freeing up additional spectrum is essential for the U.S. to win the 5G race as analysts predict that mobile data traffic is projected to increase by eight times over the next six years. A tremendous amount of spectrum, including the 12 GHz band, will be required to support this growth in mobile traffic, and the country with the largest reserves of mid-band spectrum available is the best positioned to win the 5G race.[20] T-Mobile, which supports adding a mobile allocation to the 12 GHz band, agrees noting that the availability of additional spectrum in higher mid-band frequencies "is important for the continued deployment of 5G."[21] Moreover, updating the Commission's rules in the 12 GHz band will help create American jobs. In addition to its engineering study, RS Access has submitted an economic study from the Brattle Group that demonstrates the value of terrestrial 5G in the 12 GHz band. As the study shows, the incremental addition of terrestrial 5G spectrum will produce a net present value of social welfare benefit of an amount that could exceed $1 trillion, and it estimates that the value of the 12 GHz band when employed for terrestrial 5G use ranges from $27 to $54 billion.[22]

Global 5G Leadership and National Security: Freeing more mid-band spectrum by updating the Commission's rules in the 12 GHz band is also critical for U.S. global 5G

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[20] *See* DISH Comments at 9, 13.

[21] Comments of T-Mobile USA, Inc., WT Docket No. 20-443, GN Docket No. 17-183 (filed May 7, 2021) at 5 ("T-Mobile Comments").

[22] *See* The Brattle Group, *Valuing the 12 GHz Spectrum Band with Flexible Use Rights*, iii-iv, 35 (May 7, 2021), appended to RS Access Comments ("Given the overwhelming weight of terrestrial subscribers in the U.S. relative to other users, both today and in the future, allowing terrestrial mobile uses of the 12 GHz band is almost surely the welfare-maximizing path for the FCC to take. Consequently, even with limited interference we expect the incremental value of allowing mobile 5G services into the 12 GHz to be all or nearly all of $27.1 - $54.1 billion and the incremental total societal benefits to be all or nearly all of $270 billion - $1,082 billion.) *See also* RS Access Comments at 27-28.

leadership and national security. As INCOMPAS and CCIA explain, the U.S. needs more spectrum for 5G to innovate and compete with other nations that have already allocated significantly greater amounts of mid-band spectrum for 5G, and "[a]llowing for flexible-use licenses for two-way broadband by swiftly modifying the 500 megahertz of existing licenses in the 12 GHz band allows the U.S. to overtake China (950 MHz) immediately and propels the U.S. from 13th place to second place behind Japan (1000 MHz)."[23] As DISH and RS Access explain, freeing up this spectrum will also lead to economic and military advantages over potential rivals,[24] as well as serving broader economic and national security interests.[25]

Increased Competition: Greater competition in the wireless market, and specifically through the 12 GHz band, is important for consumers for a variety of reasons, and the record reflects why updating the technical and operational rules for the 12 GHz band is critical for competition. As INCOMPAS and CCIA explain, when there are multiple providers of advanced broadband services, consumers benefit through the lower prices, faster service, and greater innovation that competitive providers bring to a market.[26] Others in the record have echoed the importance of the 12 GHz band for increased competition: "the relative dearth of direct access to spectrum remains a serious obstacle to innovation and competition,"[27] and increasing the

[23] INCOMPAS-CCIA Comments at 13.

[24] *See* DISH Comments at 16-18 (citing to a Council on Foreign Relations Independent Task Force report that concluded that countries that "harness the current wave of innovation, mitigate its potential disruptions, and capitalize on its transformative power will gain economic and military advantages over potential rivals").

[25] *See* RS Access Comments at 5.

[26] *See* INCOMPAS-CCIA Comments at 16, 18.

[27] PIOs Comments at 17.

spectrum rights of terrestrial licensees in the 12 GHz band will enhance broadband competition, which has "profound public interest benefits" including affordability, quality of service, and increased access.[28] Moreover, if the FCC wants to help DISH reach its potential as a viable fourth competitor, then it must ensure that DISH has access to sufficient spectrum to compete aggressively with incumbent providers."[29] RS Access puts is simply: "the virtuous cycle of efficiency, competition, and choice is precisely what is at stake in this proceeding."[30]

Bridging the Digital Divide: The record in this proceeding shows why updating the Commission's rules will help close the digital divide. As explained by the Coalition's public interest partners, opening access to unused capacity in the 12 GHz band and authorizing opportunistic sharing "will substantially improve broadband access and capacity in rural, Tribal, and other hard-to-serve areas," and "provide rural ISPs and other entities with the spectrum-for-infrastructure they need to expand broadband services and help to bridge the digital divide." [31] Federated Wireless has indicated that "[m]aking more efficient use of spectrum and creating new opportunities for spectrum access are both critical objectives as the Commission looks to solve challenges of reaching unserved and under-served communities."[32] And according to several current MVDDS licensees, "[m]any of the markets served by [our companies] are in rural areas;

[28] *Id*. at 4-5.

[29] *Id*. at 7.

[30] RS Access Comments at 23.

[31] PIOs Comments at 12, 27.

[32] Comments of Federated Wireless, Inc., WT Docket No. 20-443, GN Docket No. 17-183 (filed May 7, 2021) at 1.

updating the rules to permit 5G services in these areas would enable the MVDDS Licensees to help the U.S. lessen the digital divide."[33]

Opportunistic Use: The proposed development of a spectrum sharing framework that authorizes opportunistic access to available capacity in the 12 GHz band while protecting incumbent users "will generate widespread public interest benefits" including "increasing spectrum access to meet the public demand for expanded services; increasing innovation, competition, and consumer choice; deterring licensees from warehousing spectrum and boost the secondary spectrum market; and improving deployment to rural, tribal, and other underserved areas."[34] In calling for greater opportunistic use of spectrum resources, public interest advocates in this proceeding identify access as the major obstacle to addressing growing spectrum demands.[35] Making underutilized bandwidth available through opportunistic sharing "makes wireless connectivity more available to more people and decreases deployment costs, which directly improves both consumer welfare and the productivity of businesses that are dependent on wireless data."[36]

II. THE 12.7-13.25 GHz BAND REPRESENTS A TREMENDOUS OPPORTUNITY TO ADD 1050 MEGAHERTZ TO THE NATION'S SPECTRUM PIPELINE IF PAIRED WITH THE 12 GHz BAND

While the 5G for 12 GHz Coalition is primarily interested in maximizing the 12 GHz band for two way terrestrial and 5G mobile and fixed services,[37] the Coalition supports the

[33] MVDDS Licensees at 6.

[34] PIOs Comments at 14.

[35] *See id*. at 15-16.

[36] *Id*. at 16.

[37] *See* Reply Comments of the 5G for 12 GHz Coalition, WT Docket No. 20-443, GN Docket No. 17-183 (filed July 7, 2021) (urging the FCC to maximize the potential of the 12.2-12.7 GHz

agency's efforts to expand opportunities for additional operations in the 12.7-13.25 GHz band ("Upper 12 GHz band"), adjacent spectrum that the FCC has identified as suitable for mobile broadband and other expanded use. The Coalition is confident that, under the appropriate sharing framework, the 550 megahertz of mid-band spectrum in the Upper 12 GHz band can be brought to market for mobile and fixed broadband and other terrestrial uses and can serve as another important tool in helping close the digital divide in communities across the country.

Given the urgent need to make additional spectrum available for 5G and future wireless services, the Coalition urges the Commission to consider changes to the Upper 12 GHz band that would align federal regulations with advancements in spectrum sharing and enable an ecosystem where mid-band spectrum drives innovation, new technologies, and next-generation connectivity for American consumers and businesses.

Making the 12 GHz band and the Upper 12 GHz band available for flexible use is critical for the country's global 5G leadership, its economic interests, and national security.[38] Adding 500 megahertz of 12 GHz spectrum and 550 megahertz of spectrum in the Upper 12 GHz band to the nation's mid-band spectrum portfolio would allow the U.S. to overtake several international competitors, including China, and propel the country back into a global leadership position in 5G competitiveness.

band by modernizing the band's operational rules and expanding its allocation to include two-way terrestrial and mobile 5G services).

[38] *See, e.g,* Spectrum Policy, CTIA, https://www.ctia.org/spectrum (last visited Nov. 18, 2022) ("To meet consumer demand and lead the world in 5G innovation, wireless networks need more capabilities and capacity. That means hundreds of megahertz of new licensed spectrum, with an emphasis on making more mid-band available to help reverse the U.S.'s mid-band deficit and realize 5G's potential.")

Furthermore, the Coalition asserts that the Upper 12 GHz band shares important characteristics with the 12 GHz band that make this mid-band spectrum ideal for 5G deployment. Like the 12 GHz band, the Upper 12 GHz bands has signal range and coverage area advantages over mmW bands and would require fewer towers for terrestrial service deployment. Given that this spectrum is ideally suited for mobile and fixed broadband and could be used to better position the U.S. in its efforts to deploy next generation services, like 5G, the federal government should accord significant weight to the option of expanding the Upper 12 GHz band's service rules to accommodate these additional operations.

III. CONCLUSION

Increased competition in mobile and fixed broadband through the broader use of mid-band spectrum supports free markets that encourage competition, more choices, and greater opportunities for American families. Maximizing the number of potential providers in the 12 GHz band and Upper 12 GHz band offers the best chance for consumers to access reliable, affordable broadband and mobile services throughout the United States. Leveraging 5G through increasing the licensed U.S. mid-band spectrum allocation is not only about facilitating faster speeds, but also building next-generation, open RAN networks that will transform the way American businesses serve American families. Building next-generation 5G networks for enterprise customers will help modernize how hospitals, power grids, factories, and farms operate. Doing so will allow these entities to deploy new automation tools to better serve hardworking Americans who rely on them. With this in mind, the Coalition urges NTIA to add these bands to its spectrum pipeline and to encourage the Federal Communications Commission to change its operational and technical rules in order to

bring these bands to market in order to further promote mobile and fixed broadband and other expanded use.

Respectfully submitted,

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