

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

In the Matter of)	
)	
Office of Engineering and Technology and)	GN Docket No. 19-128
Wireless Telecommunications Bureau Seek)	
Comment on Bidirectional Sharing Pursuant)	
To RAY BAUM’S Act of 2018)	

COMMENTS OF CTIA

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CTIA¹ respectfully submits these comments in response to the Public Notice issued by the Wireless Telecommunications Bureau (“WTB”) and Office of Engineering and Technology (“OET”) of the Federal Communications Commission (“Commission”), which seeks comment on how to make shared spectrum access viable between commercial spectrum users and Federal entities, as well as any barriers to voluntary commercial arrangements in which non-Federal users could provide spectrum access to Federal entities.²

I. INTRODUCTION AND SUMMARY.

The RAY BAUM’S Act requires the Commission, in collaboration with the National Telecommunications and Information Administration (“NTIA”), to conduct a bidirectional sharing study to determine the best means of providing Federal entities flexible access to non-

¹ CTIA – The Wireless Association® (“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 *Office of Engineering and Technology and Wireless Telecommunications Bureau Seek Comment on Bidirectional Sharing Pursuant To RAY BAUM’S Act of 2018*, Public Notice, GN Docket No. 19-128, DA 19-371 (rel. May 1, 2019).

Federal spectrum on a shared basis across short-, mid-, and long-range timeframes, including for intermittent purposes like emergency use.³ As WTB and OET consider the role of bidirectional sharing between non-Federal and Federal users, it is critical that they recognize the continued importance of the highly successful flexible, exclusive-use policies that have allowed the U.S. to lead the world in wireless innovation and investment. WTB and OET should consider a variety of options to address the needs of commercial and Federal users and only prioritize solutions that create incentives for efficient spectrum use. Additionally, while sharing frameworks may provide benefits in certain cases, they cannot be pursued as a primary means of facilitating 5G, and when used, should provide regulatory certainty necessary for commercial investment.

With regard to potential sharing solutions, WTB and OET should review the recommendations and proposals made as part of the NTIA Commerce Spectrum Management Advisory Committee (“CSMAC”) process concerning bidirectional sharing. WTB and OET should also recognize the utility and importance of commercial arrangements such as contracts and leases, which have been used for years to create greater spectrum efficiency, as well as CSMAC recommendations regarding the use of Memorandums of Understanding (“MOUs”) that can serve as a starting point for commercial agreement negotiations and frameworks. As part of the review process, CTIA recommends that WTB and OET hold a multi-day, multi-discipline workshop with NTIA to explore non-Federal and Federal requirements for bidirectional sharing.

Importantly, any successful bidirectional sharing framework must facilitate a “meeting of the minds” between Federal and commercial entities, thereby creating enforceable agreement terms, and sharing should not occur without full agreement of any affected party. Frameworks

³ Repack Airwaves Yielding Better Access for Users of Modern Services (RAY BAUM’S) Act of 2018, Pub. L. 115-141, § 610, 132 Stat. 1080, 1108 (2018).

for bidirectional sharing must also encourage transparent communication and collaboration among all affected stakeholders. To that end, a methodology should be developed to allow for seamless sharing of sensitive information between non-Federal and Federal stakeholders. In addition, it is critical that Federal incumbents disclose the need for additional shared access and why existing Federal allocations are insufficient to meet mission needs prior to authorization of any bidirectional sharing. These measures are necessary to facilitate efficient arrangements and ensure that Federal and commercial entities are on equal footing regarding negotiations.

CTIA and its members are eager to work with the Administration, the Commission, Congress, and all commercial and government stakeholders to extend U.S. global leadership in wireless to the age of 5G. If we get 5G policy right, including the parameters governing any potential bidirectional sharing, the U.S. will continue to lead the world in wireless, strengthening our economy and our global competitiveness.

II. FLEXIBLE, EXCLUSIVE-USE LICENSING IS THE HALLMARK OF THE SUCCESSFUL REGULATORY FRAMEWORK THAT WILL ENABLE 5G.

As CTIA has discussed previously, policymakers' top priority should be identifying and making available low-, mid-, and high-band spectrum for exclusive, licensed terrestrial use.⁴ More specifically, the U.S. government should make available hundreds of megahertz of mid-band spectrum and thousands of megahertz of high-band spectrum for terrestrial wireless use in the near term—and licensees should be able to provide fixed, mobile, or both types of service.⁵

The tremendous success of the U.S. wireless ecosystem in meeting customers' needs, strengthening the nation's economy, and leading the world in innovative technologies is the

⁴ See, e.g., Comments of CTIA, Docket No. 181130999-8999-01, at 3 (filed Jan. 22, 2019) ("CTIA National Spectrum Strategy Comments"); *Spectrum Considerations for 5G*, CTIA, at 2 (rel. Apr. 2, 2019), <https://www.ctia.org/news/spectrum-considerations-for-5g> ("Spectrum Considerations").

⁵ See *Spectrum Considerations* at 4.

product of three fundamental spectrum policies: (i) exclusive licenses to provide certainty in spectrum use; (ii) flexible use to adjust swiftly to marketplace demands; and (iii) reliance on market forces to optimize the award and transfer of spectrum rights to the highest and best use. The first element, exclusive-use licenses, are the cornerstone of the U.S.'s successful wireless strategy, and form the backbone of the Commission's licensing approach for mobile services. Exclusive-use licenses provide licensees with predictability and the certainty necessary to assure them that their investments will be protected against harmful interference, and allow licensees to fully "mine" the spectrum, resulting in more intense and efficient utilization. The U.S. wireless industry has relied upon these exclusive licenses as it migrated through four generations of technology, becoming the global leader in the provision of 4G service, and policymakers should continue to prioritize its use for the next generation of wireless services.

Flexibility and reliance on market forces are also critical elements of U.S. spectrum policy. By permitting licensees to offer mobile, fixed, or portable services to meet whatever the market demands, flexible-use rights have fostered investment and innovation that empower licensees to differentiate themselves by offering one service or a mix of services.⁶ The results are greater consumer choice, intensified competition, and spectrum that is put to its highest and best use. Congress and the Commission have also repeatedly found that a robust secondary market for spectrum serves the public interest.⁷ These market-driven policies, with the concomitant regulatory certainty included in exclusive license spectrum rights, create strong incentives for licensees to make efficient use of spectrum, and have been key to driving the successive generations of wireless networks. And, indeed, the wireless industry has become

⁶ CTIA National Spectrum Strategy Comments at 14.

⁷ *Id.* at 15.

increasingly efficient in its spectrum use through iterative generations of technology, including by refarming existing spectrum holdings, quickly putting new spectrum assets to use, and deploying denser wireless infrastructure and enhanced, spectrally efficient technologies.

III. WTB AND OET SHOULD CONSIDER A VARIETY OF OPTIONS TO ADDRESS THE NEEDS OF COMMERCIAL AND FEDERAL USERS AS MANDATED BY THE RAY BAUM'S ACT, BUT SHOULD ONLY PRIORITIZE THOSE SOLUTIONS THAT CREATE INCENTIVES FOR EFFICIENT SPECTRUM USE.

A. Sharing Frameworks May Provide Benefits, but Cannot Be Used as a Primary Means of Facilitating 5G.

CTIA recognizes that there are circumstances where incumbent operations pose challenges for spectrum reallocation to commercial use, and that, in some instances, a sharing framework could be the best and mutually beneficial means to repurpose spectrum.⁸ However, while sharing may provide benefits, including for incumbents, it is not the only solution for 5G development and deployment. In fact, sharing frameworks alone will not result in rapid development, deployment, and investment in 5G. Instead, 5G must be based on flexible, exclusive-use licensing as a primary model, or the U.S. will fall behind in deployment of next-generation technologies and services.

Abandoning flexible, exclusive-use licensing and focusing solely on bidirectional sharing would not only break with the tested and successful method, as described above, but would present significant infirmities for spectrum use. For example, requiring stringent power or geographic limitations would inhibit 5G deployments and restrict the ability of wireless providers to innovate and invest in new services. This is true because shared spectrum does not provide the fundamental certainty needed to make such risks acceptable, and introduces the potential for equipment incompatibility for spectrum bands used internationally for 5G as other

⁸ *Id.* at 16.

countries are focused on providing exclusive-use, not shared, spectrum access for mobile use.⁹

In short, it is imperative that the U.S. preserve and protect the existing spectrum policy framework for mobile services to allow the wireless industry to continue meeting customers' needs, strengthening the nation's economy, and leading the world in innovative technologies.

Moreover, WTB and OET should bear in mind as they develop the report to Congress that there has not yet been a real-world deployment of a successful system with dynamic spectrum usage and sharing.¹⁰ While the Citizens Broadband Radio Service mechanism (using a Spectrum Access System, or "SAS") may hold promise—and the wireless industry looks forward to its use for initial commercial deployments this summer—the underlying software and equipment surrounding that approach is still nascent and unproven. In addition, even if SAS-type approaches turn out to be viable, WTB and OET should not consider such methods as the default approach for the sharing of spectrum.

B. Sharing Frameworks Must Provide Regulatory Certainty and Interference Protection.

To the extent that WTB and OET recommend any sharing regime, they should recognize that sharing should be used as just one of many tools to facilitate efficient spectrum use.

Development of bidirectional sharing policies should not sacrifice the benefits associated with licensee certainty and flexibility. Instead, such policies should emphasize the most simple and unencumbered manner for sharing and allow for a transparent process that ensures all parties are

⁹ For example, multiple countries have licensed, or plan to license, mid-band spectrum on an exclusive-use basis. In contrast, the U.S. adopted a sharing framework for the CBRS band. See David Abecassis, Chris Nickerson, and Janette Steward, *Global Race to 5G – Update*, ANALYSYS MASON, at 31-32 (Apr. 2019), <https://api.ctia.org/wp-content/uploads/2019/03/Global-Race-to-5G-Update.pdf> ("Global Race to 5G Update").

¹⁰ Sharing has been accomplished using geographic- or time-based models (like with the AWS-3 spectrum band) but not based on dynamic use of the spectrum by both Federal and commercial users.

protected from interference and assured that their investments will not be impinged upon by new operations.

As an initial matter, any spectrum sharing regime should prioritize policies that present the most streamlined and unencumbered means of shared use. Each particular spectrum decision requires careful consideration of the underlying issues surrounding the use of the band. For example, if sharing is to be required between two fixed services, there would be no need for a complicated SAS-type approach for managing sharing. Similarly, in the future there may be less complex methods necessary to allow for spectrum sharing. WTB and OET should ensure the report to Congress notes that the circumstances and encumbrances for any spectrum band under consideration for sharing will dictate the requirements of a sharing regime and that any sharing regime will not be more complicated than required to protect incumbents and new entrants.

In addition, any recommended sharing framework must provide the regulatory certainty needed to support commercial investment decisions and provide spectrum licensees with sufficient rights to warrant the investment necessary to deploy robust, next-generation networks. For example, spectrum licensees participate in auctions for spectrum rights and those rights should continue to be fully protected by any sharing mechanism. Similarly, commercial sharing of Federal spectrum should provide rights that are clearly defined and allow for investment and innovation without an underlying threat that use of the spectrum could be removed at some later date. Sharing arrangements should also allow for both parties to continue to innovate and evolve technology choices—the sharing criteria should not be so rigid as to preclude moving to better and more efficient technology in the future. Moreover, for spectrum sharing to be successful, arrangements must ensure the utility of the band for commercial use and any sharing conditions should be clear prior to auctioning the spectrum.

Finally, to the extent that a sharing regime is deemed appropriate in a particular spectrum band, a regulatory regime for sharing should consider the requirements of all affected stakeholders and address the needs not only for certainty for investment, but for interference protection. Interference protection is one of the key spectrum rights that drives participation in spectrum auctions and allows licensees to innovate and invest in new services. It is critical for all licensees and must be sufficiently guaranteed in any sharing framework to protect both Federal and commercial spectrum users. Bidirectional sharing arrangements would be inoperable and ineffective absent transparent and cooperative interference protection parameters.

IV. TO THE EXTENT WTB AND OET RECOMMEND UTILIZATION OF BIDIRECTIONAL SHARING, THEY SHOULD PRIORITIZE RELIANCE ON COMMERCIAL ARRANGEMENTS.

It is imperative that commercial arrangements, such as spectrum leases, other contractual agreements, or MOUs, be the preferred approach for bidirectional sharing. Such negotiated arrangements would allow all affected parties the opportunity to agree upon the parameters of the sharing and ensure that systems can coexist without interrupting service to either party. These types of arrangements are commonplace in commercial environments and should be encouraged to enable bidirectional sharing.

A. Secondary Market Transactions Promote Efficiencies and Ensure Spectrum Is Put to Its Highest Use.

In developing a framework for bidirectional commercial arrangements, secondary market transactions such as contracts or commercial leases should be utilized and systematized as part of any bidirectional solution. For years, policymakers have sought ways to promote greater efficiency in agency use of spectrum and tools to create greater incentives for efficient spectrum use. And Congress has recognized on multiple occasions that secondary market transactions

offer an efficient mechanism to ensure spectrum is put to its highest and best use.¹¹ WTB and OET should recognize these benefits, particularly given that bidirectional sharing removes the essential market mechanism that helps drive efficient spectrum use. In other words, in a bidirectional sharing environment that does not utilize commercial sharing arrangements, not only would Federal users have access to their own spectrum bands without the need for purchasing the spectrum rights, but they would also have access to commercial spectrum without the need to engage in commercial arrangements. Indeed, the Government Accountability Office has specifically recognized this concern:

If no price is attached to a good—which is essentially the case with federal agencies’ use of spectrum—the normal market incentive to use the good efficiently may be muted. In the case of federal spectrum users, obtaining new spectrum assignments may be difficult, so an agency may have an incentive to conserve and use the spectrum it currently has assigned to it or currently shares efficiently, but the extent of that incentive is likely weaker than if the agency had had to pay a market price for the all of their spectrum needs. As such, federal spectrum users do not fully face a market incentive to conserve on their use of spectrum or use it in an efficient manner.¹²

The risk of inefficiencies in a sharing framework that does not emphasize the need for negotiated sharing arrangements counsels in favor of enabling commercial transactions to ensure efficient use of limited and critical airwaves and to preserve secondary market rights.

B. MOUs Can Similarly Facilitate Efficiencies in Any Bidirectional Sharing Framework.

NTIA, through its CSMAC, has engaged commercial industry and Federal government experts over the past several years on bidirectional sharing opportunities and concerns. This has

¹¹ See, e.g., 47 U.S.C. § 310(d).

¹² See *Spectrum Management: Federal Government’s Use of Spectrum and Preliminary Information on Spectrum Sharing: Hearing before the Subcomm. On Commc’ns and Tech., H. Comm. On Energy and Commerce*, 112th Congress, 12 (2012) (statement of Mark L. Goldstein, Director, Physical Infrastructure Issues, GAO).

led to consensus agreements and recommendations that should be considered by WTB and OET, in collaboration with NTIA. Specifically, WTB and OET should study CSMAC's proposals and recommendations on facilitating bidirectional sharing through MOUs.

MOUs were developed to address sharing between Federal and commercial spectrum users.¹³ Historically, formation of a Federal and non-Federal spectrum sharing agreement generally begins when the Federal agency in question approaches relevant public safety or commercial parties to propose Federal activity.¹⁴ MOU negotiations have proven to be complex undertakings, even when both parties are eager to see the deal done, but have resulted in viable agreements between Federal and commercial parties that have allowed for sharing without detrimental effects to either party. The selection of specific bands and geographic regions, as well as consideration for interference with incumbents in adjacent bands, all require technical analyses. Moreover, they may require policy changes that allow such sharing arrangements and a sophisticated understanding of spectrum and telecommunications engineering—all challenging while protecting confidential and classified system information.

CSMAC reported that the current MOU process is predominantly *ad hoc*.¹⁵ All parties face high transaction costs from the lack of transparency around existing MOUs and parties generally must negotiate a new MOU every time an agreement is reached.¹⁶ The existing MOU

¹³ *Federal Access to Non-Federal Spectrum: Systematizing MOU Structure & Usage and Workshop Recommendations*, Commerce Spectrum Management Advisory Committee, Subcommittee on Federal Access to Non-Federal Bands, NTIA, at 2 (July 8, 2016), https://www.ntia.doc.gov/files/ntia/publications/federal_access_to_non-federal_bands_sc_report_august_1.pdf (“MOU Structure & Usage and Workshop Recommendations”).

¹⁴ *Id.* at 3.

¹⁵ *Id.*

¹⁶ *See id.* at 3.

process likely would require updating if utilized for future bidirectional sharing arrangements, but can serve as a starting framework for negotiations and agreements.

C. Regardless of the Mechanism, Successful Bidirectional Sharing Requires a Clear Understanding of Both the Federal and Non-Federal Entities' Rights and Obligations.

Whether implemented through a modified MOU process or other commercial arrangements such as leases or contracts, any successful bidirectional sharing framework must facilitate a “meeting of the minds” between Federal and commercial entities, thereby creating enforceable agreement terms. Preserving commercial negotiations in the bidirectional sharing process is of paramount importance to facilitate efficient management of spectrum resources in a complicated and diverse environment. As an ideal first step to resolve the “meeting of the minds” issue, WTB and OET should consider CSMAC’s recommendation for a workshop on this issue.¹⁷ Specifically, WTB and OET should consider utilizing a multi-day, multi-discipline workshop to explore non-Federal and Federal requirements and terms for bidirectional sharing. This workshop could address issues like the need for commercial arrangements as well as other issues discussed below regarding transparency and collaboration.

D. WTB and OET Should Examine Any Potential Barriers to Federal Entities Engaging in Commercial Agreement.

Finally, any bidirectional framework recommended or adopted by policymakers that includes a commercial agreement or MOU component should consider any barriers faced by Federal users to accessing commercial spectrum. For instance, the Department of Defense (“DoD”) has represented that it needs a primary spectrum allocation to receive equipment funding. This issue should be formally disclosed and discussed by NTIA, WTB, and OET. Moreover, if Federal agencies believe there are other reasons why they cannot access spectrum

¹⁷ *See id.* at 2.

through commercial arrangements, as recommended above, it would be helpful to understand why and for the Commission and NTIA to explore solutions to address this issue.

V. TO THE EXTENT WTB AND OET RECOMMEND UTILIZATION OF BIDIRECTIONAL SHARING, IT IS ALSO IMPERATIVE TO PRIORITIZE TRANSPARENCY AND COLLABORATION AMONG STAKEHOLDERS.

For successful bidirectional sharing to occur, any proposed approach must promote transparency and collaboration between agencies and the commercial sector. Transparency and collaboration led to beneficial outcomes in the AWS-1 and AWS-3 contexts when affected parties met and shared viewpoints and requirements for Federal and commercial requirements.¹⁸ In contrast, the process involving sharing in the 37-37.6 GHz band, as well as added sharing requirements for the 37.6-38.6 GHz band, has been inefficient and protracted due to a lack of transparent interactions. To facilitate conversations and engagement, any bidirectional sharing framework should therefore balance interests between the Federal government and commercial sector and be based upon transparency, open dialogue, and engagement between the licensee(s) and Federal user(s).

It is worth noting that CSMAC found through interviews with DoD that there would be a benefit to a more detailed and comprehensive review of the problems that have led Federal users to seek access to non-Federal spectrum.¹⁹ This is particularly true as the Federal government is the primary user of approximately 60 percent of all spectrum below 3.7 GHz.²⁰ To encourage

¹⁸ See, e.g., Advanced Wireless Services (AWS), FCC, <https://www.fcc.gov/wireless/bureau-divisions/broadband-division/advanced-wireless-services-aws#block-menu-block-4> (last visited May 23, 2019) (noting that the Commission and NTIA issued a Joint Public Notice announcing AWS-3 coordination details, which refined the default nationwide coordination zones and provided additional information regarding coordination between Federal and non-Federal commercial shared use of the 1695-1710 MHz and 1755-1780 MHz bands).

¹⁹ See MOU Structure & Usage and Workshop Recommendations at 6.

²⁰ Positions: Spectrum Policy, CTIA, <https://www.ctia.org/positions/spectrum> (last visited May 22, 2019); see also *Report to the President, Realizing the Full Potential of Government-Held Spectrum to Spur*

investment and cooperation, Federal incumbents should be required to disclose the need for additional shared access and why existing Federal allocations are insufficient to meet mission requirements. This enhanced transparency could encourage future commercial investment and could also incentivize Federal agencies to coordinate with one another before seeking agreements with commercial entities. Therefore, WTB and OET should explore what issues the government seeks to resolve through co-primary access to commercially auctioned and licensed spectrum and also implement use disclosures into any bidirectional framework.

Other CSMAC efforts have also determined that sharing sensitive information is critical to allowing spectrum sharing. For instance, a 2016 Report noted information asymmetry and the need for Federal entities to access information from the commercial side and vice versa.²¹ To the extent possible, and in an act of good faith, it would be helpful if Federal agencies would engage publicly, potentially through NTIA comments or *ex parte* filings, to highlight their concerns and requirements for bidirectional sharing.²² Nevertheless, CTIA understands that exclusions are necessary for national security and does not expect blanket disclosures on sensitive issues. To that end, a general methodology should be developed to allow the seamless sharing of sensitive information between non-Federal and Federal stakeholders. Building on CSMAC's recommendations, WTB and OET should (1) explore whether the National Security

Economic Growth, Executive Office of the President, President's Council of Advisors on Science and Technology, at 8 (July 2012), https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/pcast_spectrum_report_final_july_20_2012.pdf.

²¹ *Agency to Industry Collaboration Subcommittee Report*, CSMAC, at 3 (June 8, 2016), https://www.ntia.doc.gov/files/ntia/publications/csmac_agency_to_industry_collaboration_subcommittee_report_r1.pdf ("CSMAC Collaboration Report").

²² Such action would be despite the general exemption for Federal entities from the *ex parte* disclosure rules. *See* 47 CFR § 1.1204(a)(4)-(5).

Council or National Advanced Spectrum and Communications Test Network models can be utilized for sharing of sensitive information with the commercial industry; and/or (2) investigate lessons learned from other government committees operating under the Federal Advisory Committee Act requirements that have been able to allow access to classified information.²³ As is true in the *ex parte* context, CTIA understands that exclusions would be necessary for national security and does not expect sensitive disclosures.

VI. CONCLUSION.

CTIA commends WTB and OET on their work to ensure that all avenues for efficient spectrum use, both exclusive and shared, are adequately explored. As bidirectional sharing opportunities are considered, it is critical that WTB and OET take the steps outlined herein to preserve highly successful U.S. spectrum policies by recognizing the utility of commercial terms and encouraging transparency and collaboration in any bidirectional sharing framework.

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²³ CSMAC Collaboration Report at 3-5.