Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
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Office of Engineering and Technology and Wireless Communications Bureau Seek Comment on Bidirectional Sharing Pursuant to RAY BAUM's Act of 2018	)	GN Docket No. 19-128

COMMENTS OF THE
TELECOMMUNICATIONS INDUSTRY ASSOCIATION

The Telecommunications Industry Association ("TIA")[1] hereby submits these comments in response to the Public Notice ("*Notice*")[2] in the above-captioned proceeding. TIA appreciates the opportunity to provide comments on the important topic of bidirectional sharing.[3] To our knowledge, this is the first on-the-record proceeding devoted solely to this important topic, and we look forward to reviewing feedback from other stakeholders and participating in future discussions on this issue. TIA has long espoused that a national spectrum policy should be built upon principles of predictability, flexibility, efficiency, and priority, and all four of these

[1] TIA is the leading trade association for the information and communications technology ("ICT") industry, representing companies that manufacture or supply the products and services used in global communications across all technology platforms. TIA represents its members on the full range of policy issues affecting the ICT industry and forges consensus on industry standards.

[2] Public Notice, *Office of Engineering and Technology and Wireless Telecommunications Bureau Seek Comment on Bidirectional Sharing Pursuant to RAY BAUM's Act of 2018*, GN Docket No. 19-127, rel. May 1, 2019, DA 19-371 ["Notice"].

[3] In these comments, we understand the term "bidirectional sharing" to mean "providing Federal entities flexible access to non-Federal spectrum on a shared basis." *See* Repack Airwaves Yielding Better Access for Users of Modern Services (RAY BAUM's) Act of 2018, Pub. L. No. 115-141 § 610(a)(1), 132 Stat. 1080, 1108 (2018).

principles would be significantly implicated in any discussion of potential bidirectional sharing regimes.

I. FUNDAMENTAL PRINCIPLES FOR BIDIRECTIONAL SHARING.

As a preliminary matter, TIA believes that bidirectional sharing can and should be explored, albeit subject to certain important principles and safeguards. TIA and our members have long supported and contributed to the exploration of methods to increase the efficiency of spectrum usage, subject to appropriate safeguards. While the potential for bidirectional sharing is still in early exploratory stages, the Commission should recommend that Congress continue encouraging work in this area through various means. With spectrum being increasingly scarce, TIA and our members are committed to developing and deploying technologies that make spectrum usage more efficient and effective for all types of users, both federal and non-federal.

Developing a comprehensive list of principles and safeguards at this stage may be challenging. Nevertheless, the Commission should promote and recommend to Congress that any bidirectional sharing be based upon the following:

Sharing must be voluntary. Spectrum users have invested tens of billions of dollars making investments in their systems and networks based on the expectation that spectrum will be available to them to serve their mission or their customers. After making such huge investments, any system to permit bi-directional sharing must therefore be completely voluntary. Any involuntary use would seriously undercut the market-based expectations of spectrum users, would have a tremendous chilling effect on future spectrum auctions, and for federal users could have significant impacts on an agency's ability to fulfill its mission. The consequences would ultimately harm technology deployment, hurt U.S. technology leadership, and have direct and indirect negative consequences for American taxpayers.

Both the present and future expectations of spectrum users must be respected.

Commercial licensees, and even non-commercial licensees like FirstNet, have invested billions of dollars into procuring spectrum rights and building out networks. Similarly, Federal users have existing systems designed to operate on its existing spectrum. Spectrum users reasonably expect not only offer services at current levels using current technologies, but to repurpose their spectrum using newer technologies as time passes. Indeed, the Commission has long espoused a technology-neutral approach to spectrum allocations in order to promote innovation. Any bidirectional sharing regime, therefore, must fully respect the needs of current users by ensuring that they can expand their usage in the future as needed.

This respect should also extend to the needs of non-Federal unlicensed operations. To be clear, TIA believes in technology neutrality, so any operations that comply with the basic requirements for power levels etc., and that have the appropriate management protocols in place, could potentially be permitted to operate in a band, whether federal or non-federal. However, permitting Federal "sharing" in a well-established unlicensed band on unequal terms with other users, such as by providing dedicated allocations or unequal technical requirements for new federal operations, should be avoided.

Any bidirectional sharing regimes must be band-specific and avoid one-size-fits-all approaches. The technical characteristics, current allocations, missions, and market expectations of users in any given band will differ from those in other bands. Any bidirectional sharing regime should account for these differences. It would be inappropriate, therefore, to establish rules that apply too broadly, particularly at a technical level. While it may make sense to establish some general principles – such as those discussed in this section – that would apply across different bands, in general the inquiry will be band-specific. Such an approach will

provide both non-federal and federal users with greater certainty, promote information sharing, and will likely lead to better and more sophisticated technical outcomes that provide advantages for both parties.

Any bidirectional sharing regime must provide clarity on a regulatory framework for spectrum access. In any given band, a bidirectional sharing regime should clarify how a potential federal user will obtain access to existing non-federal band. For example, would the government be required to follow the existing non-federal licensing rules, in order to provide transparency to all users in the band? If so, how would enforcement be handled, and by whom? How would temporary or non-routine requirements by either federal or non-federal users be handled? How are licenses being assigned, and under what conditions? Some of these issues were specifically explored by a prior subcommittee of the Commerce Spectrum Management Advisory Committee (CSMAC),[4] and some of those recommendations could provide a path forward as the Commission studies the issue and provides recommendations to Congress.

Federal agencies should continue seeking commercial alternatives. Advances in technology, along with the deployment of wireless networks of increasing sophistication across the country and the world, have provided agencies with a plethora of new ways to potentially achieve their missions. Just as shortwave radio has gradually declined due to the proliferation of international communications via the Internet, federal agencies should continue to evaluate whether some of their current or legacy communications needs can potentially be met by off-the-shelf commercial alternatives. For example, the Department of Defense's 2013 Electromagnetic

[4] CSMAC Subcommittee on Federal Access to Non-Federal Bands, *Federal Access to Non-Federal Spectrum, Systematizing MOU Structure & Usage and Workshop Recommendations*, July 8, 2016, https://www.ntia.doc.gov/files/ntia/publications/federal_access_to_non-federal_bands_sc_report_august_1.pdf

Spectrum Strategy called for DoD to "cultivate and adopt commercial service capabilities,"[5] specifically mentioning smartphones and 4G wireless. The Commission should recommend that Congress update and encourage the replication of this approach across the government.

II. THE TECHNOLOGIES NECESSARY TO FACILITATE SOPHISTICATED BIDIRECTIONAL SHARING ARE STILL IN EARLY STAGES.

Any federal / non-federal sharing regimes will take time to develop. More than six years after the Commission first issued a Notice of Proposed Rulemaking, the 3.5 GHz CBRS sharing model has not yet been placed into full operation, although the PAL auction is finally expected to happen in 2020. Prior to that, the project to transition AWS-3 spectrum in the 1755-1780 MHz band took years of work and cooperation between federal and non-federal stakeholders to enable spectrum sharing. Moreover, both the CBRS and AWS-3 sharing arrangements are conceptually simpler than some of the more advanced dynamic frequency selection / software-defined radio paradigms that are often discussed in connection with bidirectional sharing. Federal stakeholders, therefore, must have reasonable expectations about when access to non-federal spectrum can be achieved.

Automated sharing capabilities do not exist yet. As Fred Moorefield of the DoD CIO's office recently stated, "we do not have an automated capability that would allow us to be able to quickly share spectrum, within both the Federal government and the private sector."[6] As noted above, TIA believes that these are areas for potentially fruitful technical investigation. However,

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[5] Department of Defense, *Electromagnetic Spectrum Strategy* (2013), https://dodcio.defense.gov/Portals/0/Documents/Spectrum/ESS.pdf.

[6] Kelcee Griffis, *Pentagon Spectrum Expert Predicts More Dynamic Sharing*, LAW360 (Sept. 24, 2018), https://www.law360.com/articles/1085563/pentagon-spectrum-expert-predicts-more-dynamic-sharing

policymakers must be realistic about capabilities and timelines for making such collaboration a reality.

The technological capabilities of non-federal licensees may be a limiting factor. TIA's members have been active participants in making next-generation wireless technologies a reality. For example, many TIA members participate in the National Spectrum Consortium,[7] a research and development organization that is working with DoD on cutting-edge technologies that would permit far more opportunistic sharing than is possible with currently-deployed technologies.

However, while this cutting-edge R&D work is laudable, policymakers must recognize that commercial deployments of such technologies is at a far earlier stage. Even the spectrum access system ("SAS") concept is only now about to be proven through CBRS in the 3.5 GHz band. Effective bidirectional sharing may require coordination and sophisticated technology capabilities – or at least sufficient technical awareness – by all parties to the shared spectrum, including non-federal users. This again should make policymakers understand that there will be limits to how quickly and effectively bidirectional sharing regimes can be implemented.

III. THE COMMISSION SHOULD URGE CONGRESS TO TAKE STEPS THAT WILL PROMOTE FUTURE SHARING.

In addition to conducting a bidirectional sharing study, RAY BAUM's Act also requires the Commission to submit a report to Congress that includes "any recommendations for legislation or proposed regulations."[8] The Commission should use this valuable opportunity to make the following recommendations:

Congress should improve tracking mechanisms for both federal and non-federal spectrum usage. For sharing to be truly bi-directional, Congress must facilitate mechanisms to

[7] https://www.nationalspectrumconsortium.org/

[8] RAY BAUM's Act § 610(a)(2).

improve tracking of spectrum usage by both federal and non-federal users.[9] For example, TIA has long supported strengthening NTIA's role as the coordinator of spectrum usage by the federal government, and these efforts should be bolstered by increased staffing and potentially other means. Better tracking of where the government or the private sector *are* using spectrum may be mutually beneficial in that it would also reveal where federal or non-federal entities *are not* using spectrum, and therefore what potential opportunities for bidirectional sharing may exist.

Congress should facilitate greater cooperation between non-federal licensees and potential federal users. Successful examples of federal / non-federal cooperation exist, such as in the 1755-1780 MHz AWS-3 band that led to the highest-grossing auction of spectrum to date. The Commission should urge Congress to encourage greater cooperation, including mechanisms to provide security clearances to non-federal licensees, to encourage greater cooperation. Facilitating better information sharing may reveal opportunities for mutual advantage, or at least non-interference, that allows spectrum to be used more advantageously.

In addition to promoting federal / non-federal cooperation, the Commission should also urge Congress to promote greater spectrum cooperation between agencies. One example is the cooperation between federal agencies toward making the 1300-1350 MHz band available, while significantly upgrading current radar technology, as an objective of the Spectrum Efficient National Surveillance Radar (SENSR) cross-agency program.

Congress should continue exploring ways to incentivize agencies to share or transfer spectrum where appropriate. Reps. Doris Matsui and Brett Guthrie have introduced the Federal

[9] TIA has recognized, as have reports from the CSMAC, that federal and non-federal users use spectrum differently, often intentionally so, and therefore that industry metrics on spectral efficiency might not apply (or could require adjustment) for federal systems.

Spectrum Incentive Act in multiple Congresses, although this provision has not yet been enacted into law given some complexities in the proposals. These and other approaches should continue to be pursued as a means to incentivizing greater spectrum sharing where it satisfies the objectives discussed above.

Congress should provide dedicated funding for advanced communications research and development by reinvesting a small portion of auction proceeds. In the 2012 Spectrum Act, Congress provided funding for public safety communications research only.[10] Now is the time to establish a dedicated funding stream for more fundamental advanced communications research. Advances in technology are crucial to supporting better spectrum sharing regimes, both for federal and non-federal users, and to maintaining U.S. technological leadership in an increasingly competitive global environment. Rather than seeing the next round of spectrum auction proceeds serve only to facilitate the next budget deal, Congress needs to act now to ensure that a portion of future proceeds are reinvested into advanced communications R&D. Research is the "seed corn" that improves spectrum efficiency and makes future auctions possible. Aside from research in direct areas such as radio propagation, Congress should also encourage applications of other emerging technologies, such as machine learning methods, to wireless networks.

[10] Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, § 6303, 126 Stat. 156, 221-22 (2012) (authorizing program); *id.* at §§ 6413(b)(4), (b)(7), 126 Stat. at 236 (providing $300 million in funding).

IV. CONCLUSION

TIA appreciates the work of the Commission on this proceeding, and its continuing efforts to promote new technology by making more spectrum available. We look forward to reviewing the initial comments and offering further input at later stages of this proceeding.

Respectfully submitted,

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