

**Before the
National Telecommunications and Information Administration
U.S. Department of Commerce
Washington, DC 20203**

**COMMENTS OF THE DYNAMIC SPECTRUM ALLIANCE
Docket No. 181130999-8999-01
January 22, 2019**

The Dynamic Spectrum Alliance (DSA)¹ submits these comments in support of a modern national spectrum framework that recognizes the significant benefits to American consumers and businesses, federal agencies, and technology innovation that dynamic spectrum sharing enables.

The DSA represents the companies that make the technologies to improve spectrum utilization to the benefit of consumers and businesses, worldwide. We believe that spectrum sharing is fundamental to a modern spectrum policy framework – particularly for the U.S. to maintain leadership in 5G – and strongly urge the National Telecommunications and Information Administration (NTIA) to recognize the vital importance of spectrum sharing.

Specifically, we urge NTIA to: i) continually examine opportunities to unlock new bands through modern sharing techniques; ii) consider the costs and benefits of sharing a spectrum band versus clearing it and licensing it when examining new opportunities for non-federal access; and iii) to significantly improve the information exchange between federal and non-federal users regarding each other’s spectrum use to enhance the efficient utilization of all spectral resources. Building these strategies into a comprehensive framework will improve broadband access for U.S. consumers and businesses – while maintaining and even expanding critical federal access – and stimulate a robust U.S. technology and service ecosystem, which will serve of the as the engine for 5G leadership.

Sharing is Fundamental to a National Spectrum Strategy

Electromagnetic spectrum is naturally a shared resource. Spectrum has always been shared in the geography and frequency domains in licensed spectrum, and geography, time, frequency, and even power domains in unlicensed spectrum. We believe that the United States needs to move away from the binary

¹ The Dynamic Spectrum Alliance is a global, cross-industry alliance focused on increasing dynamic access to unused radio frequencies. The membership spans multinational companies, small- and medium-sized enterprises, academic, research, and other organizations from around the world, all working to create innovative solutions that will increase the utilization of available spectrum to the benefit of consumers and businesses alike. A full list of DSA members is available on the DSA’s website at www.dynamicspectrumalliance.org/members/.

lens through which it has traditionally viewed spectrum policy, where the only access choices are between licensed and unlicensed. Instead, the United States must continually leverage all available spectrum access schemes and technologies.

As wireless technologies have evolved, the intensity of sharing has increased, although not at the same rate. Technological advancements and diverse wireless use cases have outpaced the rate at which spectrum is shared in practice. This divergence between the capability of wireless and computing technologies to intensify spectrum sharing – and the level of sharing in practice – is a function of an outdated regulatory and policy paradigm that is far too static for modern spectral needs. When coupled with ever-increasing consumer demand for bandwidth, these ingredients create the so-called “spectrum crunch,” which can only be addressed through regulatory reforms that take advantage of proven spectrum sharing technology.

Indeed, the wireless technologies exist today to dramatically increase utilization through sharing tools. Dynamic databases, device-based sensing, simple electronic coordination, and smart radios are all available and deployed across the wireless ecosystem.

For instance, for years WiFi has leveraged “listen-before-talk” protocols that rely on device-level sensing to coordinate effective access. Broadcast spectrum white spaces can now be leveraged through relatively simple lookup databases that help authorize additional unlicensed access in unused broadcast spectrum. More recently, the Federal Communications Commission (FCC) and NTIA, in partnership with the Department of Defense and the Navy, and with the support of diverse industry participants, have leveraged dynamic databases and sensing to unlock 150 megahertz of previously unusable spectrum in the Citizens Broadband Radio Service, which is poised for commercial launch in the coming months.² More recently, the FCC has begun inquiries into whether spectrum sharing using database technology can expand use and improve spectral efficiency in the 3.7-4.2 GHz and 6 GHz bands, positions that DSA supports as fundamental to its mission to create conditions for innovation and expand broadband access. And even in traditional commercial wireless bands – specifically the AWS-3 band – new non-federal access was enabled through effective protection and sharing with incumbent federal systems.³

² See *Promoting Investment in the 3550-3700 MHz Band*, GN Docket 17-258, Report and Order, FCC 18-149 (rel. Oct. 24, 2018) (CBRS 2018 R&O).

³ See *The Federal Communications Commission and the National Telecommunications and Information Administration: Coordination Procedures in the 1695-1710 MHz and 1755-1780 MHz Bands*, GN Docket No. 13-158, DA 14-1023 (WTB / NTIA Jul. 18, 2014).

These techniques and others must be leveraged as part of a national spectrum strategy that continually unlocks spectrum that was previously unavailable, or intensifies spectrum use, for both non-federal and federal users.

Critically, spectrum sharing techniques can also help facilitate competitive access to spectrum resources. In their complementary roles identifying and reallocating spectrum, the FCC and NTIA uniquely influence the supply of spectrum and the delivery of new, innovative services through the licensing and access rules they establish. Shared spectrum also reduces the financial barrier to spectrum access, which allows competitive providers and new entrants to invest more significantly in network deployment instead of spectrum acquisition. And, shared spectrum can allow certain federal use cases to continue to exist while opening a band up for new non-federal access.

With lower-barrier access and the ability of smaller or new providers to continue to operate or newly launch, a more robust technology ecosystem will foment in the United States. A diversity of operators with a diversity of needs will necessarily drive a diverse device and technology ecosystem.

Most importantly, however, a smart and modern spectrum strategy that significantly incorporates and relies on shared access can mean better broadband access for consumers, and continued and potentially expanded access for federal users.

The Government Should Consider Sharing, and the Cost and Benefits, in Spectrum Planning Decisions

The FCC's and NTIA's shared jurisdiction over spectrum creates a helpful tension in policymaking. Their constituents' goals may not always align, which creates useful space for new ideas to come forth. This was borne out in the context of CBRS, for example, where a federal use case was able to stay in a band that was otherwise unlocked for new non-federal access using dynamic databases and sensing technologies.⁴

As the FCC and NTIA continually examine "new" bands for access – either new non-federal or new federal access – they should consider the costs and benefits of shared access over cleared and licensed access. This has two results: 1) sharing becomes a primary instead of secondary part of the strategic policy discussion; and 2) it will potentially uncover bands that would not be available (either for non-federal or federal) without shared access. With respect to the second result, this also means that

⁴ See *Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, GN Docket No. 12-354, Report and Order and Second Further Notice of Proposed Rulemaking, 30 FCC Rcd 3959 (2015).

unlicensed schemes can also be considered and incorporated, which have the added benefit of operating at lower power and subject to interference from other users. Furthermore, the cost of not adopting spectrum sharing as a primary part of a strategic policy discussion – or worse yet, a rejection of that approach – will create perverse incentives for incumbents not to use spectrum efficiently or even engage in rent-seeking behavior to monetize incumbency, as Fixed Satellite Service operators are likely seeking to do in the 3.7-4.2 GHz band.

NTIA Should Improve Information Exchange Between Non-Federal and Federal Users

In some cases, spectrum sharing can be improved dramatically with more information. Historically, spectrum sharing between non-federal and federal users was accomplished through static coordination – a federal agency would determine its (conservative) protection threshold, which non-federal operators were unable to exceed. This simple coordination – where devices understand a boundary around an incumbent system – is still an important tool and in some cases the best tool.

However, with more complex sharing regimes in which the non-federal and federal uses are not very compatible, where non-federal uses are at higher powers (i.e. licensed by rule), or where there are myriad federal systems with different operational requirements, more information leads to enhanced sharing. Dynamic spectrum databases – like the Spectrum Access Systems (SAS) developed for CBRS – can improve the fidelity within which they can accurately facilitate increased access to a band without interference with more information.

NTIA could achieve this by releasing more detailed information about federal users, by leveraging a federal “SAS” for the purposes of coordination, or through other means. In all events, classified information would have to be protected, and NTIA should consider ways to anonymize or otherwise obfuscate such information in a way that would still be valuable and useful for effective sharing.

Finally, we acknowledge that NTIA and federal agencies, too, could gain better access to information about non-federal deployments, particularly on a licensed basis. While the FCC’s Universal Licensing System does contain a good deal of information about licensed operations, the specifics of any network or user are largely hidden in bands with large geographic license areas. More information about the location and intensity of non-federal uses could potentially reveal new opportunities for both increased non-federal access and new federal access. In all cases, where an incumbent operates it would of course retain its primary rights.

Conclusion

We are encouraged that NTIA is comprehensively building a national spectrum strategy, and for the foregoing reasons, strongly urge NTIA to consider shared access as a fundamental part of the strategy.

Sincerely,



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