

**Before the
DEPARTMENT OF COMMERCE
NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION
Washington, DC 20230**

In the Matter of)	
)	
Developing a Sustainable Spectrum Strategy for America’s Future)	Docket No. 181130999-8999-01
)	

COMMENTS OF FACEBOOK, INC.

Facebook, Inc. (“Facebook”) is pleased to submit these comments in response to the Request for Comments by the National Telecommunications and Information Administration (“NTIA”) on developing a sustainable spectrum strategy for America’s future.¹ Facebook’s mission is to give people the power to build community and bring the world closer together. And connecting people is a critical first step in executing this mission. Today, nearly half of the world’s population is still not connected to the Internet.² Among those that have connectivity, many are under-connected. Connecting these people is a complicated effort that requires not just bringing network infrastructure to more people, but establishing a regulatory environment that fosters innovation and encourages investment.

¹ Department of Commerce, National Telecommunications and Information Administration, Docket No. 181130999-8999-01, Request for Comments, Developing a Sustainable Spectrum Strategy for America’s Future, 83 Fed. Reg. 245 (Dec. 21, 2018) at <https://www.govinfo.gov/content/pkg/FR-2018-12-21/pdf/2018-27690.pdf> (“NTIA Request for Comments”).

² International Telecommunication Union, Measuring the Information Society Report 2018-Volume 1 at 2 (11 Dec. 2018) at <https://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2018/MISR-2018-Vol-1-E.pdf>.

Improving connectivity in the United States and around the world means pursuing spectrum policies that maximize the use of this limited resource and promoting the expansion of both the capacity and coverage of wireless networks. To this end, Facebook strongly supports the NTIA’s efforts here to develop a National Spectrum Strategy. As noted in the Presidential Memorandum, the United States “requires a balanced, forward-looking, flexible, and sustainable approach to spectrum management.”³ As a world leader in spectrum management, the United States is in a unique position to develop innovative policies and set an example for the rest of the world. Going forward, ensuring that spectrum is available in low, middle, and high bands will be critical to the United States’ future global competitiveness. And beyond availability, flexible, fair, and efficient spectrum management mechanisms—including access to spectrum under licensed, unlicensed, and lightly licensed frameworks—will be necessary to ensure spectrum can be used by a variety of users and platforms. Moreover, an ongoing sustainable spectrum strategy will require spectrum sharing, the use of automated sharing technologies, and possibly the use of additional buildout requirements to ensure that spectrum is used efficiently.

1. The National Spectrum Strategy Should Seek to Make Spectrum Available for Flexible Use under a Balance of Licensed, Unlicensed and Lightly Licensed Frameworks to Accommodate a Wide Range of Use Cases.

Spectrum policies should promote flexible use and coexistence across a variety of use cases and platforms, such as mobile, satellite, and new technologies like high-altitude solar aircraft. Although Facebook is neither a manufacturer nor an operator, Facebook has invested in research and development in all of these platforms, towards the common goal of expanding

³ Presidential Memorandum of October 25, 2018, Developing a Sustainable Spectrum Strategy for America’s Future, 83 Fed. Reg. 210, 54513 (Oct. 30, 2018)(“Presidential Memorandum”).

broadband connectivity both in the U.S. and around the globe. Connecting the unconnected and enhancing user interfaces and device automation in the future will require a mix of technical solutions. For example, to accelerate commercial viability of high-altitude platforms, Facebook has initiated development of a broadband communications system to be used for these platforms supporting a range of partners. Facebook has also announced its Terragraph project, a low-cost high-throughput (multi-Gigabit) multi-node mesh wireless network for dense urban topologies that could provide fiber-like reliability for access and backhaul at a lower upfront cost.⁴

Making spectrum accessible to a wide range of use cases will require spectrum to be made available under a balance of unlicensed, lightly licensed, and licensed spectrum allocation regimes. All three of these allocation regimes are critical to the expansion of wireless infrastructure. Exclusively licensed spectrum is necessary to accommodate the buildout of wide-area networks. And ensuring sufficient unlicensed spectrum is available drives innovation and investment in a range of technologies that can complement and support networks and expand broadband at low cost. Sufficient unlicensed spectrum is necessary to meet demand for high capacity access and backhaul technologies, internet-of-things and machine-to-machine communications, and other use cases in the future. Lightly licensed spectrum under a link registration system should also be available to support high-powered wireless backhaul use cases.

Spectrum access through a variety of licensing frameworks increases spectrum utilization and allows for the coexistence of multiple users within the same spectrum band. Spectrum

⁴ Introducing Facebook's new terrestrial connectivity systems—Terragraph and Project Aries, <https://code.facebook.com/posts/1072680049445290/introducing-facebook-s-new-terrestrial-connectivity-systems-terragraph-and-project-aries/>

sharing and allocation rules should be based on factors such as: indoor/outdoor use; terrestrial/space use; or power level based distinctions to allow for the most effective utilization of the spectrum. For example, spectrum could be allocated for unlicensed use indoors and lightly licensed use outdoors within the same band.

2. Ongoing Sustainable Spectrum Management Will Require Increased Spectrum Sharing and Sharing Technologies.

To date, the United States has led the world in cutting-edge spectrum management regulations and the use of sharing technologies by allowing opportunistic access to spectrum, including between Federal and non-Federal users. NTIA's leadership in the development of the Spectrum Access System and Environmental Sensing Capability in 3550 – 3700 MHz will bear fruit in other repurposed bands, like 3450 – 3550 MHz. Spectrum access systems and related technologies can manage spectrum access for incumbent users and priority users while allowing general access to the spectrum not in use by higher-priority licensees. Facebook believes that automated sharing techniques could balance the needs of multiple spectrum users while keeping these bands open to the innovation that is yet to come. For example, Facebook has worked alongside other companies across the industry to evaluate and develop the automated frequency coordination (AFC) mechanism that the Federal Communications Commission has proposed to use in portions of the 6 GHz band.⁵ The AFC would allow unlicensed users to coexist with point-to-point microwave links by determining available frequencies for unlicensed operations.⁶

⁵ See *Unlicensed Use of the 6 GHz Band*, ET Docket No. 18-295, FCC 18-147 (rel. Oct. 24, 2018) at <https://docs.fcc.gov/public/attachments/FCC-18-147A1.pdf>.

⁶ See *id.* ¶ 25.

As this approach becomes finalized and implemented, similar mechanisms could be applied to other spectrum bands.

Moreover, the use of automated sharing technologies that allow for sharing between incumbents and general access users that can access the spectrum opportunistically avoids the risk of licensed spectrum laying fallow. Around the world, licensed spectrum resources are often significantly underutilized. Yet this spectrum remains unavailable to others due to delayed buildout and weak license buildout requirements. If unused spectrum were instead open for unlicensed use through sharing technologies, this would no longer be a concern.

In the meantime, while sharing technologies are still being developed, policymakers should consider adopting meaningful and enforceable buildout requirements. For example, a use-or-share requirement that would require licensees to make available any unused spectrum after a certain period of time would serve not only to ensure that the spectrum is utilized, but it could serve to motivate licensees to build out more quickly.

Facebook strongly supports the NTIA's efforts to develop a sustainable National Spectrum Strategy. Improving spectrum utilization and access through a balanced approach to spectrum allocation and the use of sharing technologies is critical to the future of wireless infrastructure in the United States.

Respectfully submitted by:

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