

Before the
NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION
Washington, DC 20230

In the Matter of)
)
Developing a Sustainable Spectrum Strategy) Docket No. 181130999-8999-01
for America’s Future) RIN 0660-XC044
)

**COMMENTS OF
CONSUMER TECHNOLOGY ASSOCIATION**

Consumer Technology Association (“CTA”)¹ respectfully submits these comments in response to the above-captioned Notice of Request for Comments (“RFC”) on the development of a comprehensive, long-term National Spectrum Strategy.²

I. INTRODUCTION

CTA applauds the National Telecommunications and Information Administration (“NTIA”) for issuing this RFC on the development of a National Spectrum Strategy. CTA member companies are accelerating the pace at which they develop innovative connected consumer products and services. A forward-thinking National Spectrum Strategy will ensure that this pace of innovation continues and in turn facilitates America’s continued global competitiveness in the coming years.

¹ Consumer Technology Association (“CTA”)™ is the trade association representing the \$398 billion U.S. consumer technology industry, which supports more than 15 million U.S. jobs. More than 2,200 companies—80 percent are small businesses and startups; others are among the world’s best-known brands—enjoy the benefits of CTA membership including policy advocacy, market research, technical education, industry promotion, standards development and the fostering of business and strategic relationships. CTA also owns and produces CES®—the world’s gathering place for all who thrive on the business of consumer technologies. Profits from CES are reinvested into CTA’s industry services.

² Department of Commerce, National Telecommunications and Information Administration (“NTIA”), *Developing a Sustainable Spectrum Strategy for America’s Future*, Request for Comments, 83 Fed. Reg. 65,640 (Dec. 21, 2018) (“RFC”).

The billions of connected devices entering the consumer products market rely on spectrum, and wireless networks will need greatly increased capacity and access to additional low-, mid-, and high-band spectrum for both licensed and unlicensed to accommodate these devices. The National Spectrum Strategy can help address these needs by seeking to improve federal spectrum management and increase transparency regarding new spectrum that could be made available for future commercial use. In addition, the National Spectrum Strategy should utilize every tool available to expand access to spectrum for innovative consumer products and devices. By taking these steps, the National Spectrum Strategy will help enable greater innovation moving forward.

II. INCREASED AVAILABILITY OF SPECTRUM ENABLES THE LATEST INNOVATIONS IN CONSUMER TECHNOLOGIES

CTA members are at the forefront of developing and deploying new devices and technologies to meet consumers' increasing demands for, and reliance on, connected devices and things to communicate, consume content, improve their health and safety, and better their lives. This innovation has never been more evident than at CES 2019 in Las Vegas. Walking the show floor, visitors saw a vision of the connected world that was jaw-dropping in its expanse and potential: multitudes of devices communicating with each other to improve quality of life across many metrics, with enormous promise to transform our lives and society. For example, innovators unveiled new small cells allowing for enhanced data coverage and faster speeds.³ Another company demonstrated real-time tracking of blood pressure—no cuff or wires required.⁴

³ See, e.g., Corinne Reichert, ZDNET, *CES 2019: Sprint unveils smart home Magic Box, confirms Samsung 5G phone* (Jan. 7, 2019), <https://www.zdnet.com/article/ces-2019-sprint-unveils-smart-home-magic-box-confirms-samsung-5g-phone>.

⁴ See Brian Cooley, CNET, *CES 2019: Omron HeartGuide blood pressure watch is for real*, (Jan. 6, 2019), <https://www.cnet.com/news/ces-2019-omron-heartguide-blood-pressure-watch-is-for-real> (“The watch wirelessly uploads its readings to an app called HeartAdvisor and that history

Moreover, for several years now, CES has been home to showing some of the greatest innovations in the auto sector. These improvements to the driving experience based on the latest connected technology are making transportation safer and saving thousands of lives.⁵

This is just the beginning, and there is no telling what innovations the future holds. Consumer demand for these products is only increasing. The connected world enables more smart homes and appliances, smart cars, smart retail experiences, smart agriculture and manufacturing, and other new innovations that we cannot imagine today. Cisco projects that the number of devices and connections in the United States will increase from 8.1 per capita in 2017 to 13.6 per capita in 2022.⁶ These devices will rely on seamless connectivity made possible by next-generation networks, increased processing power, and tiny sensors that enable machines and devices to respond instantaneously to their environments. The proliferation of connected devices, today, however, already is stretching the limits of current communications networks. Connected devices of tomorrow will require significantly more network capacity to meet connectivity needs.

can be shared with your doctor via automatic PDF export or transferred into [third-party health platforms]”).

⁵ For example, Aptiv deployed 30 autonomous vehicles in Las Vegas during CES that were capable of taking passengers to 1,600 different stops and can change lanes to pass other cars. Jon Swartz, BARRON'S, *We Took a Spin in a Driverless Car at CES. Here's What We Learned* (Jan. 8, 2019), <https://www.barrons.com/articles/aptiv-autonomous-cars-ces-2019-51546883934>; see also News Release, Samsung, *Samsung Showcases the Future of Connected Living at CES 2019* (Jan. 7, 2019), <https://news.samsung.com/us/ces-2019-samsung-showcases-future-connected-living-press-conference> (discussing the “Digital Cockpit 2019,” which uses Cellular-V2X technology “to receive and analyze information that will make the driving experience safer and more enjoyable”).

⁶ See Cisco, Visual Networking Index: Forecast and Trends, 2017-2022 (Nov. 26, 2018), https://www.cisco.com/c/m/en_us/solutions/service-provider/vni-forecast-highlights.html# (select the United States from the North America drop down arrow).

Connected devices, and the consumers who use them, benefit from access to networks that utilize new low-, mid-, and high-band spectrum.⁷ Indeed, one of the keys to the game-changing capabilities of 5G wireless services is the use of a wide variety of spectrum bands for fixed and mobile applications. Future services will use multiple spectrum bands, with the network and devices employing the most appropriate frequencies for the best delivery of a particular service.⁸ To enable continued innovation in new products and services that utilize 5G and future generations of wireless networks, the federal government must continue to identify a wide array of suitable, licensed and unlicensed spectrum for commercial use.

III. A FORWARD-THINKING NATIONAL SPECTRUM STRATEGY WILL HELP ENSURE AMERICA’S CONTINUED GLOBAL COMPETITIVENESS IN THE COMING YEARS

Wireless broadband connectivity played a critical role in introducing new consumer products and services in the last decade. Combined with the introduction of mobile broadband operating systems, this increased connectivity contributed to “hockey stick growth in many dimensions—device sales, data traffic, apps, advertising, payments, social media, and much more.”⁹

America’s forward-thinking spectrum policymaking helped to enable this growth. By making both licensed and unlicensed spectrum available for commercial use in conjunction with other innovation-friendly policy choices, policymakers set the stage for companies to invest and

⁷ See Comments of the CTA to FCC, GN Docket No. 14-177, at 5 (Jan. 23, 2017), https://ecfsapi.fcc.gov/file/10123665715360/CTA_Spectrum_Frontiers_2FNPRM_Comments.pdf (“CTA Spectrum Frontiers Comments”).

⁸ See, e.g., News Release, T-Mobile, *T-Mobile, Ericsson and Intel Complete World’s First 5G Call on 600 MHz* (Jan. 7, 2019), <https://www.t-mobile.com/news/600-mhz-5g-call> (At CES 2019, T-Mobile, Ericsson, and Intel demonstrated this future at CES with 5G first—a tri-band 5G video call, where each caller used a different spectrum band: 600 MHz, 28 GHz, and 39 GHz.).

⁹ CTA, *5G U.S. Market Impact*, at 2 (2018), <https://www.cta.tech/Research-Standards/Reports-Studies/Studies/2018/5G-U-S-Market-Impact.aspx> (“5G Market Impact Study”).

innovate in the U.S. in new connected products and services.¹⁰ Not only did this investment and innovation benefit consumers in ways previously not imagined, but it also yielded dividends in the form of economic growth and job creation. For example, although there were just five companies that had crossed the billion-dollar threshold in 2010, this number ballooned to 120 by 2018—and half of these billion-dollar companies were located in the U.S.¹¹

America’s future global competitiveness depends upon the same type of forward-thinking spectrum policymaking that previously enabled American leadership in wireless broadband connectivity over the past decade.¹² Indeed, the stakes for leading in 5G and other advanced wireless connectivity may be higher than ever: The deployment of 5G technologies likely will occur in concert with other significant technological breakthroughs in artificial intelligence, Internet of Things, robotics, blockchain, user interfaces, and edge computing—all technologies that either rely on, or can be enhanced by, wireless connectivity. With these innovations occurring in conjunction with 5G deployment, there could be three to five times more disruption in the 5G cycle as compared to the 4G cycle.¹³ Put in monetary terms, this 5G “value chain” could generate \$3.5 trillion in revenue and support 22 million jobs between 2022 and 2035.¹⁴ To ensure America realizes these economic benefits, the federal government must have a plan to

¹⁰ See CTA, International Innovation Scorecard 2019 – United States (Jan. 3, 2019), <https://www.cta.tech/cta/media/policyImages/policyPDFs/IntlScorecard/2019-01-03-2019-CTA-International-Innovation-Scorecard-United-States.pdf> (“2019 International Innovation Scorecard”).

¹¹ 5G Market Impact Study at 14.

¹² See RFC at 65.641 (Question 5. “What are the risks, if any, to the global competitiveness of U.S. industries associated with spectrum management and policy actions?”).

¹³ 5G Market Impact Study at 14.

¹⁴ IHS Economics & IHS Technology, *The 5G economy: How 5G technology will contribute to the global economy*, at 18 (Jan. 2017), <https://cdn.ihs.com/www/pdf/IHS-Technology-5G-Economic-Impact-Study.pdf>.

ensure commercial access to new spectrum by the current and next generation of connected devices and products.

IV. THE NATIONAL SPECTRUM STRATEGY SHOULD IMPROVE FEDERAL SPECTRUM MANAGEMENT AND INCREASE TRANSPARENCY REGARDING NEW SPECTRUM FOR COMMERCIAL USE

To meet the growing demand for wireless bandwidth and to ensure that America maintains its global competitiveness, the National Spectrum Strategy also should seek to improve federal spectrum management. Specifically, it should seek to increase transparency regarding how federal spectrum is used and what federal spectrum could be made available for commercial use. The National Spectrum Strategy can accomplish this by taking a number of steps.

First, the National Spectrum Strategy should develop methods for ongoing measurement of federal spectrum utilization. By some accounts, the federal government occupies—either exclusively or on a primary basis—sixty percent of the spectrum best suited for mobile broadband.¹⁵ To help policymakers understand how, where, and when the federal government is using spectrum resources the National Spectrum Strategy should identify methods to measure the utilization of spectrum by the federal government. This measurement should happen on a recurring basis to enable an assessment of whether spectrum is being used efficiently.¹⁶

Second, the public should have access to the results of these measurements, subject to any national security concerns. Providing public transparency into federal spectrum use will allow for engagement on how to best utilize the nation’s limited spectrum resources while

¹⁵ See, e.g., Michael O’Rielly, *Enacting More “Sticks”: Spectrum Fees for Government Users*, FCC Blog (Sept. 8, 2015), <https://www.fcc.gov/news-events/blog/2015/09/08/enacting-more-sticks-spectrum-fees-government-users>.

¹⁶ See FCC, *Connecting America: The National Broadband Plan*, at 80-81 (2010), <https://www.fcc.gov/general/national-broadband-plan> (“National Broadband Plan”).

ensuring that federal agencies are able to meet their mission requirements. Ultimately, such engagement will contribute to policies that meet the growing demand for bandwidth in the consumer innovation industry while ensuring that federal agencies can continue to provide mission-critical services.

Third, the National Spectrum Strategy should provide a roadmap identifying bands that are being explored for future commercial use on an exclusive or shared basis. CTA previously urged the Federal Communications Commission (“FCC”) to issue a roadmap that would describe the timing related to the release of spectrum in the pipeline. Specifically, CTA recommended that such a roadmap include dates, in the near term, for holding spectrum auctions.¹⁷ Similar to an FCC roadmap, providing estimated timing about the Administration’s activities to free up spectrum would give the industry and consumers useful information to plan commercial development and deployment of 5G and next generation wireless products and services that would utilize these bands. To that end, the National Spectrum Strategy also should explore the possibility of a joint FCC/NTIA roadmap that could provide a more comprehensive picture of the timeline for making more spectrum available for commercial use.

V. THE NATIONAL SPECTRUM STRATEGY SHOULD UTILIZE EVERY AVAILABLE TOOL FOR EXPANDING ACCESS TO SPECTRUM FOR INNOVATIVE CONSUMER PRODUCTS AND DEVICES

The RFC invites comment on how predictability of spectrum access for all users can be improved, which is an issue of paramount importance.¹⁸ Without access to spectrum, there will be less innovation and investment in connected consumer products and services.

¹⁷ CTA Spectrum Frontiers Comments at 3, 5.

¹⁸ See RFC at 65,641 (Question 1. “In what ways could the predictability of spectrum access for all users be improved?”).

Given the importance of predictable access to spectrum for commercial use, the National Spectrum Strategy should utilize every available tool to increase access to spectrum across the board, while accounting for critical federal uses. Examples of possible tools include:

- Prioritizing Efficient Use of Spectrum by Federal Users: The efficient use of spectrum by federal users can help to free new spectrum for commercial use. In a number of instances in the past two decades, NTIA and the FCC have cleared spectrum bands of federal operations by relocating federal operations to new frequency assignments.¹⁹ In each case, increases in the efficient use of spectrum by federal users helped make new spectrum available for commercial use. The National Spectrum Strategy should continue to prioritize existing spectrum clearing efforts as well as explore new initiatives, such as those that provide incentives to incumbent federal operators to voluntarily clear spectrum in return for a portion of the proceeds realized by the auction of the cleared spectrum.²⁰
- Continued Collaboration Between the FCC, NTIA, and Federal Users to Maximize Sharing Opportunities: The FCC and NTIA continue to explore innovative ways to maximize sharing opportunities between federal and commercial users. Indeed, innovators are exploring many different sharing frameworks depending on the details of a band's use. The National Spectrum Strategy should explore ways in which the FCC and NTIA, along with the federal agencies that use spectrum, can continue to collaborate to maximize spectrum sharing opportunities.²¹
- Creating a Positive Environment for Research and Development: Investments in research and development create the foundation for the innovation economy.²² In fact, a country's

¹⁹ For example, the FCC held commercial auctions for the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, and 2155-2180 MHz bands to commercial users. The majority of the federal systems have been relocated out of these bands. See Wilbur Ross & David Redl, U.S. Department of Commerce, *Commercial Spectrum Enhancement Act (CSEA): Annual Progress Report for 2017* (June 2018), https://www.ntia.doc.gov/files/ntia/publications/csea_2017_report_june_2018.pdf.

²⁰ See National Broadband Plan at 84-93.

²¹ See Paige R. Atkins, Assoc. Adm'r of the Office of Spectrum Mgmt., *Understanding Federal Spectrum Use*, NTIA Blog (July 30, 2015), <https://www.ntia.doc.gov/blog/2015/understanding-federal-spectrum-use> (observing that “the process of repurposing and relocating spectrum is complicated and time consuming—particularly given the numerous different systems that can be occupying a single band”). There are opportunities for industry-government collaboration on spectrum sharing through bodies such as the Commerce Spectrum Management Advisory Committee (“CSMAC”). See, e.g., CSMAC, *Spectrum Efficiency Subcommittee Report*, at 11 (July 2018) https://www.ntia.doc.gov/files/ntia/publications/csmac_spectrum_efficiency_subcommittee_report.pdf.

²² See Comments of the Consumer Technology Association to NTIA, Docket No. 1603311306-6306-01, RIN 0660-XC024 at 27-28 (June 2, 2016),

gross expenditures (regardless of the source of funds) on research and development is one indicator CTA uses to evaluate the extent to which countries are innovation-friendly.²³ Government policies encouraging private sector investments in research and development of innovative spectrum-utilization methods and spectrum sharing tools and techniques can increase spectrum access for commercial users. Policies that would unleash private-sector investment should be part of the National Spectrum Strategy. Technological advancements that come through research and development have resulted in and will continue to promote more efficient spectrum usage. For example, the technology that will enable dynamic spectrum access in the 3.5 GHz band had not yet been built when the FCC created the Citizens Broadband Radio Service in 2015.²⁴ Commercial deployments in the 3.5 GHz band will begin this year and user experiences in this innovative band will help inform the development of automated spectrum management sharing techniques in the future.²⁵

VI. CONCLUSION

CTA thanks NTIA for seeking comment on the development of a National Spectrum Strategy. To meet the growing demand for wireless bandwidth and ensure America's continued global competitiveness, the National Spectrum Strategy should seek to improve spectrum management, increase transparency regarding new spectrum that could be made available for future commercial use, and utilize every available tool for expanding access to spectrum for innovative consumer products and devices.

Respectfully submitted,

CONSUMER TECHNOLOGY ASSOCIATION

By: /s/ Michael Petricone

https://www.ntia.doc.gov/files/ntia/publications/cta_comments_re_ntia_ilot_rfc-final-060216_2.pdf.

²³ See CTA, 2019 International Innovation Scorecard, Methodology, <https://www.cta.tech/Policy/Innovation-Scorecard/International/Methodology.aspx>.

²⁴ See Keith Gremban, Director for NTIA ITS, *Moving Closer to Making Spectrum Sharing at 3.5 GHz a Reality*, NTIA Blog (Nov. 5, 2018), <https://www.ntia.doc.gov/blog/2018/moving-closer-making-spectrum-sharing-35-ghz-reality>.

²⁵ See RFC at 65,641 (Question 2. "To what extent would the introduction of automation facilitate assessments of spectrum use and expedite the coordination of shared access, especially among Federal and non-Federal spectrum stakeholders?").

Michael Petricone
Sr. VP, Government and Regulatory Affairs

Rachel S. Nemeth
Director, Regulatory Affairs

1919 S. Eads Street
Arlington, VA 22202
(703) 907-7644

January 22, 2019