



April 3, 2019

**VIA ELECTRONIC FILING**

Ms. Marlene H. Dortch, Secretary  
Federal Communications Commission  
445 Twelfth Street, SW  
Washington, DC 20554

**Re:** ***Ex Parte Presentation**, Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, GN Docket No. 18-122; *Promoting Investment in the 3550-3700 MHz Band*, GN Docket No. 17-258; *Unlicensed Use of the 6 GHz Band*, ET Docket No. 18-295; *Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz*, GN Docket No. 17-183; *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, GN Docket No. 14-177, WT Docket No. 10-112; *Accelerating Wireless/Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment*, WT Docket No. 17-79, WC Docket No. 17-84.

Dear Ms. Dortch:

The next generation of wireless, 5G, will transform every sector of the economy and every aspect of our day-to-day lives, resulting in significant socio-economic benefits—from enabling new and different apps and services for U.S. consumers, to being the hub of innovation and technological progress, to driving the creation of millions of new jobs and contributing billions to the economy. Recognizing the potential of this next-generation connectivity, the Trump Administration released a Presidential Memorandum last year calling for the creation of a National Spectrum Strategy that adopts a “balanced, forward-looking, flexible, and sustainable approach to spectrum management.”<sup>1</sup>

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<sup>1</sup> Presidential Memorandum on Developing a Sustainable Spectrum Strategy for America’s Future, Sect. 1 (issued Oct. 25, 2018), <https://www.whitehouse.gov/presidential-actions/presidential-memorandum-developing-sustainable-spectrum-strategy-americas-future/> (“Presidential Memorandum”).



To facilitate the development of this framework, CTIA endeavored to fully examine the wireless landscape, both domestically and internationally, to identify key aspects of a successful national framework to support 5G. To that end, CTIA attaches hereto two new contributions:

- A **National Spectrum Strategy report**, prepared by CTIA, that follows up on the Presidential Memorandum with a three-point plan of action to help unleash the spectrum needed to win the race to 5G, including a recommendation for additional licensed, exclusive-use spectrum; a recommitment to free-market principles; and further modernization of government policies and procedures;<sup>2</sup> and
- An **updated Global 5G Comparison report**, prepared by Analysys Mason, showing that the race to 5G has continued to intensify.<sup>3</sup> While the U.S. has significantly improved its position in the 5G race, U.S. policymakers will need to continue to combat and address the coordinated investment strategy of China and other leading 5G nations.

Chairman Pai, through his 5G FAST Plan, and the Commission, through its commitment to U.S. 5G leadership, have identified the key elements needed to ensure continued wireless leadership. Policymakers—at the Commission, and in Congress and the Administration—are poised to take the necessary steps.

The U.S. wireless ecosystem—wireless service providers, tower and infrastructure companies, app developers—is eager to embrace and invest in 5G, as are the vertical industries that stand to benefit, including health care, autonomous vehicles, agriculture, and many more. As the attached reports demonstrate, what we need is more spectrum—specifically in the mid-band ranges—to support 5G.

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<sup>2</sup> A *National Spectrum Strategy to Lead in 5G*, CTIA, (Apr. 2019), <https://api.ctia.org/wp-content/uploads/2019/04/A-National-Spectrum-Strategy-to-Lead-in-5G.pdf>.

<sup>3</sup> David Abecassis, Janette Stewart, and Chris Nickerson, *Global Race to 5G – Update*, ANALYSYS MASON (Apr. 2019), <https://api.ctia.org/wp-content/uploads/2019/03/Global-Race-to-5G-Update.pdf> (“Global Race Update”).



## **A National Spectrum Strategy**

In December 2018, the U.S. Department of Commerce’s National Telecommunications and Information Administration (“NTIA”) issued a Request for Comments seeking public input on the development of the National Spectrum Strategy envisioned by the October 2018 Presidential Memorandum. NTIA received nearly 60 comments from a variety of stakeholders, including CTIA,<sup>4</sup> which will inform the development of the National Spectrum Strategy. The Secretary of Commerce, working through NTIA, and, in consultation with the Commission, Office of Management and Budget, and White House Office of Science and Technology Policy, will issue its recommendations to the White House this summer. CTIA takes this opportunity to highlight for the Commission a three-point plan of action to help fulfill the Administration’s bold vision to develop a National Spectrum Strategy that gives “industry more freedom to innovate” and “reach the full potential that 5G offers.”<sup>5</sup>

### *A Five-Year Schedule of Spectrum Auctions*

The National Spectrum Strategy should establish and announce a five-year schedule for additional low-, mid-, and high-band spectrum. More spectrum is crucial to enabling the additional capacity, faster speeds, and lower latency necessary to deliver data for the bit-hungry applications and use cases expected for 5G. We are fortunate that policymakers have already identified key bands needed for our 5G future. It is now about publicly executing a clearly defined schedule to provide the wireless industry with much-needed certainty.

*First*, the U.S. has a critical need to make additional mid-band spectrum available. This spectrum combines favorable propagation characteristics for coverage with wide channelization that enables high throughput and low latency. The U.S. has not currently assigned any flexible use licensed mid-band spectrum above 3 GHz, while other countries

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<sup>4</sup> Comments of CTIA, *In the Matter of Developing a Sustainable Spectrum Strategy for America’s Future*, Docket No. 181130999-8999-01 (filed Jan. 22, 2019), <https://api.ctia.org/wp-content/uploads/2019/01/190122-CTIA-Comments-to-NTIA-on-National-Spectrum-Strategy.pdf> (“CTIA Comments”).

<sup>5</sup> White House, *White House 5G Summit, Remarks of Michael Kratsios*, YouTube (Sept. 28, 2018), <https://www.youtube.com/watch?v=IBbY8fvTidU>.



continue to move ahead in making hundreds of megahertz of mid-band spectrum available for licensed use.<sup>6</sup> Based on current projections, the U.S. is expected to rank at the bottom in mid-band spectrum availability by the end of 2020.<sup>7</sup> A recent study showed that licensing 400 megahertz of new mid-band spectrum will add \$274 billion in total, or \$39 billion annually, to America's GDP over the next seven years.<sup>8</sup> Doing so would also help the wireless industry create 1.3 million new jobs on a direct and spillover effect basis to deploy mid-band infrastructure.<sup>9</sup> To reap these benefits, and avoid falling behind, the Commission should move quickly to make hundreds of megahertz of mid-band spectrum available: the **3.45 GHz band** is under NTIA review to consider federal-commercial sharing; the **3.5 GHz band** rules for the licensed portion of this band were finalized in October 2018 and the Commission should schedule an auction promptly; the **3.7-4.2 GHz band** is under Commission review and should be a priority for the remainder of this year as other countries are unleashing hundreds of megahertz of the 3 GHz spectrum band for 5G services; and the **6 GHz band** offers great promise and, as CTIA has urged, the Commission should issue a further notice to consider licensing the upper portion of the band for 5G and other advanced services.

*Second*, high-band spectrum will be critical to unlocking 5G's high-capacity and data-intensive applications. The U.S. has currently made the most high-band millimeter wave spectrum available, and CTIA commends the Commission for its current auction activity, having auctioned the 28 GHz band, the current auction of the 24 GHz band, and the announced plan to auction the 37 GHz, 39 GHz, and 47 GHz bands by year-end. Still, China is expected to make six gigahertz of high-band spectrum available by 2021, reflecting the continued global focus on high-band spectrum.<sup>10</sup> The Commission should continue to meet this challenge by moving ahead aggressively with making additional high-band spectrum

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<sup>6</sup> CTIA Comments at 25-26, 31-34.

<sup>7</sup> *Id.* at 33-34.

<sup>8</sup> David Sosa and Greg Rafert, *The Economic Impacts of Reallocating Mid-Band Spectrum to 5G in the United States*, ANALYSIS GROUP (Feb. 2019), <https://api.ctia.org/wp-content/uploads/2019/02/TheEconomic-Impacts-of-Reallocating-Mid-Band-Spectrum-to-5G-1.pdf>.

<sup>9</sup> *Id.*

<sup>10</sup> *Id.* at 27-28, 39.



available to help leverage economies of scale and efficient spectrum use, including the **26 GHz, 29 GHz, 31 GHz, 32 GHz, 42 GHz, and 50 GHz bands**.

*Third*, because low-band spectrum can travel long distances and reach indoors, it is a key element for base coverage that reaches suburban and rural communities. The U.S. has currently awarded the most sub-3 GHz low-band mobile spectrum. Other countries are expected to award more than 600 megahertz of low-band spectrum by 2020.<sup>11</sup> Thus, the U.S. should continue to advance efforts to reallocate additional low-band spectrum that will play a key role in 5G wireless networks: the **1.3 GHz band** would provide 50 megahertz of spectrum for commercial use and proceeds of the auction would help the FAA and others modernize their systems; and the **1.7 GHz band** would offer great synergies with existing wireless offerings because it is 50 megahertz adjacent to the AWS-3 spectrum band successfully auctioned in 2015.

It is critical that policymakers develop a comprehensive and actionable auction plan that delivers, on a concrete timeline, the low-, mid-, and high-band spectrum needed to foster our 5G future, starting with the bands outlined above.

#### *Recommitting to Free Market Spectrum Principles*

The National Spectrum Strategy should build on the policies that have fostered today's wildly successful U.S. wireless ecosystem. The first large-scale commercial 5G deployments are happening here, in America, far ahead of schedule and far ahead of any other country, thanks to an embrace of free market policies that unleashed the competitive energy of America's wireless industry. The National Spectrum Strategy should further extend this foundation by promoting the six free-market spectrum policies that have driven U.S. wireless leadership:

- 1) **Exclusive-use licensing** that provides certainty and predictability to licensees that their investments will be protected against harmful interference and that they can fully use the spectrum they hold;
- 2) **Flexible-use rights** that empower licensees to differentiate themselves from others in the marketplace by offering a mix of services;

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<sup>11</sup> Global Race Update at 24-25, 31.



- 3) **Market-based spectrum policies** to ensure spectrum is put to its highest and best use, through secondary market transactions, auctions, and incentive auctions;
- 4) **Globally harmonized spectrum** to enable vendors to design products and services that can operate in multiple countries, thereby generating substantial economies of scope and scale, minimizing costs, and increasing demand;
- 5) **Prioritizing cleared spectrum**, because exclusive-use spectrum enables investment in wide-area mobile networks, although in some instances where incumbent operations pose challenges to reallocating for exclusive-use licensed purposes, a sharing framework is the best means to repurpose the spectrum; and
- 6) **Investment-friendly technical rules**, including large blocks of contiguous spectrum that allow for wide channelization that can deliver faster data rates, lower latency, and greater efficiency.

Promoting these principles will encourage industry investment and free market competition, driving greater innovation and more extensive deployment. The National Spectrum Strategy should also build on the significant infrastructure **siting reforms** rolled out last year by the Commission. To ease the regulatory burdens associated with the installation of the hundreds of thousands of small cells needed for 5G, the National Spectrum Strategy should support continued reforms that encourage all levels of government to clear regulatory barriers. Policymakers in the Administration, Congress, and the Commission should also encourage the U.S. government to continue working with the wireless industry on promoting security strategies, as **strong cybersecurity** will be key to global leadership in 5G.

#### Modernizing Government Policies and Procedures

Finally, the National Spectrum Strategy should modernize the U.S. government's approach to managing spectrum resources in a way that benefits government operations and encourages private sector development. Re-purposing spectrum currently allocated to federal use can generate billions of dollars and allow agencies to invest in modern, more efficient systems. This process of reallocation only works well when agencies are incentivized to act. The National Spectrum Strategy should modernize the government's approach and create more win-win scenarios by:



- 1) **Enhancing transparency** and collaboration between federal agencies and the commercial sector, starting with the call in the Presidential Memorandum for federal agencies to review current frequency assignments and quantify spectrum use;
- 2) **Seeking opportunities to further enhance the Spectrum Relocation Fund** program, which has greatly improved the incentives for federal agencies to actively participate in spectrum reallocation efforts;
- 3) **Advancing spectrum management** and innovative spectrum use through research, development, testing, and evaluation, including promoting initiatives that can lead to spectrum clearing and development of spectrum-sharing tools; and
- 4) Ensuring that the Commission has the resources necessary to **streamline its current equipment and device application and approval processes** because prompt and comprehensive equipment authorization will be critical to 5G.

### 5G Global Comparison Update

CTIA strongly supports a National Spectrum Strategy with the elements described above, because—as the Analysys Mason update report shows—the global race to 5G is intensifying. For example, nearly 80 operators in more than 40 countries worldwide will have made 5G services available to their subscribers by 2020—with 46 countries making 5G available before the end of 2022.<sup>12</sup> There have been nearly 600 5G demonstrations, tests, or live pre-commercial trials across the globe by more than 200 operators, excluding ones being run independently by vendors.<sup>13</sup> Countries and operators are vying to lead on 5G.

If we get 5G policy right, the United States will lead the world in wireless, strengthening our economy and our global competitiveness. Adequate spectrum to fuel the full range of 5G innovation and deployments on a timeline that is predictable and aggressive is key to our success. History has shown that, where sufficient spectrum is available for wireless service, the private sector will invest billions of dollars to convert that raw material into innovative products and services that help consumers, create jobs, and grow the economy.

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<sup>12</sup> *Id.* at 1, 14.

<sup>13</sup> *Id.* at 8-9.



In the past year, the United States had made strides in 5G advancement. Indeed, the Analysys Mason report finds that the United States is now tied with China in 5G-readiness.<sup>14</sup> Just last year, China held a narrow lead in overall 5G-readiness ahead of South Korea and the United States. According to the 5G update, “the U.S. rise in the ranking reflects determined moves by the U.S. operators to follow through 5G commercialization commitments with the launch of 5G services in 2018, aided by significant infrastructure reforms.”<sup>15</sup> The U.S. leads the world with the most commercial 5G deployments of any nation, with all four nationwide carriers aiming to offer nationwide mobile 5G services by the end of 2020.<sup>16</sup>

While the U.S. has significantly improved its position in the 5G race, a number of challenges remain that must be addressed in order to overcome China and other rivals longer term. Significantly, China and other countries also possess significant advantages in the availability of mid-band spectrum for 5G. Rectifying the mid-band spectrum deficit should therefore be central to policymakers’ efforts. China also retains a significant infrastructure advantage. A recent study showed China with more than 14 wireless cell sites per 10,000 people, compared to 4.7 in the United States, and more than five sites per every 10 square miles, compared to 0.4 in the U.S.<sup>17</sup>

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U.S. stakeholders are actively engaged and heavily invested in 5G, but the Analysys Mason report shows that more must be done to ensure that the U.S. retains its wireless leadership. By executing on the three-point plan of action described more fully in the attached National Spectrum Strategy report, the Commission and the Administration can work together to secure U.S. global wireless 5G leadership.

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<sup>14</sup> *Id.* at 1.

<sup>15</sup> *Id.*

<sup>16</sup> *Id.* at 13-14.

<sup>17</sup> Dan Littman, Phil Wilson, Craig Wigginton, Brett Haan, and Jack Fritz, *5G: The Chance to Lead for a Decade*, DELOITTE (2018), <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/technology-media-telecommunications/us-tmt-5g-deployment-imperative.pdf>.





Pursuant to Section 1.1206 of the Commission's rules, a copy of this letter is being filed in ECFS. Please do not hesitate to contact the undersigned with any questions.

Sincerely,

/s/ Scott K. Bergmann

Scott K. Bergmann  
Senior Vice President, Regulatory Affairs

Attachments

cc: Hon. Chairman Ajit Pai  
Hon. Commissioner Michael O'Rielly  
Hon. Commissioner Brendan Carr  
Hon. Commissioner Jessica Rosenworcel  
Hon. Commissioner Geoffrey Starks