Testimony of

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on

Future of Spectrum

before the U.S. Senate
Committee on Commerce, Science, & Transportation
Subcommittee on Communications, Media, and Broadband

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Chairman Luján, Ranking Member Thune, members of the Committee, on behalf of CTIA and the wireless industry, thank you for the opportunity to testify today.

CTIA commends this Committee's bipartisan commitment to crafting sound spectrum policy for our nation's future, with achievements like the MOBILE NOW Act and the promise of your current legislation, the Spectrum Innovation Act. I especially want to recognize your focus on identifying and repurposing spectrum for 5G. The United States leads the world in wireless—both licensed and unlicensed—thanks to your longstanding attention to spectrum.

And we need your leadership again, now more than ever. We have the opportunity to drive next-generation 5G and the industries of the future with a clear national commitment to spectrum policy built on mid-band spectrum with a focus on licensed access.

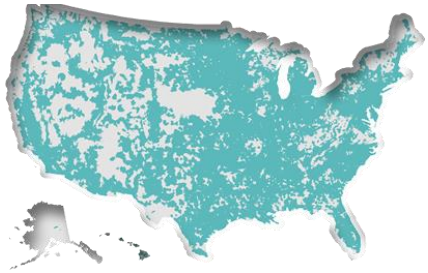
This afternoon I'll address three priority issues: we need to re-up the FCC's auction authority—due to expire next month—to maintain and extend U.S. spectrum leadership; we should replenish the spectrum pipeline, which runs dry at the close of the 2.5 GHz auction currently underway; and we should empower the FCC and NTIA to enhance interagency coordination and make interagency spectrum decisions in the best interests of our nation.

But first, let's recap the extraordinary benefits that 5G is delivering.

RAPID 5G DEPLOYMENT

4G

24 months after first launch



5G

22 months after first launch

5G's Striking Impact on the Broadband Marketplace and Our Nation

I testified before this Committee in 2019 about what 5G could be. The first 5G networks had just launched across ten states. I'm pleased to be back to talk about what 5G is today.

5G covers 310 million Americans, and we're deploying it across the country nearly twice as fast as 4G. More cell sites have been built in the past three years than in the previous seven years combined—driving 5G deployments, expanding coverage and capacity, and strengthening network resiliency.

The wide availability of 5G is the result of record-breaking investment. Wireless providers invested more than $60 billion to build out 5G in the past two years—in 2020 alone, U.S. wireless investment accounted for 20% of the world's total mobile capital expenditures even though the U.S. has just 4% of the world's population. And at a time of increasing focus on the nation's economy, 5G will add $1.5 trillion to the U.S. GDP and 4.5 million new American jobs this decade according to the Boston Consulting Group.

4.5M

NEW JOBS

BCG projects 5G will drive new jobs and over $1.5T in economic growth this decade.

20%

Of U.S. carbon emission reduction targets could be met by 5G-enabled technologies by 2025. That's 72M cars off the road for one year.

Wireless is also bucking the inflationary trends in our nation. While the prices of many goods and services we rely on are on the rise, wireless service and smartphones stand out as two of the things that are actually cheaper year-over-year. I'm very proud of our industry's ability to deliver next-generation services and value to American households.

We are now in the beginning of the 5G decade, and 5G is already proving to be a platform for stunning innovation and problem solving. Accenture recently found that 5G-related innovation will drive a 20% contribution towards the nation's carbon reduction targets—the equivalent of taking 72 million cars off the road for a year. GM is using 5G to re-imagine manufacturing in the U.S. And the VA is using 5G to improve health care for our veterans.

5G home broadband is also now driving greater competition for residences and businesses. The fastest growing home broadband company is a wireless provider. Today 5G fixed wireless is available to tens of millions of homes and looking ahead 5G home broadband will reach over 200 million households by 2025.

AMERICANS CHOOSE WIRELESS

60+%

of participants in the FCC's new low-income program select wireless solutions.

And yet even with these projections, we have more work to do. 5G goes further and faster every day. We need to keep building in New Mexico and South Dakota and across the nation. This is about opportunity and equity. To that end, Congress has funded unprecedented sums to build out broadband to all unserved and underserved locations across the nation—and 5G home broadband will be essential to this mission. 5G home broadband is a scalable, cost-effective solution that can extend the reach of these federal dollars and close the digital divide.

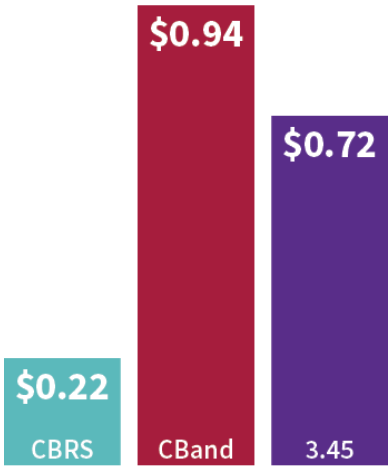
Of course, all of the benefits that 5G is delivering in the U.S.—expanding digital inclusion, economic growth, job creation, smart cities, and improvements in public safety, health care, and our environment—is predicated on the availability of spectrum.

And there is more to do on that front.

WIRELESS GROWTH CURVE

Wireless usage in the U.S. is projected to increase five-fold by 2027.

HIGH VALUE OF EXCLUSIVE LICENSED SPECTRUM



$/MHZ PoP

Low-power shared spectrum has significantly less value at auction

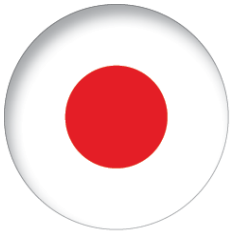
Americans' Growing Demand for Wireless and the Need for More Mid-Band Spectrum

With a 5x increase in U.S. mobile data traffic projected between 2020 and 2027, the U.S. needs to free up additional spectrum, especially full-power, licensed mid-band spectrum, to meet growing demand.

As this Committee knows well, mid-band spectrum is the "sweet spot" for spectrum innovation. It combines high speeds over a broad coverage area, making sure no one gets left out of the new 5G Economy. It is a key input for 5G.

Last year, the FCC conducted two auctions for full-power mid-band spectrum, one for C-Band spectrum at 3.7 GHz and one for the 3.45 GHz band. Together, these two auctions raised over $102 billion in winning bids, reflecting the extraordinary demand for exclusive-use, commercial full-power, mid-band spectrum. C-Band deployments launched in January of this year and overnight speeds increased substantially. The 3 GHz band will be the backbone of wireless investment over the next few years. We need more of it—and more mid-band spectrum generally—for full-power, licensed spectrum.

CURRENT ACCESS TO MID-BAND



JAPAN
1,000 MHz

S. KOREA
600 MHz

CHINA
460 MHz

USA
270 MHz

Contrast the C-Band and the 3.45 GHz band with the CBRS spectrum that sits between the two: CBRS spectrum sold at auction for less than a quarter the amount of C-Band based on a per-MHz-PoP basis, due primarily to far lower authorized power levels and a complicated sharing structure. CBRS requires 5x as many cell sites for coverage in suburban areas, and at least 7x as many in rural areas—significantly increasing costs, the time to deploy, and slowing 5G network buildout. The CBRS sharing regime also took about 8 years from FCC proposal to auction, far longer than C-Band (3 years) and 3.45 GHz (2 years).

In the meantime, other nations understand that global leadership in wireless—and economic growth and jobs in the industries of tomorrow—hinge on access to prime spectrum. Leading nations around the world are, on average, making available more than twice as much licensed mid-band spectrum—from 3–7 GHz—by the end of 2022 than we will have in the U.S. (accounting for C-Band Phase 1, the 3.45 GHz band, and CBRS). America is playing catch-up, but with the right policies in place we can maintain our global leadership in wireless.

1

Extend FCC Auction Authority

2

Enact a Future Pipeline of Spectrum

3

Enhance Agency Coordination

Three Recommendations to Maintain U.S. Wireless Leadership and Enable Cutting Edge Wireless Services for the American People

I commend this Committee for its ongoing commitment to advancing U.S. wireless interests, and we need your continued leadership now more than ever. I have three recommendations for Congress: re-up the FCC's auction authority; replenish the spectrum pipeline; and revitalize interagency coordination. With these actions, Congress will put in place the building blocks to sustain the U.S. as the global leader in wireless.

Re-up the FCC's Auction Authority. The FCC's auction authority is slated to expire on September 30, 2022, and reauthorization is key to maintaining America's wireless leadership.

Since Congress first authorized the FCC to conduct spectrum auctions back in 1993—the first-ever spectrum auctions anywhere—the United States has led the world in spectrum policy. The U.S. economists who led this ground-breaking work were recently recognized with the Nobel Prize

highlighting auctions' effectiveness as a tool to allocate spectrum and drive innovation. Auctions have proven to be the most successful means to assign the interference-protected, exclusive-use, flexible rights spectrum licenses that are the bedrock of 5G and mobile wireless communications.

Spectrum auctions have resulted, to date, in over $200 billion in revenue for the U.S. taxpayers, and auction proceeds have been used to modernize systems for DoD and other agencies that have repurposed spectrum for commercial use. Auction proceeds could also be used to fund other Congressional priorities, such as funding NG911 and rip-and-replace of Chinese equipment.

Congress has never allowed the FCC's authority to lapse before, and if we forfeit that authority now, we run the risk of stunting 5G growth, impeding U.S. investment and innovation, and ceding global leadership in wireless.

The lessons of the 1997, 2006, and 2012 auction extensions strongly favor an approach that ensures that your key congressional role in spectrum policy is retained and strengthened by packaging extensions of authority with

designated future auctions. In each instance, Congress mandated specific auctions along with extending the auction authority. The last extension directed the FCC to hold the then-record breaking AWS-3 auction, the 600 MHz broadcast incentive auction, and the H Block auction.

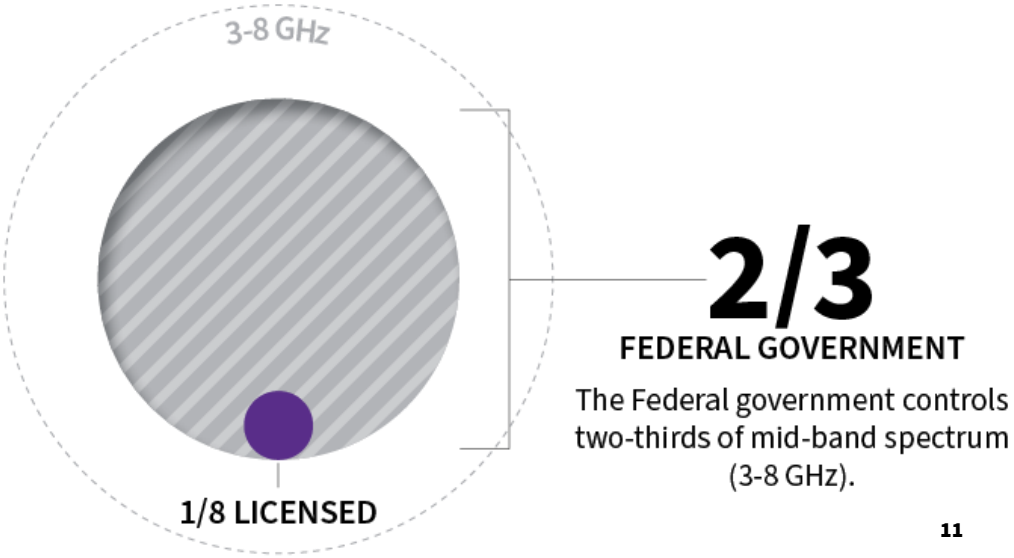
By linking auction authority with a spectrum pipeline, Congress has been a key force in driving U.S. wireless leadership. That is why we support the House's bipartisan approach to extend FCC auction authority for 18 months. This approach will give all stakeholders the time to contribute towards the development a new spectrum pipeline that can be combined with a longer-term extension.

Replenish the Spectrum Pipeline. It is in our national interest to identify a spectrum pipeline of bands to be auctioned for exclusive use—once the current 2.5 GHz band auction concludes, there will be no more 5G spectrum in the pipeline. The Committee is uniquely situated to address this shortfall.

I believe we all have the same objective: we all want a balanced spectrum policy that enables government agencies to meet their missions—including national defense—while enhancing and expanding commercial access. And a balanced approach applies in equal force to promoting both licensed and unlicensed solutions.

But today, that balance is out of whack—particularly in mid-band spectrum.

The federal government occupies 2/3 of the spectrum between 3.0-8.4 GHz. We should continue to rebalance government spectrum and commercial holdings—all while sustaining the federal mission. We can find ways to repurpose federal spectrum and use auction proceeds to repackage federal systems into more efficient state-of-the-art technology.



On the commercial side, our wireless ecosystem thrives with licensed networks and unlicensed operations, but we also need a more balanced approach between licensed and unlicensed allocations. Today, mid-band spectrum designated for unlicensed eclipses licensed spectrum by four to one. We need to rectify this ratio and repurpose more spectrum for full-power, licensed use to meet the demand for 5G.

And we know where to start: maximizing the amount of commercial licensed spectrum in the 3 GHz, 7-8 GHz, and 4 GHz bands should be our immediate focus.

KEY PIPELINE TARGET BANDS

The lower 3 GHz band (3.1-3.45 GHz) is a top priority. This 350 megahertz swath, immediately adjacent to other full-power licensed spectrum, is an ideal fit to provide large channels and faster throughput. We strongly support the

Spectrum Innovation Act introduced by Chairman Luján and Ranking Member Thune, which would immediately address access to the lower 3 GHz band and we urge its passage. The band neighbors existing full-power commercial spectrum and bringing it to market in the near term is crucial to our global 5G leadership.

The 7/8 GHz band (7.125–8.4 GHz) is another prime mid-band resource that NTIA has already found to be underutilized. We also recommend mid-band spectrum in the mid- to upper-frequencies in the 4 GHz band that are used today in China and other countries. Of course, good spectrum policy requires a mix of spectrum bands leveraging differing capacity and coverage characteristics, and we support additional low-band and high-band allocations as well. We support Chairwoman Rosenworcel's call to investigate the 7-15 GHz range for future commercial access.

It can take significant time to identify and make spectrum available for auction, so it is in our national interest to develop a spectrum pipeline that addresses today's needs and plans for

the future. We should have a new Congressionally approved spectrum pipeline before 2024.

Revitalizing a Unified Government Voice on Spectrum Issues. The U.S. Government's spectrum management generally works well, but as we are all aware it broke down in the C-Band / altimeter co-existence debate. Despite these challenges, I am pleased that two nationwide wireless providers launched C-Band 5G in January 2022, with no impact on aircraft safety, and the FAA recently announced an agreement for full-power C-Band 5G over the next year as airlines upgrade their equipment. But as a nation, we can and must do better.

We need to empower the FCC and NTIA to adjudicate spectrum matters and leverage their expertise to address spectrum interference concerns. We can't allow other agencies to re-litigate decisions after spectrum auctions conclude or try to unilaterally set the terms of future commercial spectrum access.

We welcome NTIA's leadership to administer spectrum use for federal agencies and speak on the Executive Branch's behalf and with a single unified voice. Congress could send all

stakeholders a clear signal about NTIA's critical role by elevating the Administrator's position to the Under Secretary level within the Department of Commerce. We also support each agency's deeply talented and committed spectrum experts. In particular, Congress could advance our nation's spectrum capabilities by providing additional funding to NTIA's Institute for Telecommunication Sciences, an outstanding group that conducts important research and engineering services to promote new technologies and promote more efficient use of the spectrum.

Fortunately, we have strong leaders in place with FCC Chairwoman Rosenworcel and NTIA Administrator Davidson, and I applaud their ongoing work to enhance coordination and improve government spectrum management.

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This Committee is rightly focused on enhancing and improving our nation's spectrum policy. I did want to call your attention to—and ask your help to address— the proposed corporate book minimum tax's impact on spectrum holdings. As currently structured, it would frustrate your efforts and set

back our nation's spectrum policy. The tax would eliminate the deductibility for spectrum licenses even while companies would be free to write-off other major business investments. This 15 percent tax on over $200 billion in auctioned spectrum risks undermining our ongoing efforts to close the digital divide; jeopardizing America's global competitiveness; and undermining the spectrum pipeline we are working so hard to identify. We encourage you to treat spectrum licenses no differently than any other asset used in our nation's infrastructure.

Thank you again for this opportunity to testify, and I look forward to your questions.