

KEYNOTE REMARKS OF FCC COMMISSIONER BRENDAN CARR

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“EXTENDING AMERICA’S 5G LEADERSHIP”

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Thank you, Shane, for the kind introduction, and thank you to AEI for giving me an opportunity to discuss America’s leadership in 5G. There are a lot of signs that we may soon be doing these types of events in person again. And I certainly welcome that because when I’m speaking at length into a blank screen—as I am today—I often wonder whether people are zoning out or perhaps sleeping in the virtual audience. I don’t have that problem when I give speeches in person—I just have to look up from the podium and then I know for certain that people are zoning out and sleeping in the audience.

In all seriousness, I appreciate the chance to speak here today and offer my take on a 5G agenda that will extend U.S. leadership. I have spent a lot of my time on the Commission working to advance that goal and I think our decisions at the FCC have made a real difference.

Indeed, securing U.S. leadership in 5G is one of the great success stories of the past four years. Now, looking back from where we stand today in 2021, this may seem like a forgone conclusion. Of course America would lead the way. Yet our success was far from guaranteed. Just a few short years ago we were at serious risk of ceding U.S. leadership in 5G to our overseas competitors. We were in jeopardy of losing the good-paying jobs and the trillions of dollars in economic growth that come with a first mover advantage.

Back then, the experts and analysts were not painting a rosy picture of America’s 5G future, to put it mildly. A few years ago, Deloitte wrote that the “disparity between the speed at which China and the United States can add network infrastructure and capacity bodes well for China’s prospects in the race to 5G.” They added that “China and other countries may be creating a 5G tsunami, making it near impossible [for America] to catch up.” Ernst & Young put it more bluntly a few years ago: “China is already in a leading role in the 5G development” and “is poised to win the race to 5G.”

The facts on the ground certainly supported those predictions. On the infrastructure side, it took too long and cost too much for U.S. providers to build the hundreds of thousands of new cell sites needed for 5G. Between 2012 and 2016, for instance, the construction of new cell sites in this country had essentially flatlined. We were averaging fewer than three new sites a day over that time period. In comparison, China started putting up about 460 sites per day. What it was taking us four years to do, China was doing every 9 days. On top of that, the excessively high permitting costs in the U.S. meant that our carriers were spending nearly three times as much as their counterparts in other parts of the world to generate equivalent network capacity.

On the spectrum side, things weren’t much better. The U.S. ranked well behind China, the U.K., South Korea, Japan, and Germany in spectrum availability. We had zero mid-band spectrum for 5G at a point in time when other countries had 300 MHz or more. On top of all that good news, the U.S. had a grand total of zero commercial 5G offerings.

This was the state of play just a few short years ago. So at the FCC we went to work and put a plan in place to turn things around. Some people argued that we needed to be like China to beat China. They said we needed to nationalize the wireless networks or heavily regulate our way forward. Instead, we bet on America’s free enterprise system. And we went with a tried and true playbook—freeing up more spectrum and modernizing our infrastructure rules.

On the spectrum side, we knew that 5G would be delivered over every spectrum band. So we pursued an all-of-the-above strategy. On high-band, we launched the world's first 5G spectrum auction in 2018 and went on to hold several more, bringing thousands of megahertz of spectrum to market. On low-band, we completed the transition work needed to free up the 600 MHz band in addition to modifying the rules for the 800 MHz and 900 MHz bands to enable more high-speed builds. The reality is that the U.S. started pushing this low-band spectrum out more than a decade ago.

On mid-band, though, the U.S. had very clearly fallen behind. And in 2017, when leadership changed at the FCC, the agency had no mid-band spectrum in the pipeline. So we put in the legwork to correct this mistake. That effort paid off.

We held the first auction of mid-band spectrum in 2020 with 70 MHz worth of spectrum in the 3.5 GHz band. At 2.5 GHz, we transformed the rules governing nearly 200 MHz worth of this mid-band spectrum to support 5G builds and teed up over 100 MHz for auction. At 4.9 GHz, we modernized the regulation of a 50 MHz swath of spectrum. In the L Band, we authorized 30 MHz of spectrum for 5G and IoT. At 5.9 GHz, we opened up 45 megahertz for unlicensed. Plus, we pushed out an additional 1,200 MHz for unlicensed in the 6 GHz band. And of course, there's the Big Kahuna, C Band, where we cleared 280 MHz of sought-after mid-band spectrum.

All told, our spectrum efforts over the past four years opened up more than six gigahertz of spectrum for licensed 5G services in addition to thousands of megahertz of unlicensed spectrum.

These were not all walks in the park. In many cases, these were spectrum bands that prior FCCs took a pass on. Not because the bands were unsuited for next-gen wireless services, but because moving forward meant taking political heat for doing the right thing. Thankfully, the FCC led by Chairman Pai took these fights head on and freed up the spectrum needed to power 5G. In fact, we would still be hundreds of megahertz behind and stuck in neutral while our global counterparts passed us by if we had heeded the calls for inaction by some in Washington and on the Commission.

So we need to be clear eyed about our spectrum policy going forward. Whether we like it or not, freeing up more spectrum requires FCC leadership that accumulates political capital and has the willingness to spend it. This is the reality of spectrum policy these days, and the FCC must show strong leadership to free up more airwaves.

This brings me to the second part of the 5G playbook: infrastructure. Four years ago, it was clear that the FCC's infrastructure rules needed an update.

When Chairman Pai tapped me to lead the FCC's infrastructure reforms, we moved quickly to modernize the agency's approach and cut billions of dollars' worth of red tape. We updated the environmental and historic preservation rules that needlessly drove up the cost and slowed down the timeline for adding small cells. We put in place guardrails to address outlier fees and delays imposed at the state and local level. We streamlined the process for swapping out utility poles to add wireless equipment. We created an expedited approval process for tower builds during COVID-19. We accelerated next-gen networks through a 5G Upgrade Order that clarified Section 6409. And we paved the way for more resilient and capable cell sites by streamlining the local approval process for modifying existing sites.

Like our spectrum decisions, these actions generated their fair share of push back—even at the FCC. In fact, nearly every one of our infrastructure decisions included calls from some of my colleagues for the agency to slow down or stop entirely.

I am glad we didn't because the FCC's reforms delivered results. They allowed our private sector to bring thousands of families across the digital divide, to keep Americans connected during the pandemic, and to outperform those dire predictions from 2016.

I know, I know you want to see the data to back up these claims. Well, get ready, because I'm about to hit you with a lot of it. If you're a podcast speed listener, this might be the time that you really wished this speech had one of those 2X speed buttons on the audio.

Infrastructure builds accelerated at a record pace over the last four years. In 2016, U.S. providers built just 708 new cell sites. In 2019, with our streamlined framework in place, they built over 46,000. That's a 65-fold increase! Telecom crews also set records for new high-speed fiber builds—adding over 450,000 route miles in 2019 alone, which represents a nearly 70 percent increase over 2016.

Those new builds are paying off for the American consumer. Internet speeds in the U.S. have more than tripled over the last four years—far outpacing the increases seen in other countries. Indeed, the U.S. leapfrogged ahead of 20 countries on the global mobile speed rankings over that same period of time. Competition has increased too, with the percentage of Americans with more than two options for high-speed service jumping by 52 percent between 2016 and 2018 alone. Prices are down. And the digital divide has been cut nearly in half since 2016.

On top this, we flipped the script on 5G. Americans should be proud that we now the world's leading 5G platform. The very first commercial 5G service in the world launched here in the U.S. in 2018. By the end of 2018, the private sector extended 5G to 14 communities. Halfway through 2019, that figure expanded to more than 30. Today, 5G networks cover over 270 million Americans—not just in places like Manhattan or San Francisco, but in Sioux Falls, South Dakota, and Peachtree Corners, Georgia—and at least one provider has committed to extending 5G to 99 percent of the U.S. population—well ahead of experts' predictions.

U.S. providers are now outpacing their counterparts in China as well. In 2019, wireless networks in the U.S. benefited from more than four times the per capita investment as networks in China. And the U.S. is projected to see two times their percentage of 5G connections.

I am proud of the results our 5G reforms helped deliver, and now is the time to build on these successes—to move 5G forward.

So here's a roadmap for doing just that (and for those that have been patiently waiting for something new in these remarks, now is the time to perk up or wake up, as the case may be).

First up, spectrum. With all the work we've been doing over the past four years, we now have a lot of spectrum in the pipeline. The key is to make sure we get those airwaves out into the commercial marketplace as quickly as possible. So I am offering up a spectrum calendar to make sure we stay on track. I even filled it in! So here's what I propose.

In 2021, we should take the following actions:

- 3.45 GHz
 - Hold Auction 110 for the 100 MHz of spectrum in the 3.45 GHz band as required by Congress at power levels that will support 5G builds. The good news is that we should be voting later this week on an order that would do just that. So I am almost ready to give us a checkmark on this one!

- 2.5 GHz
 - Hold Auction 108 for the 100+ MHz of spectrum in the 2.5 GHz band. This is prime, mid-band spectrum that needs to get to market ASAP. And we've already put the legwork in to get this across the finish line later this year by releasing the comment Public Notice in January.
- 6 GHz
 - We should adopt an order this year that permits very low power (VLP) devices to operate in the 6 GHz band at 14 dBm. I have talked about this as a key step to promoting 5G in this country because it would help power the AR/VR and other applications that will drive consumer demand for 5G devices. We have a pending Further Notice that would allow us to go right to an order on this and doing so would align the U.S. with the approach taken in this band abroad, including in Brazil.
 - We should also allow client-to-client device communications in this band, which we sought comment on in a January 2021 Public Notice and would increase efficiency and enable even more innovative uses of this spectrum.
- 3.5 GHz
 - We should seek comment this year on increasing the power levels for CBRS operations in the 3.5 GHz band. Upping the power levels here would help align the U.S. band plan with international standards and create efficiencies for mid-band 5G builds in the U.S. that could span the 3.45 GHz to C Band spectrum ranges. We should take the real-world experiences we're gaining with CBRS builds and coordinate with federal users as we look at increasing the power levels here. Getting this done will help extend the reach of 5G services to even more Americans.
- U-NII-2C (5470-5725 MHz)
 - Okay, this one may seem like it is coming from left field. So stay with me. We should start a proceeding to look at updating the rules that apply to the U-NII-2C band (5470-5725 MHz). This band contains a large, 255 megahertz-wide swath of unlicensed spectrum that is vastly underutilized today—indeed, equipment manufacturers don't even bother to include the band in many 5 GHz Wi-Fi devices. This is because we have costly and cumbersome technical restraints on the band that are designed to protect federal operations. We should examine whether advances in technology would allow us to continue to protect federal through a more efficient mechanism, thus creating more opportunities for unlicensed use of this band.
- FCC's Auction authority
 - Finally, we should work with Congress this year to ensure that it reauthorizes the FCC's spectrum auction authority, which expires for most bands at the end of fiscal year 2022.

We can and should get all of that done in 2021 and doing so would match the pace we've been moving on spectrum over the past few years.

Then, in 2022, here's what should be at the top of our list:

- 1300-1350 MHz.
 - Hold an auction for the 50 MHz of spectrum between 1300-1350 MHz. This spectrum was first identified as a target for clearing all the way back in 2015. And last year, the FCC began working with NTIA on a plan that would enable the current federal incumbents to vacate the band for auction as soon as next year.
- Millimeter wave
 - Hold another auction of millimeter wave spectrum. And the 42 GHz band looks to be one of the prime candidates for action next year.

After 2022, there will be more spectrum bands that we can get across the finish line.

- Lower 3 GHz
 - The FCC has been working with federal stakeholders to create additional opportunities for commercial providers below the 3.45 GHz band. The FCC has already relocated most of the secondary non-federal users out of the band to facilitate this move. And momentum is building towards making more 5G available in this band sooner rather than later thanks to lessons learned during the AMBIT initiative. There are challenges that remain given the presence of some high-power systems, but we are well positioned to work through those issues this year and move forward with an auction of Lower 3 GHz spectrum after 2022.
- 4.8 GHz
 - We should also auction spectrum in the 4.8 GHz band after 2022. This is a particularly important band from an international perspective because a number of countries have moved ahead of us by licensing this spectrum exclusively for 5G. While there are many federal point-to-point links in this band, we have the time to open this band up for 5G in the next couple of years.
- 7.125-8.4 GHz
 - Following a 2018 directive, federal agencies have been collecting information about their operations in this band with a report due back to NTIA. With some additional legwork this year and next, we will be well positioned to reallocate portions of this band for commercial 5G operations.
- Above 95 GHz
 - We took initial steps towards opening up the spectrum horizons above 95 GHz back in 2019. And the terahertz bands in that range could prove useful over time for short-range applications, including potential 6G applications. So we should look to take additional steps in those bands in the coming years.

So the good news is that we have plenty in the spectrum pipeline. It's on us at the FCC to make sure we stick to this schedule and get it into the market. Of course, we will need to pair those airwaves with more action on the infrastructure front. So here are my thoughts on an agenda that will extend the significant infrastructure gains we have made over the last four years and will match the pace with which we have been moving.

First, we need to get our broadband maps done this fall, not next year. Congress provided the FCC with \$98 million to create more accurate and granular maps. Getting those maps done is the key to

unlocking the funding that will be needed to close the digital divide. Indeed, we cannot start RDOF Phase II or the 5G Fund for Rural America—FCC initiatives that will extend high-speed infrastructure to unserved households—until we get those new maps completed. If we need to allocate more agency resources to this effort, then we should do so now. Speed matters.

So here's one idea. Let's build off of the tech playbook and iterate. Rather than building maps that have all the bells and whistles that various groups might want, let's start with a targeted or 1.0 version. These targeted maps should focus narrowly on the data we need to move forward with RDOF Phase II and the 5G Fund. We can then add to the maps over time.

With targeted maps out by the end of this year, the FCC can then proceed with the 5G Fund. And I think we should begin that auction in early 2022. Doing so will ensure that rural America gets the full benefit of 5G.

And as 5G continues to extend across remote communities, we need to make it easier to build infrastructure on federal lands. Getting approval from the federal agencies that own those lands has long been an impediment to reaching rural communities. In fact, we often hold state and local governments to tighter timelines than the federal government itself. That needs to end. So here's one thing we can do. We should designate a team within the FCC—a Federal Lands Desk, if you will—that will act as lead coordinator with other agencies on these issues. Having a single agency contact for addressing the permitting delays that plague builds across federal lands could help break at least some of the log jams and make a difference for rural communities.

We also need to keep up the pace on our meat-and-potatoes infrastructure reforms. For instance, let's make sure that the FCC's cost sharing rules for pole replacements aren't inhibiting Internet builds, particularly in unserved areas. We've had a petition in front of us on this since July 2020, and I have it on pretty good authority that it would not take much work or any additional drafting to circulate a Notice of Proposed Rulemaking that would get this reform going.

To complete America's 5G build, we also need nearly to double the number of tower techs and telecom crews working in this country. Doing so will not only accelerated Internet builds, since a lack of skilled workers has been slowing down efforts—it will also create thousands of good-paying jobs. I have been engaging directly with a number of trade schools on this effort, and we've already seen programs launch in South Carolina, South Dakota, North Carolina, and Oklahoma. Earlier this month I was in Mississippi to work on standing up another program there. So as we move forward at the federal level—whether through legislative efforts like the bipartisan Telecommunications Skilled Workforce Act—we should do so mindful of opportunities to expand this workforce.

Finally—and I think we can all agree that I need to wrap this up—we need to firmly reject the chewed over ideas of the past that would only turn back the clock on the progress we made over the past four years. Regulations that would reduce private sector investment in infrastructure and prevent families from getting the best and most affordable Internet services should be a non-starter.

That means we must resist the odd yet emerging calls for the government to subsidize overbuilding. This wasteful and unnecessary spending jeopardizes the operations of businesses that risked their own capital to serve local communities. Indeed, existing providers will be less likely to invest in new networks and upgrade existing networks if they are faced with the possibility of a government-subsidized new entrant.

We should also see the push for a return to Title II “net neutrality” for what it is—a push for rate regulation. Those backing this misguided policy simply refuse to accept the reality that the Internet has flourished since we repealed the ill-advised Title II regulations. Speeds and investment are up, prices are down, competition has increased, and the resiliency of our networks are unmatched throughout the world.

Indeed, COVID-19 was the ultimate stress test for global telecom policies. With the pandemic every aspect of our lives shifted online in an instant. Throughout all this change, America's networks fared exceptionally well. Our networks delivered high quality service despite elevated traffic levels, while our friends in other advanced economies were not so fortunate. Their networks—burdened by heavy-handed regulations—strained to maintain quality and speed. In Europe, EU officials asked Netflix and other streaming platforms to significantly reduce their video quality to prevent the continent's networks from breaking. Australia made a similar request. Yet our networks showed no significant reduction in speed or increase in latency. In fact, U.S. wireless networks saw speed increases despite the significant jump in data usage. By contrast, China saw up to 40 percent reductions in download speeds, and countries all across Europe and Asia also experienced significant declines.

In the end, our light touch approach prevailed. There is simply no justification for taking U.S. telecom policy backwards to a point in time where our global leadership looked to be in retreat. We need to keep moving forward. The 5G agenda I've laid out today would allow us to do just that.

So thank you, again, to Shane and AEI for the opportunity to speak with you today. I look forward to taking some questions.