REMARKS OF FCC CHAIRMAN AJIT PAI
AT THE DYNAMIC SPECTRUM ALLIANCE GLOBAL SUMMIT

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Thank you, Martha, for that introduction. It's great to be with the Dynamic Spectrum Alliance—which, for the record, has to be the among the coolest names of any group I've spoken to. The "alliance" is the key. It's so much better than the Dynamic Spectrum Association. Seriously, Dynamic Spectrum Alliance sounds like something from Star Wars. And you certainly fit the galactic bill; as Commander Tagge said in Episode IV, the Alliance "is too well equipped. They're more dangerous than you realize!" Indeed. Anyway, I'm a little gun-shy of calling you the DSA after what happened on Tuesday. What, you didn't hear? Well, in the course of affirming key decisions we made on wireline deregulation—decisions which admittedly relied on a fair amount on acronyms—the D.C. Circuit threw us the following shade: "[W]e prefer the use of the English language and deplore the practice of using acronyms unknown to the general public." A-OK!

All joking aside, it's my pleasure to be a part of today's important discussion. To the uninitiated, a bunch of people talking about creative ways to use our airwaves more efficiently may not seem like a big deal. But this past month, our little community of spectrum policy nerds got some serious outside validation. On October 12, the 2020 Nobel Prize in Economic Sciences was awarded to Paul Milgrom and Robert Wilson of Stanford University. What did these two do to garner economics' biggest prize? They were two of the key architects (along with Evan Kwerel and other talented FCC thinkers) behind the world's very first spectrum auction, which just happened to be held by the FCC. For good measure, Professor Milgrom also led the design team for our broadcast television incentive auction. This Nobel Prize sends a powerful message that spectrum policy can unlock technological innovation, transform our economy, and improve quality of life around the globe.

When we talk about spectrum policy innovation in 2020, dynamic spectrum sharing rests at the cutting edge. It's become a powerful tool for squeezing the most value out of high-quality spectrum and meeting the growing demand for wireless services.

You can find ever more cases on the spectrum chart in which the FCC is using dynamic sharing, which means there are ever more cases I could discuss in my limited time. Then I saw the Global Summit's schedule featured sessions on CBRS, the 6 GHz band, and TV white spaces. This gave me an idea: I should talk about CBRS, the 6 GHz band, and TV white spaces.

Let's start with CBRS, also known as the Citizens Broadband Radio Service, also known as the 3.5 GHz band. This August, we reached a major milestone for the 3.5 GHz band when the Commission successfully completed an auction of 70 megahertz of licensed spectrum in the band—the first-ever auction of mid-band spectrum for 5G in the U.S. Getting to this point was quite the journey.

Given all the talk about 5G, many think of 3.5 GHz primarily as part of the push to free up mid-band spectrum for next-generation wireless technologies. And it is, in fact, a key piece of the Commission's 5G FAST plan.

But when the campaign began to open up the 3.5 GHz band for commercial use, it wasn't about 5G at all. It was more of an experiment. Federal users occupied much of the band. And even though they made little use of it across much of the country, if they had it, nobody else could use it. For years, the FCC tried to square this circle.

And then, in 2012, we decided to test a theory—a sharing regime that would allow different services to flourish. In 2015, this sharing regime began taking shape. The FCC voted to create a dynamic, three-tiered, hierarchical framework to coordinate shared federal and non-federal use. Incumbents, such as federal users, comprised the highest tier and would receive protection from all other

users. They would be followed by Priority Access Licenses, or PALs, on the second tier, and General Authorized Access, or GAA, on the third tier.

There were many positive aspects of this framework. But unfortunately, the rules that the Commission adopted in 2015 did not do enough to encourage investment and innovation with respect to Priority Access Licenses.

When I became Chairman, I knew that we had to institute reforms, in particular to advance the band's 5G potential. And so, led by Commissioner O'Rielly, we re-examined the rules governing the Priority Access License tier. We determined that the earlier decision to license PALs by census tracts was ill-suited for 5G deployment, so we instead instituted county-based licensing. And we also extended the license terms from three years to 10 and created an expectancy of license renewal. These reforms make 3.5 GHz licenses much more appealing for 5G operations.

All this came to a head with the recently completed 3.5 GHz auction. Seven 10-megahertz channels were made available, for a total of 70 megahertz of spectrum. Bidders paid for the right to use a 10-megahertz channel, but they didn't bid on a specific channel. Instead, the Spectrum Access System administrators assign frequency blocks for use that may change from time to time as a result of dynamic spectrum sharing between federal and non-federal users. The FCC auctioned over 20,000 licenses in this auction—the most ever—generating more than $4.5 billion in net proceeds from 228 winning bidders, including mobile wireless operators, cable companies, fixed Wireless Internet Service Providers (WISPs), and others.

Of course, the auction is only part of what's so exciting about the 3.5 GHz band. Earlier this year, the FCC authorized several SAS administrators for full commercial deployments in the band. As a result, 150 megahertz of GAA spectrum is available right now. Anybody can use it for licensed-by-rule operations. Already, we've seen thousands of deployments, with use cases ranging from transforming the communications system for Dallas Love Field airport to rolling out new fixed wireless services in rural America. And notably, none of these operations have caused any significant complaints from incumbents about harmful interference.

CBRS may have been the FCC's first major foray into dynamic sharing, but it was hardly our last. One initiative that we're really excited about is our work in the 6 GHz band.

The 6 GHz band has long been populated by microwave services that are used to support utilities, public safety, broadcasters, and wireless backhaul. Each of these serves an important function that we need to protect. At the same time, the 6 GHz band has also been described by a leading industry expert as "without a doubt the single biggest opportunity in Wi-Fi—and probably in wireless—in a generation." At the FCC, we've been trying to balance these interests. And thanks in part to dynamic sharing, we have, recently scoring a huge win for consumers and innovators.

The topline is that we're making the entire 6 GHz band—a massive 1,200 megahertz testbed for innovators and innovation—available for unlicensed use. By doing this, we are effectively increasing the amount of mid-band spectrum available for Wi-Fi by almost a factor of five. All 1,200 megahertz of this spectrum will be available for indoor-only, low-power use without the added complexity of database coordination. We are also making the two largest sub-band segments, totaling 850 megahertz, available for use indoors and outdoors at a higher standard power when accessed through an automated frequency coordination system.

Going big means allowing unprecedented 160- and 320-megahertz channels for Wi-Fi. This will dramatically ease spectrum capacity as a constraint on innovation and open the door to new high-bandwidth applications.

And we're doing all of this while protecting incumbent services from harmful interference. Our automated frequency coordination systems will *only* allow new standard-power operations in areas that

will not cause harmful interference to incumbents.

Let me close by shifting to white spaces. The TV white space spectrum—which includes unoccupied channels in the broadcast television bands—has several attributes that make it attractive for delivering wireless broadband service to rural areas. The signals propagate well over long distances, varying terrain, and even into and within buildings. The Commission first authorized unlicensed white space operations in 2008. We've expanded white space opportunities on several occasions since then, each time taking care not to interfere with broadcast television station operations. For example, in 2019, we modified our antenna height rules to allow for improved broadband coverage in rural areas.

Just last week, the Commission adopted important additional changes to the operating and technical rules for white space devices that will expand their ability to deliver wireless services in many rural and underserved areas.

We allowed fixed white space devices in less congested areas to operate at higher power and increased height above average terrain. We created a new class of geo-fenced, mobile white space devices that may operate at higher power levels. And we reformed our rules to allow for the deployment of narrowband IoT white space devices. These rules will permit operation in smaller, 100-kilohertz channels at the same maximum power level currently permitted for fixed devices.

At the same time, we took the critical steps necessary to ensure that these reforms don't end up causing harmful interference to broadcast television stations—which, after all, are the primary users of the band. For example, we increased the minimum required separation distances between white space devices operating at higher power or height above average terrain and protected services operating in the TV bands.

What's more, we're also looking at whether we can open up even more white spaces for rural operators by incorporating smart modelling into the system—specifically, the Longley-Rice Irregular Terrain Model (or LRITM for those who insist on a DC acronym).

I expect that these changes will spur further growth of the white space ecosystem and help close the digital divide.

Of course, this isn't a complete list of all we've done to harness the power of dynamic sharing in order to get more value out of our finite spectrum resources. But it's all I have time to cover in my allotted 10 minutes.

Thank you again for the opportunity to be with you. Long live the Alliance!