

**REMARKS OF
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MOVING WI-FI FORWARD
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Thank you, Marty Cooper, for that kind introduction. For someone who works at the Federal Communications Commission, being introduced by the father of the mobile phone is as good as it gets. But actually it gets better. Because instead of being here to talk about wireless developments decades ago, Marty Cooper is here to talk about the future—the future of unlicensed spectrum. Needless to say, when the person responsible for wireless phones talks about where the wireless world is headed, we should all pay attention!

For my part, I think the future of unlicensed spectrum is big. So I want to thank you for having me here and thank Wi-Fi Forward for keeping the conversation about unlicensed spectrum moving forward. Your coalition is young, but impressive. Because from retailers to equipment manufacturers, Internet companies to chipmakers, software developers to public institutions, you represent so much of what is vital in the modern economy.

I want to talk today about the power and possibilities of unlicensed spectrum in the future. But before heading off into the future, I think it's instructive to talk about the present. In fact, I think it's useful to simply consider right here, right now—today. Because the odds are pretty good that everyone here has used unlicensed airwaves today. It might have been the shiny new tablet or laptop you used to go online with coffee and Wi-Fi this morning. Or maybe it was the old cordless phone you dusted off to make a quick call. It could have been the baby monitor you used overnight or the remote control you pressed in the morning to get out of the garage and make your way to work. Or given rush hour, it could have been the traffic application you checked out on your smartphone before hitting the road.

Every day, in countless ways, our lives are dependent on wireless connectivity. In fact, they are getting more dependent every day. Last year alone we connected more than 500 million new devices to the Internet. So it is no wonder that the demand for our airwaves is growing at a breathtaking pace. Here in Washington, so much of the conversation about spectrum is about the demand for licensed spectrum. In fact, the growing demand for licensed spectrum—airwaves that can be controlled by a single wireless operator—has received a lot of legislative attention. As a result, the FCC will hold a series of auctions for licensed spectrum this year and next.

But it is high time we give unlicensed spectrum—airwaves open to all under technical rules—its due. Because it is an essential part of the wireless ecosystem, a critical part of wireless service, and an important input into the modern economy. In fact, the economic impact of unlicensed spectrum has been estimated at \$140 billion annually. By any measure that is a lot.

So I think it is time for an unlicensed spectrum game plan. It should no longer be an afterthought in our spectrum policy. It deserves attention upfront, in policy prime time.

So let me sketch out what an unlicensed game plan looks like. It takes high-band, mid-band, and low-band spectrum. High-band spectrum provides the large channels necessary for high-definition video at short distances—think streaming video from your laptop to your television. Mid-band spectrum sacrifices some of that throughput, but gives you further reach. Low-band spectrum can go far and wide, and as a result is ideal for larger-scale Wi-Fi deployments and machine-to-machine communications. To build powerful wireless communications systems, you need a playbook that includes all three.

Now with respect to high-band spectrum, I am proud to report that the FCC has made terrific progress in the 5 GHz band. This band is widely-used for home Wi-Fi systems—it may be in many of your homes right now. Just a few months ago, after a year of prodding and pressing, the FCC voted unanimously to expand to the 5.150-5.250 GHz band the flexible rules that have already made the 5.725-5.825 GHz band an unlicensed success story. That may sound technical. But it is going to have real impact. Because it has effectively doubled unlicensed bandwidth in the 5 GHz band overnight. That is really good news.

Now going forward, I think we can develop even more high-band spectrum for unlicensed use in the 5 GHz band. In fact, I think we can take the policies we are developing for managing exclusion zones for service in the 3.5 GHz band and use them as the blueprint for making more unlicensed spectrum available in the 5.350-5.470 GHz band. So stay tuned.

Next, mid-band spectrum. Mid-band spectrum is the birthplace of Wi-Fi. And I think history will show that it is the most successful experiment in wireless service since Marty Cooper made his first mobile phone call. But the 2.4 GHz band, where unlicensed spectrum makes its mid-band home, is getting mighty crowded. It's a band where the Wi-Fi every one of us uses is packed in along with Bluetooth, wireless speakers, and video game consoles. So we need to be on the watch for new mid-band opportunities for unlicensed spectrum, especially in airwaves that are underutilized.

Finally, we have low-band spectrum. That is what I want to talk to you most about today. Because it is a place where opportunities—and challenges—involving unlicensed spectrum are most imminent.

This year the FCC will develop policies for mobile broadband use in the 600 MHz band. Now as low-band spectrum goes, the 600 MHz band is as good as it gets. These airwaves can sound almost heroic—they can leap over tall buildings and go through walls like they are not even there. They are pretty super, so it's no wonder they draw so much attention.

The opportunity to make more use of the 600 MHz band for mobile broadband comes to us straight from Congress, courtesy of the Middle Class Tax Relief and Job Creation Act. Under this law, the FCC will conduct the first-of-its-kind voluntary incentive auctions to repurpose 600 MHz broadcast airwaves for wireless broadband service. This is a big and complicated exercise. But it also comes with real opportunity for growing unlicensed services. Because as part of this law, Congress granted the FCC the authority to use technically reasonable guard bands to expand unlicensed opportunities in the 600 MHz band.

Now making this happen will not be easy—but it's worth the effort. Under the law we have to find ways to give both new and old uses access to these airwaves. There is a lot to balance. So while finding several contiguous channels for unlicensed service may be difficult, I believe there are creative ways forward.

For my part, I think that creativity starts with ditching the tired notion that we face a choice between licensed and unlicensed spectrum. This is a simplistic relic from the past that we should have long since retired—because good spectrum policy requires both.

Moreover, we need to discard the conceit that Wi-Fi comes only at the expense of others who wish to use the airwaves. Because new technologies like dynamic databases can allow several services to co-exist harmoniously.

We also need to recognize that other services striving for white space in the 600 MHz band—like wireless microphones, low power television, and medical telemetry—matter. Wireless microphones are critical for newsgathering, key for Broadway productions and widely-used in churches and schools. These microphones deserve a home. Low power television and translators also play an important role in communities across the country—and can extend the reach of television in rural areas. Plus, lives depend on medical telemetry. So these services need protection.

If we take these things as a given, I still think we can find solutions. Let's be creative. We can consider an expanded duplex gap, find new locations for unlicensed microphones, and provide unlicensed opportunities in channel 37—while also protecting existing users. Moreover, if we do this right, we can increase the value of licensed spectrum without diminishing the number of licenses we sell at auction. In short, if we are creative, I think we can honor the constraints in the Middle Class Tax Relief and Job Creation Act, but also free up new unlicensed opportunities in the 600 MHz band. That's win-win.

Count me as excited. Because what is taking shape now is a real game plan for unlicensed spectrum. We are thinking, all at once, about opportunities in high-band, mid-band, and low-band spectrum. That is new. It used to be that unlicensed service was relegated to the airwave equivalent of carpet remnants. But now, instead of having unlicensed interests scrounging for scraps of frequencies no one else wants, we are at long last recognizing that unlicensed spectrum needs a plan, deserves attention, and requires forward thinking.

This is progress—and it's a good thing. Because unlicensed spectrum is a powerful force in the economy. More unlicensed spectrum means more Wi-Fi. It means more innovation without license. It means a real jolt to the Internet of Things and the innovative possibilities of machine-to-machine communications. So now we have a game plan, let's go make it happen.

Thank you.