REMARKS OF
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"THE ROAD TO GIGABIT WI-FI"
NEW AMERICA FOUNDATION
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Good afternoon. Thank you to New America and Open Technology Institute for hosting this discussion of Gigabit Wi-Fi.

I want to start by talking about last week. Last week—along with tens of thousands of others—I made my annual pilgrimage to the desert. I went to Las Vegas. Last week Las Vegas hosted the Consumer Electronics Show. If you're familiar with it you know it's a gadget geek heaven. It's a place where you can let your digital freak flag fly and have plenty of company. You can touch, try, and experience new technologies of every stripe and type—from connected cars to virtual reality to video screens that induce serious bouts of pixel envy. It's all there. And if you walk up and down the aisles of the show floor you will hear one refrain over and over and over again. You will hear "mobile, mobile, mobile." That's because the disruptive power of so many devices now comes from their wireless connectivity. But when I heard "mobile, mobile, mobile," last week, I instantly thought of something else. I thought: Oh no, the 2.4 GHz band is getting really crowded.

So now that I've firmly established my wireless nerd credentials, let me tell you why this is important. We need more unlicensed spectrum. We need more Wi-Fi. We need Gigabit Wi-Fi.

To explain why, let me roll back before last week in Las Vegas. In fact, let me roll back three decades ago to when unlicensed spectrum was new. Three decades ago the Federal Communications Commission had a handful of underused frequencies. These were airwaves that had been designated for industrial, scientific, and medical uses. But the services that we imagined would develop in this band never quite did, in part, because under FCC rules they had to contend with interference from some widely used devices, like microwave ovens.

In fact, so little was happening in this spectrum, these airwaves were known as "garbage bands." The conventional wisdom was that they were junk. They were scraps of spectrum where the demand for wireless service would just be limited.

The conventional wisdom was wrong. That's because a renegade band of FCC engineers got together and decided to do something different. They decided to do more than just dismiss these bands as junk. They decided to experiment. Instead of having the FCC dictate what could be done in these bands, the agency would leave it up to the public. They would open these bands to anyone who would follow some technical rules instead of dictating specific services that could be offered by specific licensees.

This was radical. It was edgy stuff. It was a move away from command and control spectrum policy. It was a bet that access to some spectrum by public rule rather than private license would lead to a whole new world of wireless uses.

It was a good bet—a really, really good bet. That's because these garbage bands—which included the 2.4 GHz band—are where Wi-Fi began. And with the development of the 802.11 standard, we turned this wireless junk into gold. Because today our lives are not just dependent on wireless connectivity, they are deeply dependent on unlicensed spectrum—and Wi-Fi is an enormous part of that.

Wi-Fi is how we get online. It has democratized Internet access.

Wi-Fi is how our wireless carriers help manage their networks. In fact, today more than half of all wireless data connections are offloaded onto unlicensed spectrum.

Wi-Fi is how we foster innovation. That's because the low barriers to entry for unlicensed airwaves make them perfect sandboxes for experimentation. This is where we tinker. It is a special place in our airwaves—because access does not require contract or permission.

You can see that innovative potential very clearly on the floor of the Consumer Electronics Show. Because so many of the connected devices on display—the devices that are headed our way in the future—rely on unlicensed spectrum.

As exciting as this is, it means unlicensed spectrum is getting crowded. But you don't have to take my word for it or rely on my show floor anecdotes from last week. The numbers alone make it clear. Today, nearly two-thirds of US households rely on one or more Wi-Fi networks. Virtually all licensed devices now incorporate Wi-Fi. In fact, more devices have been certified to use the 2.4 GHz band than any other band in our skies. Before the end of the decade we will see a tripling of machine-to-machine connections with the Internet of Things and an absolute explosion in the demand for mobile video.

Add all this up and you see very clearly that we need a place for Wi-Fi to grow. Already our current Wi-Fi bands are congested—and headed for exhaustion. This matters. It matters because it will inconvenience consumers, impede innovation, and slow the economy.

But we can do something about it. We have an opportunity to increase the spectrum resources we devote to Wi-Fi. That opportunity comes from the 5.9 GHz band—and it is the subject of our discussion today.

The 5.9 GHz band, or more precisely the 5850-5925 MHz band, is an ideal place to explore Wi-Fi expansion. It's adjacent to an existing band of unlicensed spectrum in 5725-5825 MHz. That means we have the opportunity to introduce new wideband channels to the upper portion of this band—channels that will be able to take advantage of the new 802.11ac Wi-Fi standard and deliver throughput even faster than 1 gigabit per second. In other words, this is how we develop Gigabit Wi-Fi. It's no wonder, then, that in the 2012 Middle Class Tax Relief and Job Creation Act, Congress tasked the Department of Commerce with studying the

opportunities for unlicensed spectrum in the 5.9 GHz band. It's also why in 2013 the FCC introduced a rulemaking on this band. There's real potential here—and we should explore it.

But as we explore, we must be mindful of what was done in this band before the turn of the millennium. Back in 1999, the FCC set aside the 5.9 GHz band for the automotive industry. Since that time, efforts have been underway to use this spectrum to develop technology that can reduce car crashes and improve roadway safety. This system, known as Dedicated Short Range Communications Service, is designed to have cars talk to each other in real time in order to reduce driving accidents.

Now I have had the privilege of seeing DSRC developments first hand. My colleague Commissioner O'Rielly and I headed to the outskirts of Detroit last Summer. While there, we visited the Crash Avoidance Metrics Partnership and the University of Michigan Transportation Research Institute. We test drove new car safety prototypes, listened to concerns about possible Wi-Fi interference, and discussed spectrum sharing with automobile manufacturers and researchers.

We are hopeful that this technology continues to develop. But we also are mindful that DSRC is not commercially on the roads in anything like the critical mass necessary to make it effective. In fact, according to the National Transportation Safety Board, it may take as long as three decades from now before the majority of passenger and commercial fleets are connected to this system. That's a long time.

Already in the decade and a half since this spectrum was set aside for vehicle and roadside systems, a lot has changed. When DSRC was new, driverless cars were the stuff of science fiction. But autonomous and semi-autonomous vehicles are now not only on display at the Consumer Electronics Show—they are being tested on our roadways. In fact, in what is bound to be an inflection point of sorts, the first ticket was given to an autonomous vehicle in California late last year. In addition, a wide range of new technologies are coming to market that support features like automatic braking and lane change warnings that use radar and other spectrum technologies not dependent on DSRC. During the same time, our demand for wireless services all across the economy has exploded. So we should not strand our spectrum strategies in turn-of-the-millennium safety technologies when there may be other more efficient ways to reach the same goals.

The good news is we have agreement on this point. Last Fall, Senators Thune, Rubio, and Booker called on the FCC and our colleagues at the Department of Commerce and Department of Transportation to test the potential for shared automotive and unlicensed use in this band. Senators Nelson, McCaskill, and Peters also wrote in, lending their support to this approach. Car makers and equipment manufacturers chimed in, too, agreeing to new tests for shared operations in the 5.9 GHz band.

This is good. Because we now have consensus to take a modern look at the 5.9 GHz band. That means a willingness to test if sharing in this band causes harmful interference to incumbents—and a commitment to find a way forward that supports both automotive safety and our growing demand for wireless services.

I think we can do this. But what we need now is a roadmap. So here are the three signposts I propose.

First, the FCC should immediately refresh the record from its 2013 rulemaking on the 5.9 GHz band. Time has passed since our early proposal, technology has evolved, and we would benefit from updated input from all stakeholders.

Second, the FCC should begin testing unlicensed device prototypes for the 5.9 GHz band in our laboratory—and provide the public with opportunity to comment. Among other things, these tests could include study of the threshold at which a device detects a DSRC signal, the amount of time necessary for vacating a channel to avoid interference, and the potential for segmenting the band.

Third, we will need to move the results from the laboratory to the field. So we will have to work with our colleagues at the Department of Transportation to take what we have learned with these prototypes and test them with vehicles and in real-world scenarios.

I'm an optimist that we can do these three things by the end of this year. Or better put, I'm an impatient optimist. I'm impatient for us to find new and creative ways to make the most of our spectrum resources. I'm impatient for us to build a more connected future, because I believe it is how we are going to grow the economy and expand opportunity in the new digital age. And I'm convinced we can find a way to share our airwaves that will deliver better broadband and improve roadway safety. There are win-win possibilities in our future. The 5.9 GHz band is one of them. So let's get started.

Thank you.