

“WINNING THE GLOBAL BANDWIDTH RACE: OPPORTUNITIES AND CHALLENGES FOR MOBILE BROADBAND”

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I understand we're going to do some Q&A, but Kevin asked me to speak first about the incredible world of mobile communications. In particular, I'll speak about the opportunities of mobile broadband for our economy and our global competitiveness; the significant challenges we continue to face because of the rapidly increasing demand for mobile data; and what we've been doing and need to do to tackle those challenges. I'll close by talking about other threats to our mobile opportunities, including a nascent war on Wi-Fi.

Before talking about the FCC's mobile agenda today, I think it'll be helpful to understand where we began. Let's rewind to 2008.

Back then, we were talking about the vibrant mobile innovation in countries like Japan and South Korea, and Europe's lead in 3G. Businessweek described America as a “wireless backwater.”

Fast forward to today. Thanks to the work of innovative American companies, software, mobile, broadband providers, and others -- and to smart government policies -- the mobile revolution has kicked into overdrive and America's mobile story is different. It's one of comeback and U.S. leadership.

After trailing for too long in key 3G metrics, we are now leading the world in deploying at scale the next generation of wireless broadband networks, 4G LTE. Today we have 69% of the world's LTE subscribers and a path to maintain leadership into the future.

The United States has become the global test bed for 4G LTE apps and services. This is incredibly important because LTE is the leading platform for mobile, and mobile will be a leading platform for innovation for years to come – many believe, *the* leading platform for innovation.

America is leading too in the software-driven apps and services running on these networks. More than 80% of smartphones sold today throughout the world run operating systems developed by U.S. companies, up from less than 25% three years ago. More than tripling market share in 3 years. Amazing.

And U.S. companies are the clear leaders in the tablet sector worldwide, accounting for roughly three-quarters of tablets sold and for the operating system on almost all tablets.

Today's smartphone- and tablet-powered “apps economy,” already massive and still in the early innings, is fundamentally a made-in-the-U.S.A. phenomenon. In June 2008, there was no app store. In June 2012, the Apple and Android app stores alone had a collective 3 billion downloads – that's 100 million apps a day.

The Cloud is a key driver of mobile innovation, dramatically enhancing the power of mobile computing. With firms like Amazon, Apple, Google, Rackspace, and others, the U.S. pioneered and leads the fast-growing cloud computing industry.

Our progress in mobile is driving new waves of job creation and investment.

At the FCC, we've worked to foster a climate for innovation and investment.

Mobile innovation is estimated to have created well over one million U.S. jobs over the past four years, even in this challenging economy.

The apps economy was a \$10 billion market at the end of last year, and app revenues are projected to grow to \$46 billion by 2016. In just the last few years the apps economy has created nearly 500,000 U.S. jobs.

And from 2009 to 2011, annual investment in wireless networks increased approximately 25% to more than \$25 billion, including billions to build out 4G LTE.

Mobile is also creating tremendous opportunities in verticals like health care, where remote monitoring and other wireless technologies are helping lower health care costs and improve health results; education, where mobile broadband powers interactive digital textbooks and improved connectivity at schools; and public safety, where wireless is enabling initiatives like Next-Generation 911 and a nationwide mobile broadband public safety network.

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American progress in mobile over the past four years is the fastest we've ever seen. But we can't declare victory and slow down our work, not in this fast-moving and globally competitive sector. Challenges to future progress and U.S. leadership are real.

In general, the challenges to U.S. leadership in the broadband economy come from technology-powered developments: this is a flat world where – as Wharton students know well – capital can flow and innovators can work anywhere.

Whether it's Korea, China, the EU, Australia and more – all have plans to deploy ultra-high-speed wired and wireless broadband on a wide scale. Why are they focused on this? When I ask them, they don't hide the answer: To become a magnet for innovators and capital, and attract them away from the U.S.

We are in a global bandwidth race. And much like the space race in the 20th century, success in this race will unleash waves of innovation that will go a long way toward determining who leads our global economy in the 21st century.

In a knowledge economy, a nation's future economic security is tied to frictionless and speedy access to information.

The faster we can connect our citizens the faster our economy can grow. The more people of all walks of life have access to bandwidth the more opportunity we spread for all.

U.S. leadership in the 21st century will require a strategic bandwidth advantage. What are the elements of a strategic bandwidth advantage? Broadband that is fast, high-capacity, and ubiquitous.

We need people to have the bandwidth they need when and where they need it, whether you're a high-tech innovator, large or small business, or a consumer at home or on the go.

That means mobile broadband coverage everywhere people live, work, and travel, and mobile broadband requires spectrum.

Now here's something of an irony. It's actually our mobile broadband success that's driving the biggest challenge we face to having a strategic bandwidth advantage in mobile – the spectrum crunch.

Spectrum – the airwaves -- is what carries the voice and data beams from cellular, radio, and TV towers and enables the mobile devices that have become increasingly essential to our daily lives.

You can think of spectrum as an essential natural resource.

But like many of our natural resources, spectrum is finite, at least with current and foreseeable technologies. Just as we must pursue future-oriented energy technologies and policies, we have no choice on our airwaves: we must make better, more efficient use of spectrum.

The sobering fact is that based on today's projections and today's technologies, demand threatens to outpace the supply of spectrum available for mobile broadband in the coming years.

Today's smartphones generate 35-times more traffic than standard cellphones. Driven by the rapid adoption of powerful devices, U.S. mobile data traffic grew almost 300% last year, and mobile traffic is projected to grow an additional 16-fold by 2016.

When I arrived at the FCC in mid-2009, this was not a widely recognized problem. But I knew from my decade in the private sector that something was up. As Kevin mentioned, I was fortunate to work as an executive at a Fortune 500 Internet and media company, where I had seen mobile go from a nice-to-have platform for experimentation, to a must-have part of any business's strategic plan.

And when I got to the FCC, with help from the terrific MBAs, economists and engineers at the agency, we did the math. Mobile demand was threatening to outstrip spectrum supply. And we sounded the alarms.

In my first speech to the wireless industry, about 3 months after being sworn in, I spoke about the looming spectrum crunch.

There were many skeptics then about whether we faced a spectrum crunch. Today virtually every expert confirms it.

Unfortunately, as we recognized the magnitude of the spectrum challenge facing the country, we also saw that the spectrum pipeline we inherited was largely dry.

The year before, the FCC auctioned off a significant amount of spectrum in the 700 MHz band. That, by the way, was the direct result of policy decisions made in the late 1990s under Chairman Reed Hundt. I know this, as Kevin knows this, because we were then on the FCC staff, working on the Digital TV transition that freed up the 700 MHz spectrum.

This highlights an important fact about freeing up spectrum for broadband. It takes several years to bring new spectrum to consumers through traditional reallocation and auctioning of spectrum.

But while FCC auctions in the 2000s were in many respects a big success, the FCC didn't in those years replenish the spectrum pipeline. When I returned to the agency in 2009, we had our work cut out for us.

And we've been working. Since 2009, freeing up spectrum and unleashing the opportunities of mobile broadband have been at the top of the FCC's agenda. In fact, about 85% of the Commission's meetings since I became Chairman have had a wireless item on the agenda.

In addition to raising awareness about the crunch, we immediately went to work on developing a National Broadband Plan. We were not the first country to develop a broadband plan, but we were the first to develop a plan that focused on *mobile* broadband as well as wired broadband.

The Plan included a detailed discussion of the opportunities and challenges around mobile broadband, and laid out a comprehensive strategy and action plan. This was a big deal – a first-of-its-kind focus on mobile broadband that surprised many people.

To have an actionable plan on spectrum, you need to have goals. In the Plan we set audacious targets for freeing up licensed and unlicensed spectrum for broadband: 300 MHz by 2015, and 500 MHz by 2020.

A megahertz, by the way, is a slice of spectrum frequencies. To put the 300 and 500 MHz numbers in context, consider this: when we released the plan, 500 MHz represented almost a doubling of the supply of spectrum for broadband.

President Obama adopted these goals in an Executive Order. And as the President declared in announcing a goal of making 4G service available to 98% of all Americans by 2016, "America's future competitiveness and global technology leadership depend, in part, upon the availability of additional spectrum. The world is going wireless, and we must not fall behind."

People questioned whether those goals were realistic at the time. People continue to question that. But I believe in stretch goals, especially given the global competitive landscape and the upside to our economy and country.

Recognizing that it can take a decade or more to identify, reallocate, and auction spectrum, we've been using new and innovative ways to accelerate the availability of spectrum for broadband and meet our goals.

As we've proceeded, our path has been one familiar to many of the businesses you've worked at: we're hitting the lion's share of our marks; a small number of potential opportunities haven't panned out; but a number of new opportunities have opened up. As the National Broadband Plan says, "The plan is in Beta and always will be."

As we continue our work, one point. Some have contended that the U.S. has less spectrum available today for broadband, but that's simply not the case. Looking at the spectrum charts, we are in a small group at the very top tier of countries. Overwhelmingly, countries are playing catch-up with the U.S. We were well ahead of them in auctioning spectrum freed up by the Digital TV transition. The real question is the future - and as long as we hit our 2015 spectrum targets, we'll stay ahead.

Now, our global competitors *are* focused on spectrum. We *are* in a global bandwidth race. And that must spur us to keep the pedal to the floor.

So how are we doing toward our 2015 goals?

I am proud to announce today that we are on track to exceed our first benchmark of freeing up 300 MHz of spectrum by 2015.

We are bringing new spectrum online by focusing on four kinds of categories:

First, traditional auctions.

The FCC pioneered spectrum auctions for the world in the 1990s and has conducted 80 auctions, granting more than 30,000 licenses. These auctions have raised more than \$50 billion for the U.S. Treasury in the past two decades, and economists regard the economic value created by FCC auctions as being about 10 times that number, or \$500 billion in value.

We are on track to auction 75 MHz of licensed Advanced Wireless Service spectrum – essential for 4G cellular service -- by 2015. This includes an auction of shared rights to the 1755-1780 MHz band, which could be paired with the 2155-2180 MHz band already in inventory to extend the valuable AWS band by 50 MHz. We expect the first of these auctions – of the AWS-2 H-block – will happen in 2013, and the revenue generated will serve as a down-payment on funding a nationwide Public Safety Network and to reduce the deficit.

The second category is removing regulatory barriers to flexible spectrum use. Later this year, we will finish removing outdated rules and restrictions on 70 MHz of spectrum. This includes 40 megahertz of mobile satellite spectrum that I expect the Commission will repurpose for land-based mobile use, and 30 megahertz in the long-troubled Wireless Communications Service band that is now poised to be used for LTE service. We're also working with stakeholders to enable use of the portions of the mobile satellite spectrum in the L- and BIG LEO bands for terrestrial service, and this would add to our megahertz total.

Third category, clearing new bands for flexible broadband use. Recent legislation adopted one of the National Broadband Plan's most groundbreaking recommendations: that Congress grant the FCC authority to conduct incentive auctions. Incentive auctions are an innovative market-based tool to repurpose for mobile broadband valuable spectrum in the broadcast television band -- the 600 MHz band, just below the 700 MHz band now being used as part of the 4G rollout. The mechanism is a two-sided auction, a sophisticated idea that builds on the best in auction theory and practice. Last Friday we launched a proceeding to implement this idea, and expect to hold the world's first incentive auction in 2014.

While we can't know yet exactly how many megahertz incentive auctions will free up, the opportunity is large, particularly given the highly desirable nature of this 600 MHz spectrum for mobile broadband.

There are also significant opportunities to clear and reallocate underutilized government spectrum for commercial use.

The fourth category is dynamic sharing. In 2010 we created a new spectrum sharing paradigm by allowing unlicensed devices to access valuable unused spectrum in between broadcast TV channels – known as “white spaces --which I will discuss more later. Our action freed up the most new unlicensed spectrum in 25 years – at least several 6 MHz channels in most of major markets and more than 100 megahertz in many parts of the country.

The FCC also developed an idea to use database technology to enable sharing between commercial broadband and military radar systems. In a major report this summer, the President's Council of Advisors on Science and Technology, or PCAST, recommended doing this in the 3.5 GHz band, which is virtually unused on U.S. land itself. By year's end, the FCC will launch a formal proceeding to enable use of 100 MHz of spectrum in this band. By potentially focusing the band on small-cell technologies that mobile broadband providers are increasingly embracing, this can also spur innovation and U.S. leadership in this powerfully promising area. This spectrum can be online for commercial use by 2015, provided government spectrum users fully engage and, based on our direct engagement and their meaningful actions so far, I expect they will.

So with 75 MHz from traditional auctions, 70 MHz from removing regulatory barriers, 100 MHz from dynamic sharing, and significant spectrum from incentive auctions, reallocations of government spectrum, and white spaces, we are on track to exceed the 300 MHz target by 2015.

Now let's talk about our goal of 500 MHz by 2020.

This is a key challenge for the U.S. economy going forward.

In our globally competitive world, productivity drives economic growth. If we want to have most productive economy in the world, we have to have the strongest spectrum position in the world - the best invisible infrastructure - the most bandwidth.

Wireless broadband accounted for more than \$33 billion in productivity gains in a recent study that sampled nine sectors of our economy. Wireless broadband is projected to account for more than \$1 trillion in productivity gains over the next decade – but only if we have sufficient spectrum.

Meeting our medium- and long-term spectrum needs won't be easy. In fact, 500 MHz may not be enough. Since we issued the National Broadband Plan in 2010, we've seen new developments that have turbocharged mobile demand.

The first is 4G LTE.

So far we've been dipping our toes in the water on LTE. But we're about to dive in. In the past few weeks we've seen the introduction of a slew of new LTE devices: Google's Droid RAZR, a Windows 8/Nokia phone, an LTE-enabled Kindle Fire, and most recently the iPhone 5.

LTE is a net-plus for spectrum efficiency - it was designed for a data world and is a much more efficient standard than its predecessors. But it was not anticipated that LTE would have an effect on demand that outpaces the efficiency gains. Studies so far show that consumers with smartphones on a 4G network use 50% more data than the consumers using the same smartphone on a 3G network, because higher speeds and lower latency encourage the use of higher-bandwidth applications.

Another game changer is tablets.

When I first spoke about a looming spectrum crunch in 2009, that was BEFORE the emergence of the tablet market.

And how much traffic do those tablets generate? Try 121 times more than a traditional mobile phone.

Cisco projects that mobile-connected tablets will generate as much traffic in 2016 as the entire global mobile network in 2012.

Think about that. Tablets didn't even exist when we started talking about the spectrum crunch. And within 4 years, these devices -- alone -- will be generating as much mobile data traffic as we have today. Talk about a game changer.

And there's another game-changer coming fast: machine-to-machine connectivity - the Internet of Things. Before long, almost every device we can imagine - from our dishwashers to our cars -- will have embedded Internet-connected sensors, and video and other high-data uses will be part of this picture. Experts expect up to 50 billion Internet-connected devices by 2020.

Here's the bottom line: If we don't take the necessary steps, the spectrum crunch will become a spectrum crisis. This would threaten a uniquely powerful opportunity for U.S. innovation and economic growth - wireless broadband - and potentially cede leadership to our global competitors

And even as we work to meet the 500 MHz 2020 goal, we should remember that the clock won't stop in 2020, and data demand will continue to increase.

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How much demand will increase we can only guess, but we know this: We won't reach tomorrow's spectrum needs relying only on yesterday's spectrum toolbox.

We need action on two fronts.

First, technology and business innovations that dramatically increase spectrum efficiency. As an example of leadership, Qualcomm CEO Paul Jacobs recently set a company goal of expanding wireless network capacity by 1,000 times from today's levels -- yes, 1,000X -- through use of new technologies such as small cells. Wireless carriers are increasingly using Wi-Fi offloading to reduce burdens on their cellular networks. We need to make use of every available tool to improve spectrum efficiency. Smart antennas, MIMO (multiple input multiple output) and compression are just a few examples of the kinds of technologies that can be used to squeeze more communications capacity out of the available spectrum. Improvements in wireless receivers are also essential, so we can place services more closely together on the spectrum chart without interference.

The second area we need action: moving forward on smart wireless government policies.

Everyone will have to do their part -- including the FCC, other federal agencies, states and localities, and Congress. Constantly improving inter-agency coordination is essential, as NTIA, the Defense Department, and the FCC are demonstrating with the 1755 MHz and 3.5 GHz bands. And Congressional action will also likely be required -- look at incentive auctions and the historical need for legislation to drive reallocation of inefficiently used government spectrum.

Yes, this is hard work, but it can be done.

When we first introduced incentive auctions two years ago, many people said the idea wouldn't go anywhere, not in Washington, not at this time.

But less than two years after the idea's formal introduction in the National Broadband Plan, incentive auctions have gone from idea to law. The President, from the beginning, displayed strong leadership. And Congress, to its credit, overcame strong differences to enact a bold law.

The FCC of course will need to continue to pursue an aggressive and multi-faceted agenda to free up spectrum for broadband and enhance spectrum efficiency.

What are some of the elements?

Since I arrived at the Commission, we've promoted competition to drive wireless innovation, investment and spectrum efficiency. Competition, the lifeblood of our free-enterprise system, drives carriers to innovate to get the absolute most from the spectrum and equipment they have. We've shown quite clearly that we'll condition or even block deals that are anti-competitive and inconsistent with the public interest.

At the same time, we've approved more than 1,000 spectrum license transfers and reduced the amount of time it takes to review secondary market spectrum transactions.

We've done this because a healthy pro-growth spectrum policy requires both facilitating efficiency-enhancing deals and promoting competition.

It also requires investment. It requires massive amounts of private capital, and so we've been advancing our Broadband Acceleration Initiative, including implementing a "shot clock" for wireless tower siting, modernizing rules related to pole attachments, and reforming our rules for wireless backhaul.

We're moving forward on new ideas -- like removing barriers to colocating antennas, and streamlining access to rights of ways. Yes, these issues may seem a little less than exciting -- they're not the things I do that my wife can't wait to chat about over dinner -- but they're what it takes to get the regulatory plumbing right, to speed up broadband deployment and lower its cost, and to spur many billions of dollars of private investment.

Smart public investment in wireless infrastructure is necessary too. We created a new Mobility Fund to support 3G and 4G networks in unserved rural areas. Yesterday, we announced allocations of \$300 million for mobile broadband expansion through an innovative reverse auction. This will get mobile broadband to 83,000 road miles in 900 areas in 33 states. And we're gearing up to provide \$500 million annually in ongoing support for mobile broadband expansion.

These initiatives will help deliver ahead of schedule on the President's goal of more than 98% mobile broadband coverage in the U.S.

In addition to promoting competition, reducing barriers to broadband build-out and driving broadband investment, we of course need to keep clearing inefficiently used spectrum and reallocating it for licensed flexible use.

We must also recognize that the new realities make one conclusion unavoidable: the next-generation spectrum crunch requires next-generation spectrum policy innovations. We must continue with policies that have worked, reforming and improving them as we go, while also supplementing our old tools with new ones.

In the last several decades, there have been three major spectrum policy innovations, each of which has created tremendous value for our economy and society: spectrum auctions, flexible spectrum use, and unlicensed spectrum.

These can't be the last major spectrum policy innovations. We need new ones. And we're making real progress.

Incentive auctions, which I described earlier, is a major next-generation policy innovation.

Let me conclude my remarks by talking about two other major policy innovations that we are preparing to implement.

First, spectrum sharing.

We know that it is becoming increasingly difficult to find free and clear blocks of spectrum. But there's some good news. Since we wrote our National Broadband Plan, yes, data demand has increased even more than expected, but we've also identified a new source of spectrum supply, enabled by technology and by cooperation among parties: spectrum sharing.

I expect that sharing will allow us to auction spectrum that otherwise wouldn't get to the commercial market in our lifetime, if ever.

If we can share spectrum meaningfully, it will have a dramatically positive effect, as emphasized by the recent PCAST report.

Technology is enabling dynamic spectrum sharing, and sharing based on geography and time is also becoming more practical.

I applaud Assistant Secretary Larry Strickling at NTIA, and senior officials in the Defense Department including Deputy Defense Secretary Ash Carter and DoD CIO Teri Takai, for their leadership on this issue.

For some time, both major commercial and government spectrum users agreed on one thing: that exclusive use should be the sole model for licensed spectrum, and that sharing shouldn't even be tried. But that is changing, and this change is good.

Verizon CEO Lowell McAdam recently said that industry and government should “explore options for a commercial player and a non-commercial entity to share spectrum. Government and industry must work together to find ways to use spectrum more efficiently so that we are all truly connected, especially in times of need.”

And Defense Department Deputy CIO Major General Robert Wheeler said in testimony before Congress last month: “While moving from an exclusive right spectrum management regime to one focused on large-scale spectrum sharing presents new challenges, DoD is committed to working with government and industry partners to develop equitable spectrum sharing solutions.”

This reflects an important new growing consensus: that spectrum sharing is part of the solution.

From the perspective of military and other government spectrum users, sharing can help narrow the growing gap between government and commercial communications equipment, a gap characterized by a widening disparity in both functionality and price.

It can do this by allowing federal agencies in shared bands to tap into the massive \$300 billion global supply chain for commercial wireless equipment.

This enormous scale is improving the price/performance equation every day in the commercial sector, and can do the same for federal spectrum users.

Last but certainly not least in the list of new spectrum policy innovations -- next-generation unlicensed spectrum opportunities.

Unlicensed spectrum was one of the great spectrum policy innovations of the 20th Century, as I mentioned. Back in the 1980s, there was a band of low-quality spectrum that was lying largely fallow. Nobody could figure out what to do with this so-called “junk band,” so the FCC decided to free it up as unlicensed spectrum, meaning anyone can use it, as long as they follow basic rules to prevent interference.

The result was a wave of new technologies – baby monitors, cordless phones, and eventually Wi-Fi. Today, Wi-Fi -- entirely unpredicted when unlicensed use was authorized -- is an essential part of the mobile ecosystem and our overall economy, generating tens of billions of dollars in economic benefits in the U.S. every year.

Wi-Fi and other unlicensed technologies are a key complement to licensed spectrum technologies in bridging the supply/demand gap in a sustainable way.

Think about it – most of you probably automatically connect your smartphones and tablets to Wi-Fi networks instead of your cellular carrier’s network when both are available. Wi-Fi today carries much more Internet traffic than cellular networks. In fact, the aggregate capacity of the world’s Wi-Fi networks is 28 times greater than the capacity of the world’s 3G and 4G networks.

And across multiple verticals, innovators are doing amazing things on open unlicensed networks. According to one report, 80% of wireless healthcare innovation is on unlicensed, and 70% percent of smartgrid communications are transmitted over open and secure wireless networks.

What is it about Wi-Fi that has generated this success? Two things: (1) unlicensed spectrum is a vibrantly free market approach: anyone can innovate in this spectrum and anyone can use the products -- you don’t need permission; and (2) all sorts of devices and applications share the same spectrum without any fuss - turn them on and they simply work.

It's also worth noting that unlicensed spectrum use requires less government engagement than licensing.

In 2010 we created a new paradigm by allowing unlicensed devices to access valuable unused spectrum in between broadcast TV channels – known as “white spaces.” Unleashing white spaces creates a new frontier of low-band spectrum available for broadband, and our action freed up the most new unlicensed spectrum in 25 years. This innovative idea is enabling Super Wi-Fi and accelerating machine-to-machine innovations.

In moving forward on incentive auctions last week, the FCC proposed building on this by ensuring that a significant amount of unlicensed spectrum will be available everywhere across the country, and for the first time, on a consistent, nationwide basis. This is a major proposal, and can be an extraordinary new platform for next-generation Wi-Fi and other innovations.

Some disagree with this approach.

Earlier this year, there was an effort in Congress to prohibit the FCC from designating *any* TV band spectrum repurposed through the incentive auction for unlicensed use.

And just last week, one of my colleagues at the Commission suggested that the FCC significantly limit unlicensed opportunities in the spectrum freed up by incentive auctions, including questioning whether the FCC had to auction and license every megahertz of repurposed spectrum instead of making some of it available for entirely unlicensed use.

We've also seen opposition to spectrum sharing ideas, such as our proposal for the 3.5 GHz band – which would provide for small cells and other uses by sharing spectrum with federal radars. We've seen that - even though sharing would be an additive policy option, designed to ensure that we don't leave valuable spectrum on the table, and designed to increase the amount of spectrum we free up, licensed as well as unlicensed, even enabling the auctioning of paired spectrum where we'd otherwise have to auction less valuable unpaired spectrum.

Why oppose balanced spectrum policy ideas that include more spectrum for both licensed and unlicensed use? Why launch a war on Wi-Fi?

I see things differently. I believe clearing and auctioning spectrum for exclusive licensed use must remain a core component of spectrum policy, and that we should also pursue next-generation ideas like spectrum sharing and expanded unlicensed use. Let's not just talk about a forward-thinking FCC. Let's continue the success of the last few years and *be* an FCC that's forward-thinking and forward-acting. Launching a war on the kinds of ideas that gave us Wi-Fi would be a self-inflicted wound to U.S. innovation and economic leadership.

Look at what's happening with the mobile industry. As part of their strategy to solve congestion problems, major mobile carriers are deploying tens of thousands of Wi-Fi hotspots around the country. It's estimated that 20 to 40% of cellular traffic is currently offloaded onto Wi-Fi networks. As part of the "CableWiFi" initiative, five of the nation's largest cable companies are connecting their Wi-Fi networks, allowing each other's broadband customers to access more than 50,000 hotspots across the country. And we've recently seen the launch of innovative "Wi-Fi-first" wireless companies, including FreedomPop and Republic Wireless, which offer consumers low-cost mobile voice and data service primarily over Wi-Fi networks, with cellular networks as a backstop.

As innovation opportunities and demand for unlicensed uses continue to grow, and Wi-Fi networks get more and more congested – have you tried using Wi-Fi in a busy airport recently? – we need to ensure unlicensed spectrum opportunities keep pace.

Few of us can imagine life today without unlicensed devices. No browsing the Internet with our laptops unless we plug in a cord, no having everyone in the family share a single home broadband connection, talking on our cell phone hands-free with a Bluetooth headset, unlocking our car doors remotely, accessing our office with a security badge, managing inventory, making sure our children are sound asleep while we're in another room, streaming music to our home stereo, and

so many more things that today we take for granted, and which many people may not realize depend on unlicensed spectrum.

We're at a crossroads. Mobile broadband holds vast promise for US innovation leadership, for sustainable economic growth, and for broad opportunity. But we face major challenges in seizing this opportunity. We can downplay the challenges and remain locked into the policy tools we have, or we can match innovation in mobile broadband with innovation in spectrum policy.

I vote for the second path. I vote for the second path because I think strong and smart action is necessary for the U.S. to have a strategic bandwidth advantage in the 21st Century.

The U.S. has regained global leadership in mobile. Let's keep the pedal to the floor and make sure that our innovators and the American public have the infrastructure they need to preserve and extend U.S. leadership in the global broadband economy.

Thank you.