

Meredith Attwell Baker, President & CEO, CTIA-The Wireless Association Remarks

(As Prepared, Not Necessarily as Delivered)

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Thanks to the Center for Advanced Communications for sponsoring ISART. The Center was formed to advance spectrum research and promote more efficient spectrum usage. This collaborative effort is a good example of the type of innovative thinking around spectrum policy that we should all champion. Conferences like these also play an important role in our wireless future and our economic future. Because spectrum policy is now economic policy. As many of you in this room know, it is also defense and national security policy.

I want to focus on four points today to provide some context as to where the commercial wireless industry is on our core future spectrum opportunities. But first, some thank you's are in order.

Last month, NTIA released its Fifth Progress Report detailing the Administration's efforts to free up 500 MHz for mobile broadband by 2020. Balancing the critical spectrum needs of government agency operations with consumers' escalating mobile data demands is tricky. Having served at NTIA, I know this first hand. The Administration deserves a lot of credit. Its Fast Track Evaluation has been a landmark effort, and one we need to build from for years to come.

Central to that effort was the AWS-3 auction that concluded in January. The last major spectrum auction occurred seven years earlier and the revenue generated by the AWS-3 auction reflects the pent-up demand of providers eager for the ability to meet the ever escalating demands of mobile broadband traffic. This auction was a huge accomplishment. 65 MHz of internationally harmonized airwaves ready to serve American consumers and businesses. Just as importantly, the effort to make this spectrum available was the definition of collaboration. The relationships that were fostered between government and industry are critically important for our future efforts. So to NTIA and the affected agencies, thank you. We now begin the equally challenging process of relocating incumbents, protecting the remaining incumbents, and building out new commercial operations, while ensuring that mission-critical services remain online. We are committed to making this work.

The last thank you is for the work necessary to support the FCC's vote to free up spectrum in the 3.5 GHz band. It is through conferences like this over many years that we are now ready to try to deploy more advanced spectrum sharing regimes. We now have an approach that provides the promise of more spectrum for commercial use while protecting important federal services. I am particularly grateful for the Administration's successful efforts to reduce the exclusion zones in this band. We look forward to continued efforts with the FCC and other stakeholders to make sure that this 150 MHz of spectrum is made available for productive use. This is a test, an experiment, and an important one. We are committed as an industry to determine if a 3.5 GHz type approach can be a viable proof of concept for future operations in other bands.

From that starting point of thanks for the work of so many of you in this room, I want to pivot to how the commercial wireless industry looks at our future options and the need to find mutually agreeable solutions and win-win scenarios.

The Economic Value of Licensed Spectrum

Point one. Our perspective starts with the remarkable impact licensed mobile spectrum has on consumers and our economy. We released a paper this week that provides a powerful reminder of what's at stake in the spectrum debates. The Brattle Group's paper found that licensed spectrum in the hands of wireless carriers generates over 400 billion dollars in economic activity every year. This is a dramatic – yet very conservative – figure. U.S. consumers and businesses spent 172 billion dollars on wireless services in 2013. As this spending rippled through the economy, it generated an additional 228 billion dollars in economic impact. So for every dollar spent on licensed wireless services, \$2.32 is spent throughout the broader economy. And that amount does not even include the economic benefits produced by other industry sectors that rely on the mobile broadband platform, sectors like telehealth, mobile entertainment, the app economy, or unlicensed spectrum. The Brattle paper further found that Americans value their mobile service more than they actually pay to use it. What this emphasizes is that the intense competition in the wireless market drives the cost of service down, freeing up consumers to invest and spend more broadly.

So let's shift from macroeconomics to more tangible findings. Licensed wireless is a tremendous job creator. In 2013, wireless supported over 1.3 million jobs in this country. With every hundred people employed in the wireless industry, another 650 people find jobs. And wireless jobs are good paying jobs, jobs that pay 65 percent higher than the national average.

We all recognize and appreciate how our use of mobile broadband has changed, how expectations have changed year-by-year. But to pull back and measure the global impact of licensed spectrum for mobile broadband reinforces why spectrum policy is central to our future economic policy.

U.S. Wireless Industry Snapshot

Second point. So much of the value we see – and hope to see – in mobile broadband is beyond the billions measured by Brattle. Because wireless is more than just a service. Wireless is the platform for innovation in the 21st century in the commercial space as well as military and government space. Remember when wireless just meant voice and text? Well, wireless now is video, health, retail, energy and connected everything – from cars and appliances to pacemakers and drones.

Today, the connected car market is growing ten times faster than the traditional automobile market. By 2020, over 200 million connected cars will be on the road. In four years, 1.8 billion connected home devices, smart appliances, home security systems, and energy equipment, will ship, 12 times what shipped just last year. By 2020, the market for mHealth will nearly top \$50 billion, up from \$2 billion in 2012. Our connected future and

the economic and social benefits that flow from it rides on our wireless networks. These networks depend on investment and innovation.

Investment and innovation that breed disruption. Just over a year ago, Uber's share of expensed rides in major U.S. cities was 14 percent. Now it is nearly half – all hailed by smartphones. And last week, Google said that mobile searches have outpaced PC searches for the first time.

The wireless industry is so dynamic because carriers must compete and fight for consumers every day. And as a result, the U.S. has reclaimed its mobile leadership mantle with 4G. Wireless has invested \$120 billion of private capital over the last four years. Our investment was greater than that of the major oil, gas, and automobile industries. This level of investment means that every year, your network gets faster and better, your device has more capabilities and features, and the Internet of Things around you gets more and more advanced. Speeds are increasing, prices are decreasing, and usage is skyrocketing.

Network quality? We have four national carriers that have blanketed the country with 4G, and regional providers that offer LTE to millions. Competition? Over 97 percent of Americans can choose from 3 or more mobile broadband providers.

And the innovation is coming in waves. Just ahead, we will see new and better ways to use voice services with HD voice and VoLTE. Video will be re-invented on your phone with improved video streaming – LTE Broadcast. And the next great app will be developed. All of this before we introduce next-generation networks and 5G in a few years.

When and how we introduce 5G depends, in part, upon how we keep our spectrum policy as dynamic and forward-looking as our industry. All of our connected life aspirations will ultimately succeed or fail based on our underlying mobile infrastructure. Is the connection fast enough, secure enough, reliable enough to support all of these new uses. And that comes back to spectrum, just like practically every new innovation and service coming from the government sector as well.

Because of all this innovation, we see demand rising rapidly on our wireless networks. Mobile data traffic grew over 1,000% between 2010 and 2014. The average user consumed 450 Megabits a month in 2012. Today, 1.8 gigabits a month. That's just cellular data, not Wi-Fi. Now envision a future where cellular data averages 6, 8, or 10 Gigabits a month.

That future is closer than many think and just wait until the remaining third of Americans start using smartphones. These projections are a little daunting, just like they were in 2010 when we last had a conversation about what we then called the spectrum crunch. In 2014, roughly 500 petabytes of traffic flowed across wireless networks each month. In 2019, mobile data traffic is projected to be six times that amount. But we won't have six times the spectrum, no matter what we do.

So, what will it take from a network perspective to handle a six-fold increase of already significant data flows? We need infrastructure, we need standards and technologies, and most importantly, we need spectrum. Carriers will need to add thousands of small cells to densify their networks. And carriers are already investing in new standards and technologies to make more efficient use of spectrum assets already deployed. But even with all of that investment, infrastructure, and engineering know-how, we will still need more spectrum. As smartphone penetration continues, as the Internet of Things and our connected life takes off, wireless will need more hundreds of MHz more. It is our practical reality.

Mobile broadband demand cannot be met by improved spectral efficiency alone, more towers and more wireless infrastructure can never be enough, and AWS-3 and the incentive auction will not suffice.

We already lead the world in spectral efficiency. The U.S. has the third lowest amount of spectrum dedicated to LTE. German operators have 26 times more spectrum per subscriber.

What our carriers are doing to transform former satellite bands and other under-utilized bands into mobile broadband shows how hard we are looking for more spectrum. Carriers are actively refarming their existing spectrum assets to meet demand. Verizon is refarming its 1900 MHz PCS spectrum, T-Mobile has already refarmed 80 percent of MetroPCS' CDMA spectrum for 4G and is shutting down that legacy network in less than five weeks. And AT&T is actively refarming Leap's spectrum.

While infrastructure will always help, we can't just "build" our way out of a six-fold increase of mobile traffic. We forget that AWS-3 represents only 13 percent of the government's own conservative spectrum goal of 500 MHz.

Importance of Licensed Spectrum

Third point. This continued growth is based on the availability of exclusive use licensed spectrum. The question we face is will the U.S. continue to embrace licensed spectrum, the approach that has made us the global leader in 4G. Wireless carriers have invested billions in spectrum, and billions more in infrastructure, changing the way Americans go about every aspect of their lives. This week's study underscores the continued need for more licensed spectrum. While cleared spectrum will always be a challenge, it should be a challenge that we confront together with a spirit of collaboration.

We also support shared spectrum, and we support unlicensed spectrum. We need low, mid, high, and, in the future, very high-band spectrum to meet our needs. The right spectrum strategy is an all-of-the-above strategy. Sharing has its place. But sharing simply can't be the default answer when we confront the first impediment, the first roadblock. We hear it in every reallocation process, the view that there is no more spectrum available, that freeing up more bands is impossible.

All of this sounds to me a lot like what was said about AWS-3 not so long ago. Just four years ago, industry was told the 1755 band had too many agencies too many government assets to reallocate anytime soon. Even 18 months ago, “no one was sure” the FCC would move forward with AWS-3. It was called “a very tough band,” and difficult under even the best circumstances. So it will never look easy, particularly years out. To be fair, it will never be easy. But it can be done and needs to be done if we are to remain the global leader in mobility.

This isn’t a new lesson. We learned that with AWS-1, which I saw first-hand at NTIA. The process for AWS-3 was smarter and more efficient. Was it perfect? Of course not. The progress made by all stakeholders from 2006 to 2014 is laudable and encouraging for what is next. We can keep fine tuning and improving. Nonetheless, it will be a nearly 20-year process to bring AWS-3 spectrum to consumers. This is simply too long. We can and must do better, particularly because we are already behind in identifying what’s next.

We understand that new technologies will allow for more flexible sharing arrangements than the historic geographic and temporal sharing techniques that have long served as staples of spectrum management. And we should, as a country, explore these new tools. But in our view, the complexities of some sharing proposals are too far ahead of where we are today. As a country, the U.S. cannot settle too quickly into sharing regimes that rely on unproven and complex government roles and nascent or untested technologies. We can’t ask carriers to depend upon limited and undefined access for the spectrum they need to serve tens of millions of subscribers every day.

The worst thing that could happen is spectrum lies fallow because we moved quicker than technology and industry is able to go. Look no further than the TV white spaces. We are approaching a decade since the first order, and all we have are a handful of small-scale projects. We must resist the urge to reflexively embrace new models simply because they are new. They must be proven first. So how do we transfer the ideas and R&D in this room from concept to the field and eventually to hundreds of millions of Americans? Start small, move incrementally, and scale up.

Given the ability of providers to off-load traffic on unlicensed spectrum, CTIA also supports additional spectrum for unlicensed use. In fact, we are excited by the promise of incorporating LTE technology into the unlicensed bands for a more efficient and robust experience for all consumers. On top of the \$400 billion that licensed spectrum contributes annually to the economy, unlicensed provides tens of billions more.

And we need both. To continue to provide the services consumers demand, we will need substantially more licensed and unlicensed spectrum.

Refueling the Pipeline

My fourth and final point. We need a renewed discussion on where the next bands of airwaves will come from to ensure our future connected life is realized. We just had AWS-3, and the broadcast incentive auction looms ahead of us. And after that, right now, we don't know what's next.

We have seen this before. In 2010, the federal government called for 500 MHz of new commercial spectrum with no spectrum in the pipeline. Since then, mobile broadband demand has grown 88 times over. We can look back now on those early projections and see that the FCC estimates were spot on. In 2010, the FCC forecast mobile data traffic of 562 petabytes in 2014. The actual amount last year? 563 petabytes. We need to prepare for the next waves of exponential growth.

The practical reality is that five years ago, the Administration formed a ten-year plan for mobile growth. While we're making progress toward that 500 MHz, we have much more to do. We have no plan beyond 2020 to accommodate mobile growth, and the closer we get, the more daunting the timeline looks. Existing systems need to be relocated or retuned, that alone takes years and billions of dollars. History is our guide: Broadband PCS took six years. You could raise a teenager in the time it took to bring 700 MHz and AWS-1 from identification to use.

Because spectrum policy is a long game, we need to start planning today. Just months after AWS-3, it may seem strange to be here, saying we have to start again. But we do.

This must be a mutually beneficial process. And that begins with a better understanding of federal users' needs and plans. What are your spectrum priorities and demands? How can we ensure that federal agencies have the budget to plan, to test new technologies and equipment? To conduct the R&D you need to be ready to transition, if and when a move makes sense. How do we help provide more flexibility and incentives that move the needle for your agencies?

And how do we utilize all the tools in our tool kit and consider new ideas: Commercial offerings that facilitate public safety and federal government use of commercial networks and spectrum, improvements to federal procurement guidelines, incentive auctions for government spectrum bands, as well as better compression technologies. And for our part, the commercial sector needs to be clear about our spectrum needs and targets to provide federal users with a better long-term roadmap.

Our global leadership depends on beginning this process. Because countries around the world are looking to the next generation of mobile – 5G – not merely as a wireless technology, but as a key input for economic growth. We must do the same or we risk innovation and investment exported overseas. And because wireless fosters innovation across nearly every industry sector, the potential consequences of falling behind are stark.

The wireless industry is ready to build on our history of collaboration. Thank you.