

**REMARKS OF COMMISSIONER AJIT PAI
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[AS PREPARED FOR DELIVERY]

I want to thank CTIA for inviting me to speak here at MobileCon. I especially appreciate your decision to hold this year's event in the beautiful city of San Diego. As an FCC Commissioner, it's kind of a big deal for me to be in the hometown of America's most accomplished broadcast journalist, a man whose name is synonymous with the public interest. Were it not for him, I never would have learned that this city was discovered in 1904 by the Germans, who called it San Diago. I am referring, of course, to Ron Burgundy.

In all seriousness, it really is great to be with you today. Earlier, I had the chance to tour the exhibit floor and see many of the exciting new products and services that are revolutionizing the mobile space. Thanks to your efforts, we are harnessing the power of wireless technologies in virtually every sector of our economy, from health care to banking, from transportation to agriculture.

The lion's share of the credit goes to those of you in the private sector. You risk the capital. You develop new technologies. You bring new products and services to the market. You keep the United States at the leading edge of innovation. And what you've done is impressive: Over the last five years, wireless carriers have invested \$113 billion to upgrade and expand their networks. At the end of June, the United States accounted for almost half of the world's LTE connections. And if present trends continue, Mobile Future estimates that by 2016, there will be 3 billion (that's billion with a "b") networked devices in the United States.

Now, the federal government also played a role; it made two big policy choices that have enabled wireless to flourish. For one, Congress and the FCC have employed a deregulatory approach to wireless from the beginning. And that's facilitated the innovation, investment, and competition we see today. But to understand just how important this decision was, it's useful to think about how the FCC regulates the wireline side.

How to describe that regulation? It's pervasive, and it's not pretty. The FCC caps the prices telephone companies can charge their customers, and all customers in a given area have to pay the same price; that's called tariffing. To help the FCC calculate the "right price," many companies have to file stacks of paper called cost studies. To prop up inefficient companies, the rules employ hidden subsidies. And these are just some of the *federal* regulations! States regulate wired telephone companies too, and each does it a little bit differently. All of this is good for the lawyers but not so good for everyone else.

Imagine that these regulations applied to the wireless world. You want to offer a low price to attract new customers? Tariffing doesn't allow it. You want to invest in your network? Better hire an accountant to keep track of all the regulated costs. You want to subsidize a new device to encourage consumer adoption or gain a competitive edge? Okay, but it might mean you have to subsidize your competitor as well. And you want to offer a nationwide pricing plan? Nice try, but you have to comply with rate regulations in each of the 50 states.

The deregulatory approach to the mobile world has given wireless providers, handset manufacturers, and app companies the freedom to invest, to innovate, and to compete. Companies in the mobile economy can introduce new services such as texting and mobile broadband without asking the FCC's permission. They can experiment with new business models and pricing plans to serve their customers better. They can invest billions of dollars in spectrum and their networks without fear that a competitor can step in and use those facilities at government-set rates.

So deregulation is one big thing the federal government has gotten right in wireless. What's the other? It's Congress's 1993 decision to authorize the FCC to auction new licenses for spectrum. Historically, the FCC used comparative hearings—better known as “beauty contests”—or even lotteries to assign licenses. In other words, the agency either had to choose political favorites or leave it to chance—a lose-lose proposition. It was Milton Friedman who recognized decades ago that the market could provide a better way. With spectrum auctions, free-market forces propel new licenses toward their highest-valued use. And auctions are a win-win: Not only do they allocate spectrum more efficiently, but they also have raised over \$50 billion for the federal government.

The FCC made some hard calls in the last decade in conducting auctions, and we are reaping the benefits of those choices today. Between 2006 and 2008, the FCC held two major spectrum auctions, Auction 66 and Auction 73. Auction 66 involved Advanced Wireless Services or AWS spectrum, which required federal users to be relocated into other spectrum bands. Auction 73 involved 700 MHz spectrum that was recovered after the digital television transition. Between these two auctions, the FCC successfully pushed 142 MHz of spectrum into the marketplace for mobile broadband.

How important have these auctions been? They are the main reason why the United States today leads the world in 4G deployment. Verizon Wireless is using the C-Block spectrum it obtained in Auction 73 to roll out 4G LTE service nationwide. AT&T provides 4G service over B-Block spectrum from Auction 73 as well as spectrum from Auction 66. MetroPCS uses spectrum from Auction 66 to provide 4G LTE service. So does Leap Wireless. And soon, so will T-Mobile.

In my view, our deregulatory approach to wireless has been a success. The market is highly competitive. Almost all consumers can choose from at least four facilities-based wireless providers. There are also many wireless resellers that cater to consumers who traditionally have been underserved. Prices have consistently fallen. And all of the innovation on display here at MobileCon suggests to me that the rest of the mobile space is thriving too.

However, our deregulatory approach isn't set in stone. Some people, with the best of intentions, want to “improve” the marketplace by piling more rules upon the mobile sector. And their ideas can sound appealing. For example, wouldn't it be great if the government decided that you never had to pay extra for unlimited data packages? I suppose that mandating this would promote a “psychology of abundance” in the same way as requiring every restaurant to become an all-you-can-eat buffet. But in reality, the two ideas make the same amount of sense.

So when it comes to wireless, I think the FCC should continue to cast a skeptical eye on regulation. We don't want to kill the goose that laid the golden egg, so our decisions need to be based on hard facts, sound engineering, and common-sense economics.

Aside from regulation, there are two big-picture issues I worry about when it comes to wireless. One is spectrum; the other is infrastructure.

Let's start with spectrum, where we haven't made concrete progress recently. The 2010 National Broadband Plan recognized the urgent need to move more spectrum into the commercial marketplace given consumer demand. In July, I gave a speech in Pittsburgh where I expressed my support for two goals set forth in the Plan: making available 300 MHz of additional spectrum for mobile broadband use by 2015 and 500 MHz by 2020. These are worthwhile objectives, and I believe we can achieve them if we put our minds to it.

But where are we now? It's important to look at the facts, for as Daniel Patrick Moynihan put it, "Everyone is entitled to his own opinion, but not his own facts." As far as the first goal, we have 0 MHz down, and 300 MHz still to go. The National Broadband Plan identified 50 MHz that was already in the pipeline in 2010 and set a goal of holding two spectrum auctions in 2011. But the FCC didn't hold any, and hasn't for more than four years. The Plan called for repurposing spectrum already in the commercial marketplace. But the FCC hasn't effectively repurposed any. Between auctions and repurposing, the FCC was supposed to make 180 MHz available for mobile broadband in 2010 and 2011. But we still haven't moved the needle. Zero for 180 is a terrible batting average in *any* league, and I'm all too familiar with subpar hitting as a Kansas City Royals fan. So it's no surprise that, according to a report issued by Deloitte last month, we are not on track to meet the goals set forth in the National Broadband Plan.

So where do we go from here? One option is just giving up. But I don't favor that path. Given the stakes, we simply cannot fail. Another option is to redefine success. Instead of making available 300 MHz of spectrum for exclusive commercial use, some want to move the goalposts and include shared spectrum in our count. I don't favor this path either, for reasons I'll explain in a little bit.

Instead, I favor reaffirming our commitment to the 300 MHz and 500 MHz goals of the National Broadband Plan. We should use every power we have in order to make the Plan's goals a reality.

This isn't a matter of convenience. It's a necessity. With smartphones sending 32 times as much data traffic as a basic phone, and tablets 121 times as much, we cannot live off the last decade's spectrum gains for much longer. And the economic stakes are high, too. According to a recent study, a more rapid rollout of 4G wireless technology in the United States could yield \$28 billion in additional capital investment and create up to 400,000 American jobs by 2016. If we don't get more spectrum into the marketplace, we will give up those opportunities for new jobs and growth.

We've got to get moving. In Pittsburgh, I outlined a three-step plan for getting us back on track. And in the two-and-a-half months since, I'm pleased that the FCC is beginning to make some progress.

First, I proposed that we take action by the end of August so that 4G LTE technology could be deployed in the so-called WCS, or Wireless Communications Services, band. While we are two months behind the schedule I proposed—and two years behind the National Broadband Plan's schedule—I am excited that next week, we will vote on a proposal to begin freeing up 20 MHz of WCS spectrum. But our work in the WCS band will not be complete until we approve

several pending transactions so it can be used as soon as possible to provide 4G LTE service. We can and should do that before Thanksgiving and finally get some points on the board.

Second, I recommended that the FCC adopt rules to enable the terrestrial mobile use of AWS-4 spectrum by September. That's 40 MHz of prime spectrum that's being underused today. It is now October, and although I am disappointed we have not yet taken action, I am optimistic that we can issue final rules within the next month. Our staff has been working hard on the AWS-4 proceeding, and the time has come for the FCC to bring it to a close.

Third, I suggested that the FCC kick-off the rulemaking process for implementing the broadcast incentive auction legislation in the fall. I also suggested that we set a deadline for conducting those auctions no later than June 30, 2014. As you know, the Commission voted to begin this process less than two weeks ago. And it set a goal of completing the incentive auctions in 2014—a goal I hope we will meet.

In addition to staying on schedule, I think three principles should guide our work as we set up these auctions. Specifically, we must remain faithful to the legislation. We must be fair to all stakeholders. And we must keep our rules as simple as possible. To do all this, we need your help because the hardest work still lies ahead. What do you think of the Commission's proposed band plan? And the proposed auction design? If the incentive auctions are going to be successful, you need to tell us what will work in the real world, and we need to listen.

Together, these three opportunities—WCS, AWS-4, and incentive auctions—could get us more than halfway to the 300 MHz goal of the National Broadband Plan. But we can, should, and must do more.

For starters, we have another 40 MHz of cleared spectrum in the AWS-2 and AWS-3 bands that we need to auction.

After that, spectrum held by the federal government is the most obvious source, and we should start with the most obvious target: the band between 1755–1780 MHz. This band is already internationally harmonized for commercial use, which means deployment will be swifter and cheaper than other options. If we paired the 1755 MHz spectrum with spectrum we have already cleared, an auction in the next two years could raise billions of dollars. And it would show that the federal government really can make the relocation-and-reallocation process work.

Of course, all of this depends on the government actually clearing the spectrum and licensing it for auction. And in 2010, the federal government seemed committed to doing this. But things have changed of late.

In March, the Commerce Department passed along what other federal agencies told them: that it would cost them \$18 billion and take at least ten years to relocate their operations to clear a substantially larger band of spectrum. Unfortunately, as the Government Accountability Office recently reported, the Commerce Department didn't independently verify these claims or figure out what it would take to clear just the band between 1755–1780 MHz.

Then, in July, the President's Council of Advisors on Science and Technology recommended that the government divert its efforts from clearing spectrum and focus instead on sharing spectrum. And just last week, it became apparent that some at the FCC have given up on clearing this spectrum in favor of auctioning off "shared rights."

Look, I'm not opposed to spectrum sharing. For example, geographic sharing by creating exclusion zones around certain areas can be a useful tool. And spectrum sharing may be a workable alternative when auctions can't be used to raise funds for relocation, such as in higher bands like the 5 GHz band. But if our goal is to incentivize investment in wireless networks, nothing beats clearing.

Auctioning free and clear spectrum licenses gives licensees the most flexibility to put the spectrum to its highest and best use. To illustrate why, think about doing a land deal with the government. Under option A, the government sells you property so that you can build a house on it. Under option B, the government allows you to share property but reserves the right to occupy your house at its convenience from time to time. Under which scenario would you be more likely to build a new home?

Sharing also threatens to return the Commission to settling licensing disputes via government fiat rather than sound engineering. After all, an interference dispute between a commercial licensee and a government user is far more likely to become embroiled in politics than an argument between two private parties. In short, I doubt that sharing government spectrum with commercial licensees will lead to the kinds of investments, economic growth, and American jobs that have resulted from our previous clearing efforts.

Clearing federal spectrum for commercial use is also likely to result in more competition, both for the spectrum at auction (which will raise more revenues for the Treasury) and within the commercial marketplace. The reason is simple: Spectrum sharing is a complicated and largely untested endeavor that requires a lot of coordination among potentially hundreds of federal users and licensees. The largest wireless providers in America may be up for that challenge. But I doubt that smaller ones who lack the time or resources are. Indeed, the Government Accountability Office recently reported to Congress that federal sharing would require a lengthy and unpredictable process that would be especially costly for new entrants. I believe all wireless providers should be given an opportunity to compete for spectrum, and that's one of the reasons why I prefer clearing.

Turning from federal spectrum, I want to mention, last but not least, another part of a responsible spectrum strategy: making more spectrum available for unlicensed use. This is a critical part of my all-of-the-above approach.

One of the great innovations of the 1980s was the expansion of several so-called "junk" bands to allow additional unlicensed uses. The FCC's Part 15 rules, which govern the use of these unlicensed devices, have led to tremendous benefits for all Americans. The 802.11 standards, which gave the world WiFi, have made spectrum in the 2.4 GHz and 5 GHz bands some of the most valuable spectrum in the country for broadband. So while we need to free up spectrum for licensed commercial use, we also need to be thinking about more unlicensed opportunities.

The Spectrum Act, which Congress passed earlier this year, identified almost 200 MHz of spectrum now in federal hands that could be dedicated to unlicensed use. This spectrum, in the 5350–5470 MHz band and the 5850–5925 MHz band, is ideal for that purpose and well-suited for high-speed, high-capacity applications. And the propagation characteristics minimize the risk of interference between uncoordinated users. This is where spectrum sharing may be the most productive. So we shouldn't wait until the Spectrum Act's February 2013 deadline to start

the process of making this spectrum available for unlicensed use. Instead, we should do so before the end of this year.

Oh, and here's a P.S. on spectrum. It would be helpful to know what spectrum is actually being used. But we often have no idea. Here's an example. A wireless expert recently visited my office, and he brought with him a spectrum analyzer. It's roughly the size of a Kindle, and while it's much heavier, you could still hold it in one hand. Anyway, we plugged it in, set up the antennas, and booted it up. On the screen of a computer that was hooked up to the analyzer, we could see blips where spectrum was being used—sort of like watching the readout on a heart monitor. So what did we see? Well, you'd be amazed by the amount of spectrum that wasn't being utilized. I'll admit that given the FCC's location, we certainly weren't picking up every last signal in the airwaves. But still, this leads me to think that we would benefit from getting a better handle on the where, when, and how of spectrum usage, especially where licensees do not have market incentives to maximize their efficiency.

As I mentioned earlier, getting enough spectrum into the marketplace isn't the only challenge that we face when it comes to wireless broadband deployment. Carriers also need to be able to deploy a wide range of physical infrastructure, such as towers, distributed antenna systems (or DAS), and small cells. To put it mildly, this is often a challenge. And there is no better, or worse, illustration of this problem than right here in California. There might not be any state in the Union where it is more difficult to deploy wireless infrastructure. This is baffling to me, because the Golden State is a hotbed of mobile innovation.

I saw that firsthand this past summer. In July, I visited San Francisco, where I met entrepreneurs who were developing cutting-edge applications for mobile devices. I was impressed by what they were doing, projects like instant video optimization and mobile cloud computing. But what I found most striking—and not in a good way—was their response to a question about bottlenecks in the wireless industry. After they brought up the usual suspects like spectrum, they mentioned how ridiculous it was that they couldn't get good mobile reception in their own building.

Why? Because local rules made it nearly impossible for any wireless company, big or small, to deploy more towers and other infrastructure in the city. So what did these innovators do? They innovated. They walked up to the roof of their building and they built a wireless mesh network using—chicken wire. Now, let me go out on a limb here. Something has gone wrong with regulation—*really* wrong—if the best wireless solution for entrepreneurs in San Francisco is the same technology that farmers in my home state of Kansas use to keep wayward birds in the coop. But that's the reality in one of the nerve centers of innovation in this country.

Other cities in California also go the extra mile to make it hard to deploy wireless facilities. In one case, Sprint was forced to battle for seven years in federal and state courts as it attempted to build two towers in Los Angeles County. That makes the FCC look fast by comparison.

The irony is this: The more difficult it is to deploy infrastructure, the more difficult it will be for Californians to enjoy the technological breakthroughs that they produce. It doesn't make sense that you could design a great new app while you're at work, but not be able to use it at home. All of this leads to an obvious truth: You can't be for a dynamic wireless industry but against the deployment of wireless infrastructure. It's like being pro-chicken but anti-egg.

For its part, the FCC has reduced regulatory barriers to the deployment of wireless infrastructure. In 2009, for example, we adopted shot clocks for localities to act on siting applications for wireless facilities. We specified 90 days for collocations and 150 days for new sites. In some cases, these rules have encouraged municipalities to approve and issue permits more quickly. Unfortunately, I've also heard many complaints that serious problems remain.

Some cities, for example, have attempted to evade the FCC's shot clock rules by adopting a moratorium on the approval of new wireless infrastructure. What often happens is this: Somebody files an application with a local government for a new wireless facility. Then, a few people in the community complain. Next, the local government calls an indefinite timeout until it can decide how to address issues raised by the application. Here in California, cities such as Glendale and Burlingame have used this tactic in recent years.

In my view, it is time for the FCC to make clear that such delays are contrary to section 332 of the Communications Act. Local governments of course need to review and revise existing laws every now and then to account for changed circumstances. But consumers deserve certainty that local rules won't stand in the way of better services.

The FCC also needs to take another look at what happens if a local government doesn't comply with the shot clock. Right now, if a city does not process your application within 150 days, your only remedy is to file a lawsuit. In other words, the solution to municipal delay is . . . litigation, which doesn't exactly put you in the fast lane. To solve this problem, we should borrow an idea that the FCC adopted in reforming video franchising back in 2006. If a local government does not act on a wireless facilities application by the end of the FCC's shot clock, that application should be deemed granted. This would maximize the incentive for local governments to rule on applications and would allow companies to stop litigating over infrastructure and start building it.

Another problem I've heard about is that it's hard to deploy small cells and distributed antenna systems. By using smaller antennas at lower power, these solutions can improve coverage and enable us to reuse scarce spectrum. Here too, the FCC can help. To begin with, we should modernize our rules and exempt DAS from our environmental processing requirements, except for the rules involving radiofrequency emissions. Our rules let us do this if a technology is "deemed to have no significant effect on the quality of the human environment." Given their size and appearance, I believe that DAS systems meet this standard.

Similarly, we should update our historic preservation regulations—which impose yet another layer of process—to account for DAS and small-cell technologies. These systems are hardly visible, and they have a minimal impact on the surrounding environment. As a result, I don't think that most DAS or small cells should be subject to review under Section 106 of the National Historic Preservation Act, which adds yet another layer to the regulatory approval process. In order to take this step, we will need to renegotiate Nationwide Programmatic Agreements with State Historic Preservation Officers, the Advisory Council on Historic Preservation, and tribes. We should begin those discussions as soon as possible.

And the problems with DAS deployment are not just federal. Here in California, for instance, the City of Temecula refused to follow the 150-day shot clock when it received a DAS application. The FCC should clarify that the shot clock does apply to DAS systems. There is no reason why it shouldn't. DAS facilities are used to provide wireless service and are critical to improving network capacity in densely populated urban environments. Indeed, because DAS

sites are much smaller and less visible than towers, they should raise fewer state and local concerns than traditional wireless infrastructure does, not more.

Finally, given that this convention brings together entrepreneurs and innovators from all across the county, I thought this would be the ideal place to put in a plug for my proposal to create an Office of Entrepreneurial Innovation (or OEI) at the FCC. I have been encouraged by the support that my proposal has received so far, from Silicon Valley entrepreneurs to FCC staff. They realize that entrepreneurs need an ally at the FCC. OEI would be that ally, breathing life into Section 7 of the Communications Act and prodding us to be as nimble as the industry we regulate. Innovative proposals shouldn't gather dust at the Commission for years. And bureaucratic inertia should not be a barrier to the deployment of new services or capital investment. Instead the FCC should enable you to keep pushing the envelope in mobile by making decisions in a timely manner.

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Zooming back out to the big picture, I'll finish with this. The wireless challenges that we face at the FCC—regulation, spectrum, infrastructure, and more—are daunting. They can be overcome, but we need to approach them with a sense of humility. We need to acknowledge that we don't have all of the answers. And we must be willing to listen.

I've tried to live up to that since taking office in May. That's why I've held over 400 meetings with representatives of companies, trade associations, and public interest groups, as well as members of the public. That's also why I've made a point of getting out of Washington and listening to the practical concerns of people who are affected by our decisions. Whether it's a sheriff in rural Kansas or the owner of a San Diego start-up, everyone has something valuable to say. In fact, many of the proposals that I have offered have been the fruits of those conversations. So when you are in Washington, DC, stop by my office. Or feel free to contact me electronically. You can even reach me on Twitter; my handle is @ajitpaifcc.

I look forward to working with you to keep the mobile sector strong. By maintaining a deregulatory approach, by freeing up additional spectrum, by making it easier to deploy infrastructure, and by acting quickly, the FCC can enable more wireless innovation, promote economic growth, and help create jobs.

Thank you very much, and I hope that we will continue this dialogue, both here at MobileCon and in the months and years to come.

Oh, and since I don't know how long it will be before I visit this city again, I feel compelled to close with the wise words of Ron Burgundy: You stay classy, San Diego.