REMARKS OF
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SILICON FLATIRONS: THE NEXT TEN YEARS OF SPECTRUM POLICY
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Thank you very much for having me here today and thank you also to Pierre de Vries for his kind introduction on behalf of the University of Colorado and Silicon Flatirons. One interesting fact that I learned about Dr. de Vries is that he holds both a degree in sculpture and a doctorate in quantum field theory. Talk about interdisciplinary expertise!

But I also have learned that this is par for the course when it comes to Silicon Flatirons.

For nearly 14 years, Silicon Flatirons has been a home for innovative ideas about three essential disciplines—law, technology, and entrepreneurship. A place, to borrow an old advertising slogan for Apple Computer, to "think different." And so it has. In the decade plus since its start it has been a reliable source of creative thinking. So thank you for the work you do, and thank you also to CTIA and Public Knowledge for co-sponsoring this event today.

While I may be new to my current role at the Federal Communications Commission, I am not new to spectrum policy discussions. As some of you may know, I come to the agency having spent some time in the private sector, in the trenches as Commission staff, and up on Capitol Hill.

So I count myself among the fortunate who remember the efforts of the Spectrum Policy Task Force a decade ago. Their insights into our wireless future were ahead of their time. So I am aware that shaping the next decade in spectrum policy is a daunting task—but one also full of opportunity. That is why I think it is important to start with what we know.

We know that wireless services are revolutionizing the way we live. We know that wireless services are also revolutionizing the way we work. We know that the number of smart devices using our airwaves is increasing at breathtaking speed.

But we need to think beyond what we know right now. Because what we face is more than the explosion of wireless phones and tablet computers. Within the next ten years machine-to-machine devices communicating wirelessly may number as high as 50 billion. The much-vaunted Internet of Things is around the bend, and the ways we connect, communicate, and conduct our commerce will never be the same.

The numbers telling this story may be familiar, but they are so impressive, they bear repeating.

Already, there are more wireless phones in this country than there are people. Roughly half of these are smartphones, which generate 35 times the traffic of traditional wireless phones. Tablet computers generate 121 times the traffic of traditional wireless phones.

Last year, mobile data traffic in the United States grew 300 percent.

And last year, U.S. wireless networks operated on average at 80 percent of total capacity. This is the highest utilization of any region in the world. Americans love their broadband.

In the simplest terms, the demand for our airwaves is going up and the supply of unencumbered spectrum is going down. The pressure is on. This is when we innovate.

Innovation is going to take a variety of forms.

It will take technology—from developments in smart antennas to frequency-agile radios to advanced database services that facilitate dynamic spectrum access.

It will take topology—including changes in the ways that networks are deployed, especially through the big promise of increased use of small cells.

It also will take creative spectrum policy responses. We are in the early stages of one policy response you are undoubtedly familiar with—implementing incentive auctions. So I want to start with this today, and follow it up with some new ideas about federal spectrum, tower siting, and public safety.

Guiding Principles for Incentive Auctions

First, incentive auctions. For nearly two decades, the Commission's path-breaking spectrum auctions have led the world. The agency has held more than 80 auctions; it has issued more than 36,000 licenses; and it has raised more than $50 billion for the United States Treasury. The Commission's simultaneous multiple round ascending auctions have been a model for governments and commercial wireless providers across the globe.

We are now again poised to be the world's pioneer. We have an opportunity to show how a new kind of auction—incentive auctions—can facilitate the smart and efficient use of wireless resources.

To be sure, big choices and hard work lie ahead. The agency's September 28 Notice of Proposed Rulemaking commencing the incentive auction process was only the start. Broad input, including from the people in this room, is critical.

For my part, I believe four central building blocks are essential components of incentive auctions: simplicity, fairness, balance, and public safety.

Simplicity is key. Incentive auctions are undeniably complicated. But at every structural juncture, a bias toward simplicity is crucial. Simplicity will yield more interest in the opportunities these auctions provide for broadcasters, and in turn, this will yield more spectrum. In short, to have converts to our crusade for more wireless opportunity, simplicity must be our incentive auction gospel.

Fairness is essential. This is especially true with regard to the treatment of broadcasters that do not participate in the auction. Fairness demands that we consider how to accomplish repacking by minimizing unnecessary disruption and maximizing the ability of the public to continue to receive free, over-the-air television. At the same time, we ask that broadcasters make a fair assessment of the opportunities that this auction provides the industry. By offering incentives to share channels and incentives to relocate from the UHF to VHF band, this auction can mean new resources for broadcasters to develop new programming and deploy new services. Let us also be creative here—and consider how this process can yield new models for station ownership, new funding sources for local content, and new ways to use technology to make efficient use of our airwaves.

Balance is necessary. We must remember that the sum here is greater than the parts. None of the three legs of the incentive auction—the reverse auction, the repacking, or the forward auction—can stand on its own. They require balance. For instance, the interference rules we consider will not only impact broadcast services, but also how much spectrum will be available for auction, which in turn will impact the revenues raised.

Balance also requires attention to licensed and unlicensed use of spectrum across all frequency bands. The former provides reliability and interference protection; the latter provides low barriers to entry and promotes the efficient use of limited resources. Good spectrum policy requires both.

Finally, public safety is fundamental. We must remember that in the Middle Class Tax Relief and Job Creation Act, incentive auctions are part and parcel with enhancing public safety. The auction revenues the Commission raises are designated to support the first nationwide, interoperable wireless broadband public safety network. We must not forget that the success of these auctions requires meeting this funding objective—and delivering on our promise to America's first responders.

To all of this, I will add that speed matters. The Commission should put all of our auctions on a timeline. We must move at the pace of digital age wireless demand.

A New Approach to Federal Spectrum

Second, federal spectrum. Federal authorities have substantial spectrum assignments. After all, critical missions throughout the government are dependent on access to our airwaves.

Federal authorities use their spectrum assignments to protect us from attack, with tools like precision guided munitions and early missile warning systems. To manage our air traffic, enhance our crop productivity, and monitor our water supplies. To protect us against forest fires. And to predict weather patterns and warn us of climate events—like Hurricane Sandy—before they occur.

These are essential to our economic security and national well-being.

Nonetheless, we are on a hunt for new opportunities for commercial spectrum, in order to reach the 500 megahertz benchmark for new wireless broadband use in the Executive Order from President Obama just two years ago.

We are already on our way. Incentive auctions are on the horizon. We have on deck traditional auctions of up to 65 megahertz required under the Middle Class Tax Relief and Job Creation Act. In recent weeks, we have cleared the way for wireless broadband use of up to 30 megahertz in the WCS band. Likewise, we are looking into more flexible use of the 40 megahertz of the 2 GHz band currently assigned to Mobile Satellite Service. Plus, secondary market transactions will continue to be an important part of our overall effort to put spectrum to use for wireless broadband.

But meeting this mark will require more. So the search is on for ways to take a fresh look at federal uses.

On the one hand, we have calls for the traditional process of repurposing federal spectrum. Historically, three essential steps were involved in any such effort: clear, relocate, and auction. But this three-part command that has worked so well in the past may work less well going forward. Just as in the commercial sector, more government functions than ever before are traveling over our airwaves and it is growing harder to find spectrum for federal relocation.

On the other hand, we have calls for large-scale sharing of federal spectrum resources in the recent report from the President's Council of Advisors on Science and Technology. This is an exercise in innovative thinking, and its success depends on the development of new database systems that are not yet in existence. At the same time, we are making some headway with efforts to demonstrate the viability of sharing in the 1755 MHz band.

Over the long haul, I think both courses are worth pursuing. But in the near term we need a new approach—one that will facilitate federal repurposing better than our old three-step process, while leading to faster access than the current prospects for large-scale sharing.

It is time to develop a series of incentives to serve as the catalyst for us to identify more spectrum for relocation. Government agencies are mission focused. Once a communications network has been built, once a land mobile radio system is operational, agencies do not want to change because it disrupts their mission. This is completely rational. But what if we were to financially reward federal authorities for efficient use of their spectrum resource? What if they were able to reclaim a portion of the revenue from the subsequent re-auction of their airwaves? Would they make new choices about their missions and the resources they need to accomplish them? I think so. I believe this is an idea worth exploring, and it is entirely consistent with the idea of synthetic currency proposed by the President's Council of Advisors on Science and Technology.

Moreover, this is a timely solution. Agencies across the federal government face funding shortfalls as Congress addresses the looming sequestration deadline. In this context, instead of talking about a crunch, maybe we should try spectral cliff. There may be no better enticement

than the possibility of revenue from a spectrum auction to help alleviate the pain of impending budget cuts.

Many of you have worked in government and know first-hand the power of incentives for federal organizations. We must find ways to change the federal spectrum conversation. We must work with our government partners so they can realize the value of their spectrum and the value of using it efficiently—instead of only seeing loss from its reallocation.

Developing Models for Tower and Facilities Siting

Third, tower and facilities siting. This is important because no amount of spectrum would result in more and better wireless services without sufficient infrastructure.

Let us start with what we know. Wireless facilities make wireless broadband possible, which supports local economic growth. The statistics demonstrate this clearly. Studies show that delivering broadband to a community can increase its per capita income by nearly 4 percent. In short, communities with more robust wireless coverage are better equipped to compete.

So if we want economic growth, we need to avoid unnecessary delays in the state and local approval process that can slow deployment of wireless infrastructure.

On this front, we are already making progress.

Most recently, President Obama issued an Executive Order that established a multi-agency working group tasked with streamlining access to the 30 percent of land in the United States that is controlled by the federal government. More consistent policies on federal lands and roads should simplify and speed the deployment process.

Earlier this year, Congress also moved to ease the burdens of infrastructure deployment in Section 6409 of the Middle Class Tax Relief and Job Creation Act. This law requires the creation of a Master Contract for applications to deploy over federal property. It also relieves some of the regulatory burden for collocation if modification to a tower does not substantially alter the physical dimensions of the tower.

Finally, the Commission has taken steps to speed the tower siting process by adopting 90-day and 150-day shot clocks for local governments to decide on applications to site new wireless equipment. However, last month the Supreme Court decided to review the Commission's tower siting order.

Good so far, but I think it is time for an updated approach. We need to tie these disparate efforts together in a single whole. The Commission should start a proceeding to craft its own model rules for facility siting for state and local governments.

This model should be off-the-rack and easy for state and local governments to use. For starters, it should harmonize President Obama's Executive Order, developments in Section 6409 of the Middle Class Tax Relief and Job Creation Act, and the shot clocks already on our books.

We can ask our Intergovernmental Advisory Committee for input. But above all, we need to make it simple. Because the range of new deployments—from towers to collocations to small cells is growing more complex. And the demands on state and local jurisdictions navigating these new technologies are growing. By streamlining the process, we can provide a way forward for state and local governments looking to oversee new deployments within their borders. A way that respects their authority. But let us also offer them this—follow these streamlined rules and investment in your community will increase, service will expand, and your economies will grow. And if we do this right, the result will be a more predictable set of laws all across the country.

Enhancing Public Safety

Fourth and finally, public safety.

It was just two weeks ago when Hurricane Sandy wreaked its havoc on the Northeast. Here in Washington we were spared the brunt of the storm. But the pictures of flooding further north, devastation at the shore, fires at water's edge, and implausible snow drifts to the west are hard to forget. Whole communities washed out, dark from lack of power, and cold without heat.

In some locations, normal returns fast. In others, it will take longer, and normal may never be the same. So many of our first responders, 911 operators, and communications companies made herculean efforts to keep us safe and connected before, during, and after the storm. We owe them our gratitude.

But the Commission also owes the public an honest accounting of the resiliency of our nation's network infrastructure. As has been widely reported, in storm-damaged areas nearly one in four cell tower sites were not working in the immediate aftermath of the hurricane. Improvements came fast, as roads cleared, cellular on wheels rolled in, and fuel was made available for generators. Moreover, wireless companies collaborated, making their networks available to one another for their customers without additional charge.

Still. We are now a nation where over one-third of households rely strictly on wireless phones. Our digital lives are downloaded onto our smartphones. When the unthinkable occurs, we are more vulnerable. By choosing wireless and IP networks, we are choosing to go without the independent electrical source that traditionally powered copper plant. I do not believe we should sacrifice safety in the process.

It is time for an honest conversation about network reliability in the wireless and digital age. It is time to ask hard questions about back-up power, and how to make our networks more dependable when we need them most. Technology evolves, but our need to stay connected does not. If good comes out of Hurricane Sandy, it should be that we prepare better and develop new ways to keep us safe.

This does not have to be a carbon copy of the back-up power rule the Commission sought to adopt following Hurricane Katrina. The Office of Management and Budget disallowed that. This requires a comprehensive discussion that includes questions about access to fuel, priority

under the Stafford Act, back-up communications deployments, maintaining backhaul, and harmonization with state and local authorities.

But the time to have this conversation is now. Before we have another rash of headlines like we just saw: "Post-Sandy Wireless Outages Add Insult to Injury" and "Sandy Exposes Gaps in Wireless System During Emergency." We need to make progress before the next storm hits, the next disaster devastates, and the next network-related outage leaves us vulnerable again.

Finally, there is another component to this discussion—consumers. We migrate so much of our lives to our wireless devices, premised on the idea that they are always on. But storm events like this can take the most connected among us and turn us into wireless teetotalers. Even last week, we had hordes of New York residents roaming the streets looking for places to plug in and charge. So we need also to talk about consumers preparing for the next event with longer-lasting back-up batteries, solar chargers, and more.

So there you have it. Ten years ahead is daunting. But our charge for the immediate future is clear. We need to move faster. We need to make incentive auctions work. We need to build incentives into thinking about federal spectrum. We need to provide streamlined models for tower siting to spur facilities deployment. And we need to have an honest conversation about the resiliency and reliability of our networks in the wireless and digital age.

We are already on the right course. We are the world's leading economy when it comes to wireless services. We have nearly 70 percent of the world's LTE subscribers here at home. More than 80 percent of the world's smartphones run on operating systems from U.S. companies. Our wireless economy already generates nearly $200 billion annually and supports directly or indirectly 3.8 million jobs.

But if there is one constant in the digital age, it is that disruptive forces are always on the horizon. Wireless data demands are multiplying. Machine-to-machine devices are growing exponentially. Maintaining our global leadership position is going to take creative thinking, smart execution, and spectrum policy that is flexible and dynamic.

We need good ideas. From the people in this room, from Silicon Flatirons, from interests across the country. So that ten years hence, we have a wireless sector that drives digital age innovation, spurs job creation, and grows the economy.

I look forward to working with you to make it happen. Thank you.