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FEDERAL GOVERNMENT SPECTRUM USE

HEARING

BEFORE THE

SUBCOMMITTEE ON COMMUNICATIONS AND TECHNOLOGY

OF THE

COMMITTEE ON ENERGY AND COMMERCE
HOUSE OF REPRESENTATIVES

ONE HUNDRED TWELFTH CONGRESS

FIRST SESSION

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CONTENTS

	Page
Hon. Greg Walden, a Representative in Congress from the State of Oregon, opening statement	1
Prepared statement	2
Hon. Doris O. Matsui, a Representative in Congress from the State of California, opening statement	3
Hon. Lee Terry, a Representative in Congress from the State of Nebraska, opening statement	5
Hon. Henry A. Waxman, a Representative in Congress from the State of California, opening statement	6
Hon. Fred Upton, a Representative in Congress from the State of Michigan, prepared statement	47

WITNESSES

Lawrence E. Strickling, Assistant Secretary for Communications and Administration, United States Department of Defense	7
Prepared statement	12

FEDERAL GOVERNMENT SPECTRUM USE

WEDNESDAY, JULY 6, 2011

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON COMMUNICATIONS AND TECHNOLOGY,
COMMITTEE ON ENERGY AND COMMERCE,
Washington, DC.

The subcommittee met, pursuant to notice, at 2 p.m., in room 2123, Rayburn House Office Building, Hon. Greg Walden (chairman of the subcommittee) presiding.

Present: Representatives Walden, Terry, Stearns, Shimkus, Blackburn, Bass, Gingrey, Scalise, Latta, Guthrie, Matsui, Barrow, and Waxman (ex officio).

Staff Present: Ray Baum, Senior Policy Advisor/Director of Coalitions; Neil Fried, Chief Counsel, Communications and Technology; Debbee Keller, Press Secretary; Carly McWilliams, Legislative Clerk; Jeff Mortier, Professional Staff Member; David Redl, Counsel, Telecom; Nicholas Degan, FCC Detailee; Stephen Cha, Minority Senior Professional Staff; Jeff Cohen, Minority FCC Detailee; Sarah Fisher, Minority Policy Analyst; and Roger Sherman, Minority Chief Counsel, Communications and Technology.

OPENING STATEMENT OF HON. GREG WALDEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OREGON

Mr. WALDEN. We are going to call to order the Subcommittee on Communications and Technology.

To date we have held three hearings on how good spectrum policy can promote wireless broadband, spur economic development, create jobs, and generate significant revenue for the American taxpayer. Today's hearing addresses one of the hardest pieces of this spectrum puzzle: how to more efficiently use government spectrum and free additional resources to meet consumers' growing wireless broadband needs.

Now, this is not a new challenge for NTIA, the Nation's Federal Government spectrum coordinator. The spectrum in the AWS-1 band, the spectrum used by T-Mobile and others to provide high-speed wireless broadband services, was government spectrum as recently as 2007. Relocating the government users and uses in that spectrum and making it available for commercial operation has been a Herculean task, but one that raised $13 billion for the U.S. Treasury and furthered U.S. leadership in the wireless broadband space.

Looking toward the future, the NTIA has already undertaken the first steps to make additional spectrum available for commercial use. In its 5- and 10-year plans, the NTIA has identified a number

of government spectrum users and uses that hold the potential for relocation or greater spectral efficiencies.

I thank the Assistant Secretary Strickling and his staff at the NTIA for taking these important first steps to bringing additional spectrum resources to the market.

Among the many bands that the NTIA is examining, perhaps the most anticipated is the spectrum from 1755 to 1780 megahertz. This spectrum, currently used for a myriad of government systems, has long been targeted for its potential as a commercial band.

Now, this band is immediately adjacent to the existing commercial wireless broadband operations, and is also in use for this purpose abroad. Reassignment of this spectrum, domestically, for commercial services would bring international harmonization and economies of scale to the challenging task of expanding wireless broadband speed and availability.

The spectrum in 1755 to 1780 megahertz, however, is by no means the magic bullet to solving the spectrum challenges that this country does face. The FCC's National Broadband Plan and the administration have both set ambitious goals for making 500 megahertz of additional spectrum available for commercial services. The NTIA has the extremely difficult task of maximizing government spectrum efficiency, sharing, and use to do its part in meeting this goal.

The NTIA is going to have to ask some hard questions of government spectrum users: Is your spectrum use required or could the goal be accomplished using commercial systems?

Can your agency's use be combined with other government uses?

Could your agency's uses be more efficiently accomplished with less spectrum?

Could your agency use be moved to other less commercially desirable spectrum without sacrificing utilities?

These questions and others will form the basis for the more robust and agile Federal spectrum use that will in turn create the commercial opportunities to fuel wireless broadband innovation, job creation, and revenues for deficit reduction.

I thank the Assistant Secretary for his testimony today. Look forward to a lively discussion of these issues.

I would tell my counterparts on the committee, the Assistant Secretary has a very good flow chart he is going to put up, so we are going to actually extend him a longer opening time for his testimony so that he can work through this slide presentation that he and his staff have put together.

With that, I would turn now to the gentlelady from California, Ms. Matsui, who is filling in for Ms. Eshoo today as our ranking subcommittee member. Ms. Matsui, we welcome your comments.

[The prepared statement of Mr. Walden follows:]

PREPARED STATEMENT OF HON. GREG WALDEN

To date we have held three hearings on how good spectrum policy can promote wireless broadband, spur economic growth, create jobs, and generate significant revenue for the American taxpayer. Today's hearing addresses one of the hardest pieces of the spectrum puzzle: how to more efficiently use government spectrum and free additional resources to meet consumers' growing wireless broadband needs.

This is not a new challenge for the NTIA, the nation's federal government spectrum coordinator. The spectrum in the AWS-1 band-the spectrum used by T-Mobile

and others to provide high-speed wireless broadband services-was government spectrum as recently as 2007. Relocating the government users and uses in that spectrum and making it available for commercial operation has been a Herculean task, but one that raised $13 billion for the U.S. Treasury and furthered U.S. leadership in the wireless broadband space.

Looking toward the future, the NTIA has already undertaken the first steps to making additional spectrum available for commercial use. In its 5- and 10-year plans, the NTIA has identified a number of government spectrum users and uses that hold the potential for relocation or greater spectral efficiencies. I thank Assistant Secretary Strickling and his staff at the NTIA for taking these important first steps to bringing additional spectrum resources to market.

Among the many bands that the NTIA is examining, perhaps the most anticipated is the spectrum from 1755–1780 MHz. This spectrum, currently used for myriad government systems, has long been targeted for its potential as a commercial band. This band is immediately adjacent to existing commercial wireless broadband operations and is also in use for this purpose abroad. Reassignment of this spectrum domestically for commercial services would bring international harmonization and economies of scale to the challenging task of expanding wireless broadband speed and availability.

The spectrum in 1755–1780 MHz, however, is by no means the magic bullet to solving the spectrum challenges this country faces. The FCC's National Broadband Plan and the Administration have both set ambitious goals for making 500 MHz of additional spectrum available for commercial services. The NTIA has the extremely difficult task of maximizing government spectrum efficiency, sharing, and use to do its part in meeting this goal. The NTIA is going to have to ask some hard questions of government spectrum users: Is your spectrum use required or could the goal be accomplished using commercial systems? Can your agency's use be combined with other government uses? Could your agency's uses be more efficiently accomplished in less spectrum? Could your agency's use be moved to other, less commercially desirable spectrum without sacrificing utility?

These questions and others will form the basis for the more robust and agile Federal spectrum use that will in turn create the commercial opportunities to fuel wireless broadband innovation, job creation, and revenues for deficit reduction. I thank the Assistant Secretary for his testimony today and I look forward to a lively discussion of these issues.

OPENING STATEMENT OF HON. DORIS O. MATSUI, A REPRESENTATIVE FROM THE STATE OF CALIFORNIA

Ms. MATSUI. Thank you, Mr. Chairman, for holding today's hearing. And I would like to also thank Administrator Strickling for being with us here today.

According to estimates, there are over 300 million wireless subscribers in the United States. That number is growing as the current economic and social climate have an increasing number of consumers opting for only cell phones over traditional land lines. As we all know, there is real concern over the current allocation of spectrum in the marketplace. There are some estimates that by 2014 the demand for spectrum will exceed supply.

It is our job to remain focused on getting the spectrum out there, and we should move as quickly as possible. We all agree that we should repurpose Federal spectrum for commercial use. In our search for additional spectrum, government spectrum is a valuable critical resource. The administration deserves credit for realizing the importance of allocating additional spectrum in the marketplace to meet future demand.

I also commend NTIA Administrator Strickling and his agency for taking this task very seriously. When we finally get to repurposing specific bands and auctioning, I believe we will need to do so in a way that allows the government to clear important users in a timely, transparent, and feasible manner.

In my opinion, the best approach is to ensure that agencies have adequate resources and notice to undertake the substantial task which will oversee highly valuable spectrum. But once we provide those resources, we need to assure commercial bidders that they will get access to spectrum they purchase in a timely and predictable fashion.

In regards to auctioning, the FCC should have the flexibility to structure and conduct incentive auctions that will truly maximize the economic and social values of the spectrum.

I also believe that comprehensive spectrum policy moving forward should offer our innovators and entrepreneurs an opportunity to be creative and have a forum to develop advanced technologies and applications. To help spur greater innovation, I am working on spectrum legislation that supports and further advances American leadership and existing unlicensed technologies.

It is important that we continue to promote policies that lead to greater innovation in the ever-evolving telecommunications and technology sectors. As we know, technology changes rapidly. What is new today may not be new tomorrow and may be obsolete by next week. Having enough spectrum in the marketplace will offer American innovators an opportunity to continue to explore and create new products and ideas.

I also believe that spectrum should be preserved for the advancement of technologies, including Smart Grid and health IT capabilities. Moving forward, spectrum availability will be key to ensuring competition, improved public safety, spur innovation, and meet growing demand for wireless services.

I thank you, Mr. Chairman, for holding this important hearing today. And I yield the balance of my time to Mr. Barrow.

Mr. BARROW. I thank the gentlelady.

Today we hold our fourth hearing on spectrum policy and the vital role it plays in our economy. Over the past decade, technologies relying on spectrum have put so much demand on the limited spectrum that is currently available that we face a spectrum crunch in the next decade, unless we act soon. Today I look forward to discussing ways that we can make more spectrum available for commercial purposes.

As part of this effort, I recently introduced H.R. 911, the Spectrum Inventory and Auction Act, which would help avoid the looming spectrum crunch by arranging for a comprehensive spectrum inventory and voluntary auction of spectrum licenses.

I look forward to hearing your testimony, Administrator Strickling, and working with you and this committee to address our spectrum goals.

I thank the ranking member for the time, and I yield back.

Mr. WALDEN. Does the gentlelady yield back the remainder of her minute?

Ms. MATSUI. I yield back.

Mr. WALDEN. The gentlelady yields back the remainder of her time. I turn now to the vice chair of the subcommittee, Mr. Terry.

OPENING STATEMENT OF HON. LEE TERRY, A REPRESENTATIVE FROM THE STATE OF NEBRASKA

Mr. TERRY. Thank you, Mr. Chairman, for holding this hearing today. I share the goal set forth in the National Broadband Plan of finding all government spectrum that is currently being used inefficiently and reallocating it for commercial use.

I believe that we may need to revisit the Commercial Spectrum Enhancement Act in order to update it to allow for better communication sharing, quicker relocations, additional public disclosure, and easier sharing of spectrum between the government incumbent and the commercial licensee during relocations.

Additionally, as the purpose of this hearing is to examine how government is best utilizing wireless spectrum, I would like to specifically address how the U.S. Army Corps of Engineers is doing so, particularly in the area of flood management and prevention. This is a topic of great importance to me, especially now as my district and many other communities up and down the Missouri River are literally under siege by devastating floodwaters.

My office has found that recently the Corps determined that it could give up significant portions of the wireless spectrum it was utilizing for these purposes, due to increases in efficiency and technology advancements. This a great step in the right direction and is to be commended.

I wonder, however, if we can achieve a win-win, both with regard to increased reliability and spectrum efficiency by further examining our flood monitoring systems and ensuring the best, most reliable, and most efficient technology is being deployed.

And I look forward to your testimony, Mr. Strickling.

And who would like to——

Mr. WALDEN. Mr. Stearns, I think.

Mr. TERRY. Mr. Stearns, I yield to you.

Mr. STEARNS. I thank our distinguished colleague. Thank you, Mr. Chairman, for having this hearing.

Spectrum use in this country is very important. I think it is important to realize that while incentive auctions can potentially free up a large chunk of spectrum, there are other spectrum holders to examine as we consider legislation to address the looming spectrum crisis. One such holder is the Federal Government itself, obviously. The government has a variety of spectrum holds, and while some of this is necessary for national security, I think much of it could be used more effectively. So I look forward to learning from our witnesses today about government spectrum sharing and the time frame for making available already freed-up government spectrum to commercial users.

I also look forward to examining and working with the committee on the spectrum legislation that I understand will be available shortly, and continue to believe that this issue can be a win-win for all parties involved.

Thank you, Mr. Chairman.

Mr. WALDEN. Does anyone else seek recognition on Mr. Terry's time? Mrs. Blackburn.

Mrs. BLACKBURN. Thank you, Mr. Chairman. And I do want to welcome our witness, and just very briefly say we are looking forward to what you have to say. We are all concerned about the

availability of commercial spectrum or spectrum for the innovation and the use in that space.

As I have over the past week met with so many innovators that call Tennessee, and middle Tennessee specifically, home. We hear this. We are innovating, we are creating. Will the spectrum be there to allow us to push these new innovations forward?

So thank you for being here, and yield back.

Mr. WALDEN. The gentlelady yields back. The gentleman yields back.

Let's turn now to the ranking member of the full committee, Mr. Waxman, for 5 minutes.

OPENING STATEMENT OF HON. HENRY A. WAXMAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. WAXMAN. Thank you very much, Mr. Chairman.

In our previous hearings on the subject, two things have become clear. First, there is a strong bipartisan consensus that we need to find additional spectrum for wireless broadband. And second, there is bipartisan support for creating a nationwide broadband network for public safety.

One topic we have not had an opportunity to explore yet is the role of Federal spectrum in achieving these goals. And today we will examine Federal spectrum use and whether there are opportunities to reallocate Federal spectrum for commercial purposes. I am hopeful that we will be able to use this hearing and the excellent testimony we have heard in all of our hearings as the basis for consensus spectrum legislation.

I would like to welcome Assistant Secretary Lawrence Strickling back to the Energy and Commerce Committee as the Administrator of NTIA, the agency tasked with managing Federal spectrum assignments. Mr. Strickling will play a critical role in maximizing the efficient and effective Federal use of spectrum. Under his leadership, the NTIA is leading the administration's effort to identify and reallocate spectrum to meet our dramatically increasing demands for wireless broadband. This is a huge project, and NTIA's dedicated professionals deserve enormous credit for accomplishing what they have to date.

Although Federal spectrum has a great potential to help us address our growing broadband needs, we must utilize a balanced approach in getting there. Companies that bid on Federal spectrum for commercial purposes need to know when they will have access to this critical and expensive resource. The reallocation of Federal spectrum must be transparent, timely, and certain so companies can bid accordingly. If we provide the proper mix of transparency and certainty, the amount companies are willing to pay will increase and the taxpayers will benefit.

We also need to consider new ways to put Federal spectrum towards commercial use. Using technology to allow for spectrum sharing deserves careful and immediate consideration.

At the same time, we need to remember that Federal spectrum is currently being utilized for important purposes involving national security, public safety, and important agency operations. We cannot expect agencies and users to simply turn off a switch and

turn over their spectrum. We need to provide adequate resources and time to make complicated and expensive reallocation efforts successful.

I look forward to hearing from Mr. Strickling and learning more about the administration's spectrum initiative, challenges with reallocating Federal users, and how we can balance the need for more information about Federal spectrum use with our national security concerns.

Thank you for being here, Mr. Strickling. And thank you Mr. Chairman. I yield back the time.

Mr. WALDEN. I thank the gentleman from California. And for our members who joined us a bit into the hearing, Mr. Strickling is going to be allocated 10 minutes for his statement today. He has a slide presentation, I think some of you have as well, that he would like to walk through. And I thought it would be beneficial for the subcommittee to extend a little longer time to him as he is our only witness today.

So, Mr. Strickling, we are delighted to have you here. We appreciate the work you are doing. We look forward to your testimony and to the answers to your questions. So please go ahead, sir.

STATEMENT OF HON. LAWRENCE E. STRICKLING, ASSISTANT SECRETARY FOR COMMUNICATIONS AND ADMINISTRATION, UNITED STATES DEPARTMENT OF DEFENSE

Mr. STRICKLING. Thank you, Chairman Walden, and in particular thank you for the consideration of giving me some extra time for my opening remarks.

I also want to thank Vice Chairman Terry, Congresswoman Matsui, Ranking Member Waxman, and all the members of the committee for attending this hearing today regarding the use of spectrum by Federal Government agencies.

I am pleased to join you today to describe NTIA's ongoing and critical work in managing Federal agency use of spectrum and to update you on our efforts to identify and reallocate spectrum to meet the Nation's rapidly growing demand for commercial wireless broadband service.

Through his National Wireless Initiative, President Obama has set forth a bold vision for spurring innovation, expanding economic growth and job creation, and preserving America's global technology leadership. For NTIA, a critical component of the National Wireless Initiative is the President's directive to us last June to work with the FCC to identify and make available AN additional 500 megahertz of spectrum for fixed and mobile broadband use over the next 10 years. This effort will double the amount of spectrum available for commercial wireless broadband.

As directed by the President, NTIA released two reports last year. The first was our 10-year plan and timetable, identifying 2,200 megahertz of spectrum for evaluation, and detailing the process we and the FCC would follow to evaluate these bands for possible reallocation to commercial broadband service.

In addition, we released a fast-track evaluation report on four bands of spectrum that we evaluated to determine if any of those bands could be reallocated for commercial use while leaving the ex-

isting Federal agency operations in place. By doing so, we would be able to make this spectrum available within 5 years.

We concluded that 115 megahertz of spectrum in two bands could be reallocated within 5 years while accommodating the existing Federal agency uses, which were NOAA weather satellites and Department of Defense radar systems.

In our work, both to manage Federal agency spectrum use on a day-to-day basis, as well as to look for 500 megahertz of spectrum to reallocate to commercial service, we face a number of challenges.

First, compared to commercial services, Federal agencies do not have a lot of spectrum in the prime bands between 225 megahertz and 3.7 gigahertz. In that range, Federal agencies have exclusive use of only about 18 percent of that spectrum as compared to commercial and non-Federal users who control 30 percent of this spectrum on an exclusive basis. The remaining 51 percent is shared between Federal and non-Federal users.

Second, Federal agencies use this spectrum assigned to them to perform critical missions assigned to them by Congress. These missions can range from the NOAA weather satellites, to FAA air traffic control systems, to Department of Defense drone missions. And when a Federal agency needs spectrum to perform one of its missions, we only assign the agency the minimum amount of spectrum it needs, and only within the geographic area within which it needs the spectrum. In virtually no case do we provide an agency exclusive use of an entire band of spectrum. With 60 agencies holding around 244,000 individual frequency assignments, Federal agencies must share spectrum with each other, and in many cases with commercial users.

Third, the variety and complexity of spectrum uses by Federal agencies complicates our day-to-day assignment processes, as well as challenges us when we evaluate a band for reallocation. Federal spectrum management is much more complicated than in the commercial world.

Generally, any particular commercial band is devoted to a uniform set of commercial users providing similar services, using comparable systems and technology. In the case of cellular and similar land mobile radio services, the commercial operator typically has the exclusive right to use a given frequency within a geographic area, and this general uniformity among commercial providers makes it easier to design and implement efficiency enhancements.

The Federal Government, on the other hand, operates a variety of systems within a specific band that may have little in common from a technological perspective. A single Federal band, for example, could include operations as diverse and technologically unrelated as high power radars, satellite communications, drone operations, and covert law enforcement surveillance operations.

To illustrate these points, I would like to go through a slide presentation we have prepared for today's hearing. And I think you have copies of it on your desks. This presentation is based on the studies we are currently performing on the 1755 to 1850 megahertz frequency to determine if any or all of that spectrum can be reallocated to commercial wireless broadband service. We began this study in January, and expect to complete the detailed evaluation by September 30 of this year.

Over 20 Federal agencies operate in this band, utilizing over 3,300 individual frequency assignments.

Before we get to the specifics of that band, I would like to start with the slide up here on the screen relating to the commercial use of spectrum. What this shows is how the FCC has divided up the United States into cellular market areas.

Now, if we could go to the next slide. When the FCC conducts an auction of spectrum, it can offer spectrum in geographic areas as small as those individual cellular market areas, or, as shown here, in the case of the AWS-1 auction, it can combine the cellular market areas into larger regions for bidding.

In the case of the 90 megahertz auctioned by the FCC for AWS-1 the FCC organized the spectrum into 6 blocks, 20 megahertz at the cellular market area level, 30 megahertz at the level of basic economic areas, roughly the size of a State, or a little smaller, and 40 megahertz at a regional level such as depicted here. Within each of these regions the winning bidder has exclusive control of the spectrum. It decides what technology to deploy and how to build out its system, and it does not have to share its spectrum on a primary basis with anyone else.

So let's now segue to the Federal agency use of the 1755 to 1850 band. Most of the 3,300 assignments in this band are for point-to-point fixed microwave licenses, which we have depicted here on this first chart. Agencies such as the Departments of Energy, Homeland Security and the FAA use these links to transmit data supporting such operations as energy grid control, border monitoring and air traffic control. While these users are the most numerous, they are also the easiest to relocate as technology does exist today to establish these links in other spectrum bands.

But as I go to the next slide, we will overlay on the fixed microwave licenses, military bases where training is conducted with mobile tactical radios which use spectrum in this band. These radios are the military version of mobile, point-to-point, and cellular systems. And over the last several years, the Department of Defense has had to increase the number of training locations in order to provide for training of National Guard and Reserve units prior to their deployment to Afghanistan, Iraq and other locations.

Next slide.

Here we overlay military satellites operated by the Department of Defense. In particular, what we see here are the Earth stations that use frequency in this band to control these satellites. Due to the high power of these systems, these Earth stations impact the spectrum within the yellow shaded areas of the map.

Remember that satellites generally have a useful life of over 20 years, so once a satellite is launched, there is no opportunity to change out its radio. And what that means is that as long as the satellite is in active use, there will need to be ground stations from the East Coast to the West Coast, as the satellite passes over the country, to control the operations of the satellite.

And as we did with the NOAA weather satellites we evaluated in the fast track report, we can carve out exclusion zones around these Earth stations in which no commercial service would be allowed.

But it doesn't end there. And if we go to the next slide, this overlays training sites for bomb squads working with robots controlled through wireless technology. And keep in mind that while the agencies train at the locations depicted on this map—and I am checking the color, I guess they are in black on the map—in fact, they must be able to deploy this equipment anywhere in the country without radio interference.

The next slide shows the Department of Defense operations regarding training on the use of precision guided munitions. The large diameter of the circles showing the spectrum use is due to the fact that these munitions are delivered from tactical aircraft flying at high altitude, and the radio spectrum is impacted from the aircraft to the horizon. Therefore, the higher the aircraft operates, the larger the impact on spectrum use on the ground.

The next slide, we now overlay spectrum use by the Department of Defense for air combat training systems. These systems communicate data on pilot and aircraft performance to evaluators who can provide immediate feedback to pilots at the completion of their training runs. The transmission devices are installed on most tactical aircraft. And as with the previous slide on precision guided munitions, the area of impact is determined according to the high altitude at which these planes operate.

Turning to the next slide, a number of agencies are now flying unmanned aerial vehicles or drones in this band. Much of this use is for military training but, increasingly, other agencies are utilizing drones for border security and disaster relief. These orange circles reflect where training is conducted today, but with the expanding use of drones, they could be deployed anywhere in the country.

Next slide.

The Department of Defense develops and tests missile and aircraft technology. To support that effort, researchers must download large amounts of data from airborne devices during testing. This data is critical to monitor performance and to analyze malfunctions. And again, these systems operate at high altitudes and can impact communications over very long distances, as shown in the light blue circles.

And finally, the last side.

Many law enforcement agencies conduct surveillance operations in this band. These operations produce data and video that could be critical evidence in court but, just as important, we need these links to monitor and safeguard undercover agents that may be in harm's way. These systems operate throughout the country, whenever and wherever needed. Accordingly, we have shaded the entire country gray, although given all the other uses in the band, you can only see the gray shading up there in the northern Midwest.

So that concludes the slide presentation. And, Mr. Chairman, I would respectfully request that the slide deck be inserted into the record of this hearing.

Mr. WALDEN. Absolutely. Without objection.

Mr. STRICKLING. And I hope these slides give you a flavor for the challenge we face at NTIA to manage Federal agency spectrum assignments and to evaluate various frequencies for possible reallocation.

And let me close my opening remarks with some suggestions for possible legislation in this area, particularly dealing with the relocation of Federal operations.

Before we can recommend reallocation of any spectrum to commercial wireless broadband service, we first need to determine the cost of relocating Federal systems or modifying them to allow sharing with commercial users. We then need to compare that cost to the expected revenue from any auction of that spectrum to make sure that the auction revenues exceed the costs of reallocation.

We must also determine to what new spectrum the Federal agencies can relocate their operations, and determine whether there is space in those bands to accommodate these operations once they are moved. But even after we have completed that analysis and have recommended reallocation of a band, we face the practical problem of the agencies actually relocating their operations in a reasonable time frame.

The single most important step that Congress can take to facilitate the reallocation of spectrum is to provide the Federal agencies the resources and flexibility they need to plan for and undertake relocation and sharing activities. Specifically, agencies need resources for upfront planning, prior to holding an auction, to determine costs and determine the timeline for relocation. The current Commercial Spectrum Enhancement Act only allows for reimbursement of agency expenses to relocate after an auction has concluded.

Additionally, the CSEA should be amended to allow for reimbursement of agency expenses undertaken to facilitate sharing of spectrum with commercial entities.

And finally, as I hope my presentation made clear, given the diverse uses of spectrum by Federal agencies, we need flexibility in terms of setting schedules for relocation that take into account the particular technology and resource needs of each agency. With your support, we will meet the President's goal of reallocating 500 megahertz to meet the growing needs for commercial wireless broadband service.

Thank you, members of the committee. I look forward to working with you on these important issues. And I now would be happy to answer your questions.

Mr. WALDEN. Well, thank you very much, Secretary. We appreciate your comprehensive testimony and your good work and counsel in this area.

[The prepared statement of Mr. Strickling follows:]

Testimony of
The Honorable Lawrence E. Strickling
Assistant Secretary for Communications and Information
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United States Department of Commerce

Before the
Committee on Energy and Commerce
Subcommittee on Communications and Technology
United States House of Representatives

Federal Government Spectrum Use

July 6, 2011

I. Introduction

Chairman Walden, Ranking Member Eshoo, Vice Chairman Terry, and Members of the Subcommittee, thank you for the opportunity to testify on behalf of the National Telecommunications and Information Administration (NTIA) regarding the Federal Government's use of the radio spectrum. I am very pleased to describe NTIA's efforts to maximize the efficient and effective Federal use of spectrum and our work to identify and reallocate spectrum to meet the Nation's rapidly-growing demand for wireless broadband.

II. President's Wireless Innovation and Infrastructure Initiative

Beginning with his June 2010 Executive Order, and more recently in the Wireless Innovation and Infrastructure Initiative (also known as the National Wireless Initiative) announced in February of this year, President Obama has set forth a bold vision for spurring innovation, expanding economic growth and job creation, and preserving America's global technology leadership, by doubling over the next ten years the amount of spectrum available for commercial wireless broadband.

With increased access to broadband, businesses will grow faster and create more jobs, students of all ages will have greater access to education and job training, and public safety officials nationwide will finally have access to state-of-the-art, secure, interoperable mobile communications. The end products of the President's National Wireless Initiative promise to help grow the economy in several ways. First, valuable spectrum that is currently underutilized will be freed up through voluntary incentive auctions. Second, and perhaps most importantly, a decade after the attacks of September 11th, our nation's first responders and other public safety service providers finally will have access to the modern communications system they need to help keep us all safe and secure. Finally, the President's initiative also will yield important benefits for American taxpayers by reducing the deficit.

The National Wireless Initiative leverages the rollout of next generation, "4G" wireless technology that is now being deployed in the United States by several carriers, and that promises considerable benefits to virtually every corner of our economy and society. As much as 10 times faster than current high speed wireless services, 4G wireless technology will spur innovation in new and improved information devices such as smartphones, tablets and laptops, which in turn will spur increased economic growth and job creation in areas such wireless services, equipment and application. It will put cutting-edge broadband-driven capabilities – such as instantly downloading the floorplan of a burning building – into the hands of police, firefighters and other first responders, allowing them to more quickly and accurately assess and respond to emergency situations. By catalyzing private investment and innovation and reducing the deficit, this initiative will help the United States – its businesses, its students, its entrepreneurs and all its citizens -- win the future and better compete in the 21st century economy.

III. NTIA Efforts to Identify 500 MHz of Additional Spectrum for Broadband Use

A critical component of the National Wireless Initiative is the President's directive to NTIA to collaborate with the Federal Communications Commission (FCC) to identify and make available an additional 500 megahertz (MHz) of spectrum, currently used by commercial and/or Federal users, for fixed and mobile broadband use over the next 10 years. Pursuant to that directive, NTIA delivered to the White House, within three months, a plan and timetable for performing this work.

The Ten-Year Plan and Timetable, developed with input from other Federal agencies and the Federal Communications Commission, identifies over 2,200 MHz of spectrum for evaluation, establishes a process for evaluating these candidate bands, and lays out the steps necessary to potentially make the selected spectrum available for wireless broadband services.

At the same time, NTIA also undertook a "fast-track" review to identify reallocation opportunities that exist in the next five years in order to make an early down payment toward that overall goal. NTIA recommended in the Fast Track Evaluation report that 115 MHz of spectrum be reallocated for commercial broadband use within five years. In reaching this conclusion, NTIA examined four spectrum bands: (1) 1675-1710 MHz, (2) 1755-1780 MHz, (3) 3500-3650 MHz, and (4) 4200-4220 MHz and 4380-4400 MHz. The report recommends that various portions of these bands totaling 115 MHz be made available for wireless broadband use within five years, contingent upon the allocation to Federal agencies of resources for necessary relocation activities. Specifically, NTIA recommended sharing 1695-1710 MHz, currently used for satellite-based weather observations, and dissemination of severe weather information and alerts via satellites operated by the Department of Commerce's National Oceanic and Atmospheric Administration, and reallocating 3550-3650 MHz, which commercial carriers

would share with Department of Defense radar systems that operate primarily on ships. NTIA recommended geographic limitations on the commercial availability of these bands to prevent harmful interference to Federal Government facilities in the 1695-1710 MHz band and to the proposed commercial services in the 3550-3650 MHz band. In January of this year, NTIA formally proposed that the FCC reallocate these bands.

NTIA is currently conducting a detailed evaluation of the 1755-1850 MHz band to determine if any of that band can be reallocated for commercial service. NTIA chose this spectrum based on several key considerations, including: (1) the technical characteristics of this spectrum band that make it especially well-suited for mobile broadband communications; (2) the nature of current Federal agency use of the spectrum; (3) the likelihood of successfully repurposing operations located in the band within 10 years; (4) the international harmonization with mobile operations; and (5) the existence of mature wireless technologies to support Federal operations in other bands. NTIA and the other Federal agencies have been hard at work conducting technical analyses on 1755-1850 MHz and comparable spectrum bands and plan to complete the detailed evaluation of this band by September 30, 2011. Upon completion of this review, NTIA will continue to identify and evaluate additional candidate bands for repurposing consistent with the Plan and Timetable, and in so doing fulfill the spectrum goals outlined by President Obama.

IV. Maximizing the Efficient Use of Federal Spectrum

In addition to identifying additional spectrum for repurposing for wireless broadband use, NTIA is intently focused on ensuring, to the greatest extent possible, that Federal agencies use and share spectrum efficiently and effectively, while protecting critical Federal government operations. To do so, NTIA concurrently:

- manages frequency assignment and coordination;
- leads and manages the Interdepartment Radio Advisory Committee (IRAC), which is comprised of representatives from 19 Federal agencies that provide advice to NTIA on spectrum policy matters;
- reviews and certifies spectrum support for new systems;
- coordinates satellite operations;
- conducts border coordination and international negotiation;
- coordinates strategic planning; and
- performs spectrum engineering and analysis.

Let me now describe in more detail how these efforts allow us to maximize efficiency of use among Federal users, and some of the challenges we face in the pursuit of that efficiency.

a. The Variety and Complexity of Agency Spectrum Needs

Federal agencies utilize spectrum for myriad purposes, including national defense, law enforcement, emergency relief, scientific research, weather data analysis, space, and maritime and air traffic control. More than 60 Federal agencies receive spectrum assignments from NTIA. Given the diversity of purposes, NTIA must rely on the Federal agency spectrum managers within the IRAC to evaluate their spectrum needs and request appropriate frequency assignments. NTIA does not possess the expertise in the multitude of agency missions to direct how agencies should utilize spectrum to meet their needs, whether it is pursuing terrorists, exploring outer space, or managing air traffic.

Moreover, given the many different uses of spectrum by Federal agencies, it is much more difficult to achieve efficiencies as compared to commercial systems. Generally, any particular commercial band is devoted to a uniform set of commercial users providing like services using comparable systems and technology. This general uniformity among commercial

spectrum users makes it easier to design and implement efficiency enhancements. Furthermore, each of these users usually has exclusive control over the frequencies and geography under its licenses.

The Federal Government, on the other hand, often operates a variety of systems within a specific band that may have little in common from a technological perspective. A single Federal band, for example, could include operations as diverse and technologically unrelated as high-power radars, unmanned aerial vehicles (also known as "drones"), and terrestrial surveillance used by law enforcement. Operation of any type of commercial facility within such a complex and technologically variegated environment is simply not a viable option. Nonetheless, NTIA and the agencies make these shared Federal operations work. Notwithstanding the challenges of coordination among agencies, NTIA typically processes frequency assignments via the IRAC in nine days in order to ensure that agency mission-critical operations continue without disruption or interference.

b. The Widespread Practice of Sharing Spectrum Among Multiple Agencies and Operations

Within exclusive Federal bands, agencies work to improve efficiency by sharing spectrum with each other based on geographic and time restrictions. NTIA seeks to limit agencies to using spectrum only at the times and/or in the locations they need it, freeing up that same spectrum for use by other agencies at different times and places. Commercial spectrum is rarely used in a similar manner. Instead, commercial spectrum is often allocated in large geographic blocks to a single entity for a single purpose at all times. While this approach may make sense in a commercial context, Federal users achieve greater efficiencies by sharing

spectrum bands with each other, meaning any individual band may be put to different uses by different agencies at different times of the day and/or in different geographic regions.

For example, the 1755-1850 MHz band alone supports the following uses, each with its own unique systems:

- satellite and unmanned drone command and control;
- air combat training;
- undercover surveillance;
- explosive disposal robotics;
- telemetry; and
- military tactical communications.

Squeezing an array of diverse agencies and systems into a single band makes for more efficient use of the spectrum, but it complicates the possible re-allocation of that spectrum. Federal operations often use custom technology that does not operate in other bands, which can impede easy relocation of that operation. Further, the unique needs of Federal users — whether with respect to radars or military tactical communications or scientific research — often means that needs cannot be simply met by using commercial services. As a result, accommodating all these users in order to re-allocate a single band can present an extremely complex and time-consuming challenge. For example, if it is determined that this band can be made available, relocating Federal users from all or part of the 1755-1780 MHz band may take anywhere from a few years to more than 10 years, depending on the complexity and cost of Federal equipment currently in use. In addition, particularly in the case of satellite systems, it is possible that the federal government may need to maintain some geographic exclusion zones for longer than ten years. Furthermore, for some operations, government users have different requirements than the

majority of commercial or state/local users, which causes some government operations to have significantly higher equipment replacement costs than commercial users which benefit from broader economies of scale. For example, the per device cost for thousands of specialized federal law enforcement users will be higher than the per device costs for the many millions of wireless subscribers on commercial networks.

NTIA is committed to developing and improving new and innovative spectrum sharing capabilities to further our mission of increasing the efficiency of Federal spectrum use. To carry through on this commitment, NTIA, in coordination with the FCC and other Federal agencies, established a Spectrum Sharing Innovation Test-Bed pilot program to enhance the sharing of spectrum between Federal and non-Federal users. Managed by our engineers and staff in both Washington, D.C. and Boulder, Colorado, this initiative engages private sector companies to identify and test technologies that we expect will pave the way for environment-sensing technologies that enable both Federal and non-Federal users to share spectrum in an even more efficient and effective manner.

c. The Costs Associated With Federal Relocation, Especially Upfront Planning Expenses.

The Spectrum Relocation Fund of the Commercial Spectrum Enhancement Act (CSEA) provides a solid foundation for promoting more efficient use through reallocation of spectrum from Federal to commercial use. This Committee, and Chairman Upton in particular, deserve credit for forward-thinking leadership in that legislation. Based on our experience to date, however, the CSEA can be improved to support timely and cost effective relocation. Specifically, the Fund should reimburse the costs associated with agencies' up-front planning for relocation – costs that currently are not covered under the CSEA. To address this concern, NTIA

has recommended that Congress update the CSEA to support agencies up-front planning costs. NTIA believes that it would be penny-wise but pound foolish to withhold from agencies the funding they need to maximize their efficient use of spectrum. We are encouraged that legislation recently reported by the Senate Committee on Commerce, Science, and Transportation makes important strides in better accommodating the costs of relocating Federal users.

d. The Need to Avoid Stranded Public Investments

In evaluating the costs and benefits of possible reallocation of Federally assigned spectrum, NTIA also must consider the risk of stranding an agency's investment in systems and hardware – such as satellite systems (many of which have been designed and built to last for as long as 20 to 25 years), transmitters, and receivers – that could be abandoned and replaced years or even decades before the end of their useful lives if the agency re-locates all systems to another band. These are systems that the taxpayers have funded and which achieve the important missions that the Administration and Congress are requiring agencies to perform. Abandoning the taxpayers' investment in one band simply to replicate that operation – and that investment – in another band, may not be an effective and efficient use of public funds. We must take such costs into account when considering the relocation of Federal users.

e. The Need to Maximize International Harmonization of Spectrum Use

In assigning spectrum frequencies, NTIA seeks to maximize the international harmonization of spectrum. While this limits flexibility in assignments, it also increases efficiency by, among other things, increasing economies of scale for the production of hardware. However, because most other countries do not allocate as much spectrum exclusively to defense as the U.S., international harmonization has the effect of limiting current defense allocations.

f. Best Practices

Spectrum managers historically have preferred an environment where diverse systems maintain a good amount of separation in terms of both frequency and location. More and more, however, the introduction of new wireless technologies and services – and the consequent increased demand for spectrum for those technologies – requires placing technologies in closer proximity to one another. For example, NTIA and the FCC currently allow systems to operate up against the band edge next to their spectral neighbors instead of applying buffer zones, which are known as "guard bands." While new innovations in cognitive radio technologies promise to enable and mitigate interference among multiple communications services that are more tightly packed on a spectrum band, these situations present significant and novel challenges to spectrum managers.

To address this issue, NTIA is developing a Best Practices Handbook for Federal spectrum managers to help them evaluate the potential interference from emerging technologies and thereby improve the efficiency of Federal spectrum use. The Handbook will include a compilation of accepted technical standards, interference protection criteria, unwanted emission limits, and other tools. NTIA is considering releasing modules of the Handbook as they become available, with the completed product likely to become available within the next few years.

V. Government Accountability Office Report

On May 12, 2011, the Government Accountability Office (GAO) issued a report entitled *Spectrum Management: NTIA Planning and Processes Need Strengthening to Promote the Efficient Use of Spectrum by Federal Agencies*. In the report, the GAO examined the extent to which NTIA's spectrum management oversight and policy activities address government-wide

spectrum needs, how Federal agencies are using assigned spectrum, and what steps NTIA and the Federal agencies have taken to repurpose spectrum for broadband.

The GAO report provides a useful perspective on NTIA's critical role as the spectrum manager for Federal users and offered three specific recommendations to NTIA to facilitate the government-wide management of Federal spectrum use. I am pleased to report to the Committee on how NTIA is implementing these recommendations.

First, to ensure that NTIA's previous efforts to develop a Federal strategic plan are not diminished, the GAO recommended that NTIA develop an updated plan. As the Committee may be aware, NTIA, through the IRAC, assesses future Federal spectrum needs on a continuing basis. The Presidential Memorandum of June 28, 2010, and the Wireless Innovation Initiative provide significant strategic direction for NTIA and the other Federal agencies which are fully occupying our resources for conducting such planning efforts. As the Committee may be aware, NTIA, through the IRAC, assesses future Federal spectrum needs on a continuing basis.

Second, to help ensure Federal agencies are managing current and future spectrum assignments efficiently, GAO recommended that NTIA, in consultation with the IRAC, examine the five-year assignment review processes and consider best practices to determine if the current approach for collecting and validating data from Federal agencies can be streamlined or improved. NTIA concurs with this recommendation and, in conjunction with the IRAC, is currently reviewing the recommendations concerning the five-year review process and internal controls for management oversight of the accuracy and completeness of agency data. NTIA has proposed approaches to the IRAC to implement new measures such as identification of an agency point-of-contact who, for each five-year review, will submit an attestation regarding the currency and accuracy of the information and the need for the ongoing use of the associated

systems. Based on feedback from the Federal agencies, NTIA expects to start implementing some of these proposals by the end of the fiscal year.

Third and finally, to provide the assurance that accurate and reliable data on Federal spectrum use are collected, GAO recommended that NTIA take interim steps to establish internal controls for management oversight of the accuracy and completeness of currently reported agency data. Specifically, GAO suggests NTIA, in developing the new Federal Spectrum Management System (FSMS), incorporate adequate internal controls for validating the accuracy of agency-reported information submitted during the assignment, certification, and frequency assignment review processes. NTIA concurs with this recommendation and is taking steps to implement these internal controls in a cost efficient manner. As we informed the GAO, the migration to the FSMS to enhance NTIA's operational and planning capabilities is a multi-year effort that will not provide full operational capability before October 2015. NTIA is working with the Federal agencies to determine what other new processes could be implemented in advance of the FSMS completion that would lead to more accurate and reliable data, including, as noted above, the establishment of procedures for agency attestation of submitted data. Furthermore, as part of this effort, NTIA is evaluating computer checks that will assist in validating data submitted to the IRAC. We have also sought input from the Commerce Spectrum Management Advisory Committee, so that we can better understand how these data issues are managed in the private sector.

VI. Spectrum Legislation

The Administration believes that Congress can take steps to promote economic growth by supporting the efforts of NTIA, the FCC, and other Federal agencies to identify spectrum for wireless broadband, and by providing modern, efficient and interoperable communications

capabilities for the nation's first responders. Specifically, consistent with the President's National Wireless Initiative, the Administration urges Congress to adopt proposals to improve the process for reassigning spectrum encumbered by Federal users to private use, grant authority for the FCC to hold incentive auctions, create governance structures and channel auction proceeds to manage the deployment and operation of a nationwide interoperable public safety broadband network, and spur innovation in wireless services by both providing for unlicensed access to wireless spectrum and funding critical research and development. Importantly, it is critical that any spectrum reallocation legislation be feasible to implement and consistent with ongoing interagency work to find the most efficient and effective uses of our national spectrum resources. In particular, statutory requirements to reallocate specific bands must incorporate sufficient flexibility to permit the Administration to conduct appropriate feasibility assessments and develop repurposing options that best meet the goals of promoting economic growth and allowing Federal agencies to continue critical missions.

Legislation that accomplishes the goals of improving spectrum management, providing a modern communications for the nation's first responders, while at the same time providing for considerable deficit reduction, is a compelling policy opportunity we must pursue to win the future and live within our means. NTIA looks forward to working with the Committee as it crafts legislation.

Thank you for the opportunity to testify, and I am happy to answer your questions.

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7/5/2011

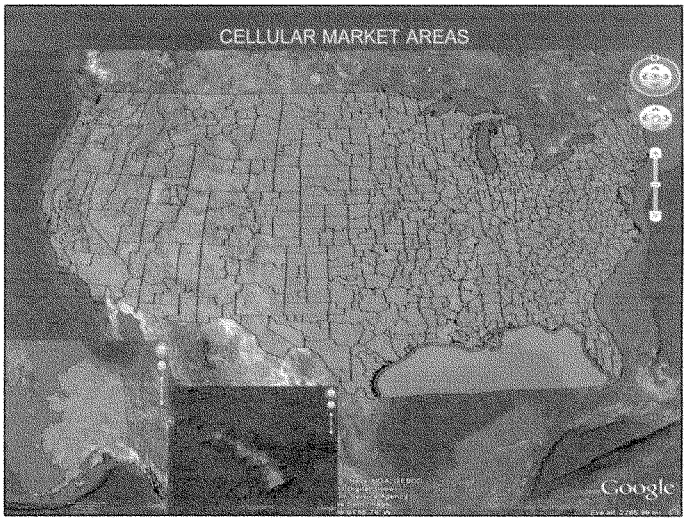
National Telecommunications And Information Administration

Presentation by Lawrence E. Strickling, Assistant Secretary for Communications and Information
to the
Subcommittee on Communications and Technology
Committee on Energy and Commerce
U.S. House of Representatives
July 6, 2011

1755 – 1850 MHz

Spectrum Use Summary

7/5/2011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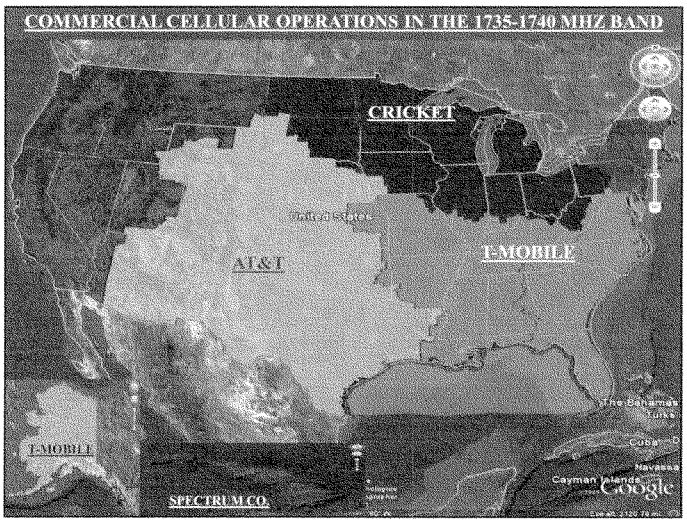
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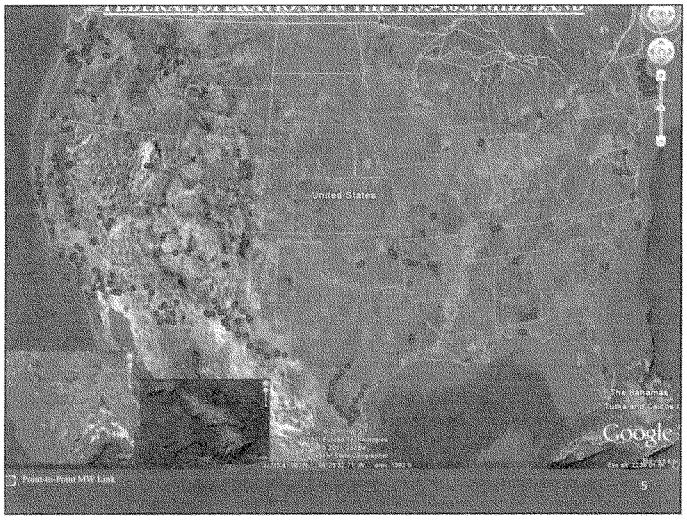
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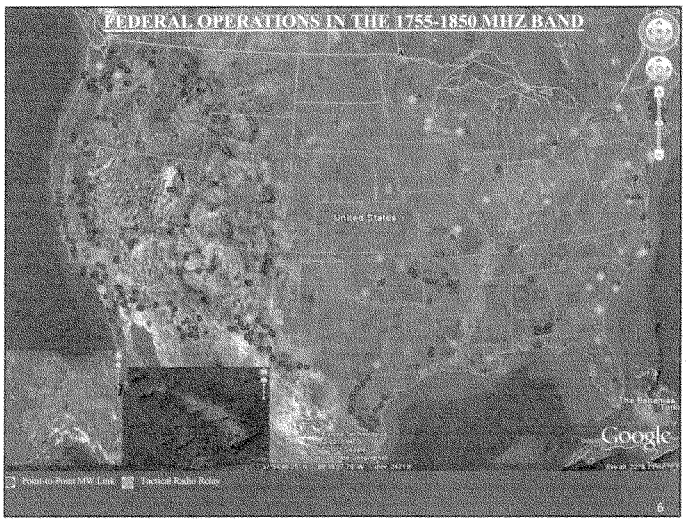
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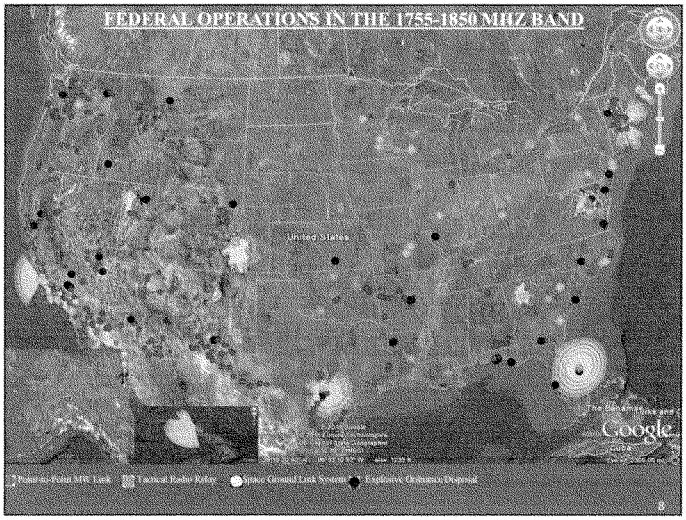
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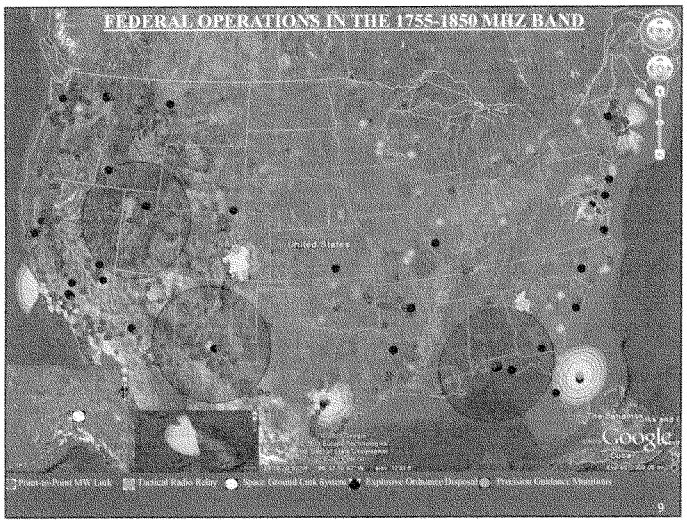
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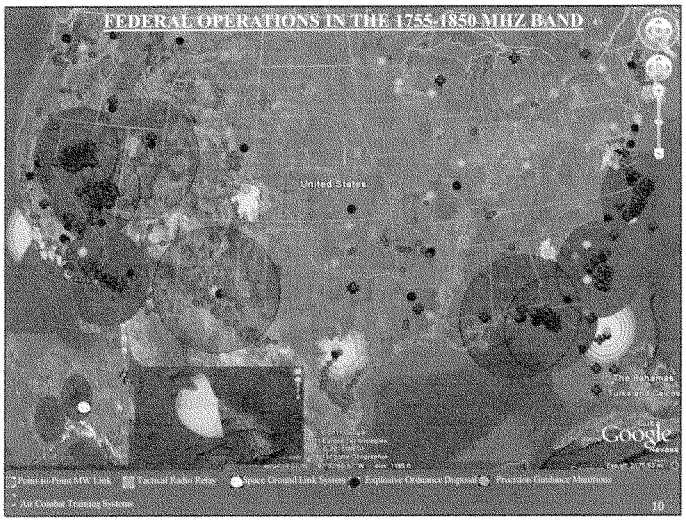
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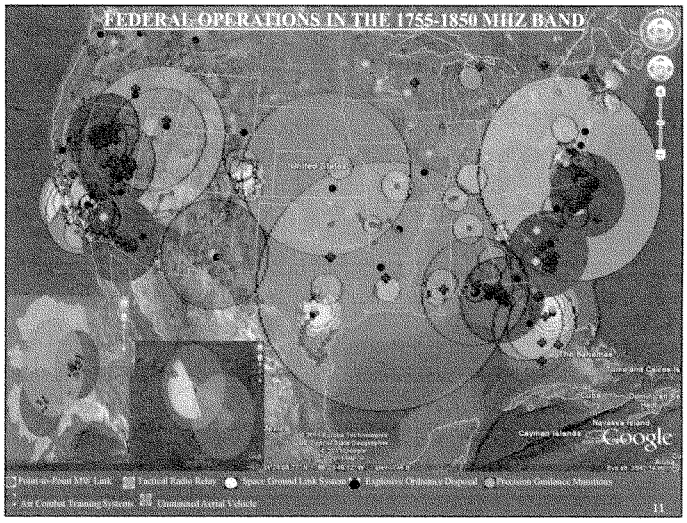
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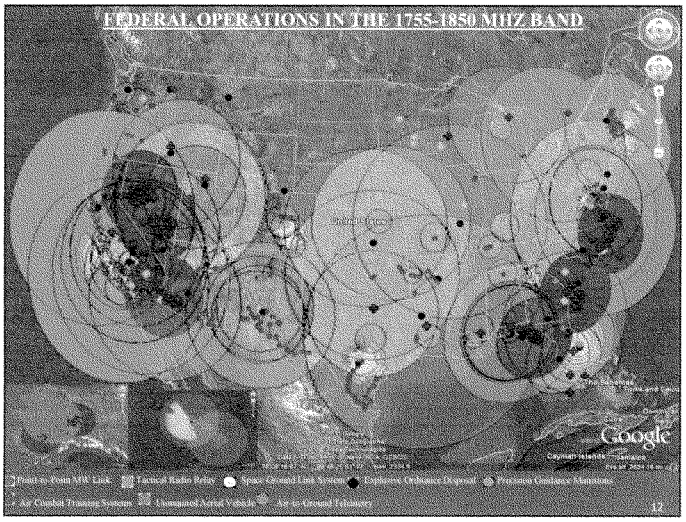
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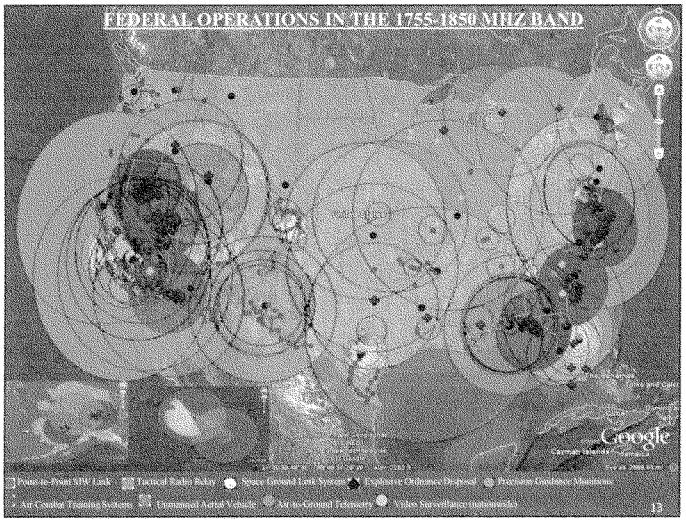
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Explosive Ordnance Disposal
Portable Outdoor Antennas
Air Combat Training Systems
Unmanned Aerial Vehicle
Air-to-Ground Telemetry
Video Surveillance (unknown)
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13

Mr. WALDEN. Nobody doubts that these systems are critical. The question is, can they be relocated? So just from a technical standpoint, can you relocate and open up this band?

Mr. STRICKLING. We choose this band because there is technology available for these systems that can be utilized in other bands. Nonetheless, it is not an easy process to do so. So, for example, the satellites, those satellites, we can't move them. And as a practical matter, we can't move the Earth stations. But we can operate, going forward, in an environment where we build exclusion zones or craft exclusion zones around those ground stations so that there will be no commercial operations taking place in those areas.

Unfortunately, as you can tell from the slide on the Earth stations, there are some very population-dense areas in which some of these Earth stations are located, including the Washington metropolitan area. So that reduces the overall attractiveness of a band if you have to carve out some of these areas to protect the satellite operations.

Our expectation is, though, that for the bulk of these operations, should we choose to recommend—and we have not made a decision to recommend this yet because the studies are continuing—that we could get the operations out of this band within the 10 years, other than the satellites.

Mr. WALDEN. All right. And then you talked about some of the changes you think need to occur in the Commercial Spectrum Enhancement Act, including dealing with agency expenses and all, to do the relocation. Did the President's budget include any money for that effort?

Mr. STRICKLING. I believe it is included. The money for that would come out of the proceeds of the auctions that would take place, so the proposal from the administration for incentive auctions would generate a certain amount of revenue, a portion of which would be used to fund the agencies for the relocation efforts.

Mr. WALDEN. And when you talked about the time frame in the 1755 to 1780 megahertz spectrum available for commercial services, was that that 10-year window you were talking about?

Mr. STRICKLING. Well, we will make a recommendation on that band at the end of September of this year. If the recommendation is to reallocate a portion of that band—and let me also say that we are looking at the full 95 megahertz from 1755 to 1850. Industry has indicated a particular interest in 1755 to 1780, which would be 25 megahertz. We are looking at 95 because the problem this country faces is bigger than what is going to be solved by doing 25 megahertz. So we are looking at the whole band to figure out what portion, if any, of it could be reallocated. And, again, the idea would be that, but for the satellites and perhaps some other systems, that as we continue to learn about them, would be made available within 10 years.

Mr. WALDEN. Of the 115 megahertz that NTIA identifies as fast-track spectrum, only 15 megahertz is below the 3-gig threshold. Now many in the industry, I am told, believe that spectrum 3-gig is poorly suited for providing mobile wireless broadband services. How does the identification of this spectrum help meet the President's goal of finding spectrum for wireless broadband?

Mr. STRICKLING. Well, first off, what you stated is an accurate statement of today's market conditions. However, even in the band that we are talking about, 3550 to 3650, that band is used for WIMAX in other parts of the world, including Europe. So there is technology being developed to work in that band.

But we have a long time horizon here. We are looking at 10 years. And what may be less attractive to industry today may well be very attractive to it in 10 years. And more importantly, by identifying this spectrum and, in effect, putting it in the bank, it sends signals to the manufacturing community and others to perhaps be thinking about developing the technology that would work in that band.

Mr. WALDEN. And that leads to another point which is, how do we send the right signals to government agencies to free up spectrum that they could either use more efficiently or don't really need?

Now some countries have sort of levied a fee, I guess, on government spectrum. I am not advocating that. But I guess the question is, if you've got it, who wants to give it up? And yet there is this big need. Have you thought that through on how we can incent?

Mr. STRICKLING. Well, first off, I would take issue with the idea that there is a lot of spectrum in the hands of Federal agencies that they use inefficiently. Again, because of the nature of what I just showed you, an agency comes to us with a very specific request to use spectrum in a given location at a given frequency. Now, the actual bandwidth they take would be dictated by the equipment that they intend to use to perform their mission. And certainly, there could be advances in the efficiency of that equipment over time. But then agencies have to have the resources to be able to pay for those technology upgrades to be able to use the spectrum more efficiently.

But in general, because of the way in which we assign spectrum—and you can see how we have piled use upon use on top of each other in order to cram all these uses in—there are not a lot of opportunities for agencies to do what you suggest.

More importantly, these agencies only get individual assignments. We never give them an entire band to work within. So the idea that they have gotten more spectrum than they need, so that they could find an opportunity to be more efficient with it, really doesn't make sense in this context; whereas, it might if we had been assigning full bands for exclusive use by some of these agencies.

Mr. WALDEN. I thank you for your answers. I will turn now to the gentlelady from California for questions.

Ms. MATSUI. Thank you, Mr. Chairman.

Mr. Strickling, I want to ask you a few questions about the Spectrum Relocation Improvement Act of 2009 that passed out of this committee on a bipartisan basis last Congress. I understand that the administration has several concerns about the bill. As the committee evaluates the spectrum legislation that would direct the FCC to auction several Federal and non-Federal spectrum bands, it is critical that we do what we can to assure greater transparency and speed in the relocation process. By helping bidders understand when they will have access to available spectrum, we hope we can

create incentives for wireless broadband providers to participate in such auctions and increase the value of the spectrum being sold.

I know the administration had had concerns with an across-the-board deadline for transition planning and relocation. What would you recommend to help provide greater certainty for entities purchasing the spectrum that the relocation process would be timely and efficient?

Mr. STRICKLING. I think the single most important thing that could be done is what I mentioned in my testimony. The agencies need adequate, upfront planning resources and personnel.

When we did the relocation under AWS-1, which took over—well, it started back in 2007 and it is continuing to this day, although 81 percent of the Federal systems have been relocated as of now and the agencies are pretty much on schedule. But we went back to industry in a notice of inquiry in 2009 and asked them for their evaluation of how the relocation had done. And the one thing that just emerges time and time again in the industry comments is that the agencies didn't have the best timetable for moving. They didn't have the best information for what it would cost.

This is entirely a resource issue because the agencies didn't, you know, have to do this. In addition to the missions that Congress has given them to perform, this isn't part of their day-to-day direct work. They are now being told, in addition to what it is we want you to do in terms of law enforcement—protecting the country—we now also need you to create a work stream to figure out how you are going to get out of this band, how you are going to move into a different band, all with no degradation in the performance of the mission that they actually are organized to perform. This is hard work and it is hard for agencies to do without adequate resources. So, more than anything else, giving agencies the resources they need would be what we need to improve relocation in the future.

Ms. MATSUI. So those would be part of the incentives that you have addressed earlier on, as far as upfront planning of resources and adequate time for relocation?

Mr. STRICKLING. Yes.

Ms. MATSUI. Things of that nature.

Mr. STRICKLING. Yes.

Ms. MATSUI. OK. As you know, S. 911 would require several bands of spectrum currently allocated for Federal use to be auctioned by 2014. That legislation looks at spectrum between 1755 to 1850 megahertz, and leaves 15 megahertz of contiguous Federal spectrum in the 1675 to 1710 megahertz band, and the 100 megahertz between 3550 to 3650 megahertz. Can you comment on whether you support the auctioning of these bands?

Mr. STRICKLING. Certainly, we have already recommended the reallocation of 1695 to 1710 and 3550 to 3650. Those were the products of our fast track report last year. It is now in the hands of the FCC to determine when and how best to auction those.

As the Chairman noted in his comments, 3550 to 3650 is not a band that industry is breaking down the door to get ahold of, so it may not make sense to auction that spectrum right now. I think for 1695 to 1710, the FCC is looking to determine what other spectrum it might pair it with in an auction. And I think they are also

interested in seeing the results of our analysis of 1755 to 1850 before making a final decision on what to do with that band.

With respect to the big band, 1755 to 1850, we are still in the middle of analyzing that band, and it would be premature for me to say today whether we think all or any portion of this can and should be reallocated and auctioned.

Ms. MATSUI. So for those bands identified, are there ways to identify and estimate the costs associated with relocating incumbent Federal users?

Mr. STRICKLING. That is very much part of the process we are engaged in right now to get those estimates from the agencies that are in that band.

Ms. MATSUI. OK. Mr. Strickling, I want to quickly ask you this. You mentioned in your testimony, GAO recently released a report on NTIA spectrum management functions and oversight. How difficult is it for NTIA to coordinate Federal spectrum use and oversee how each agency and department is utilizing its spectrum resources?

Mr. STRICKLING. Well, we have a very skilled and dedicated set of public servants in our Office of Spectrum Management, and we do the best we can with the resources we have. So we feel we can perform our current mission. But I hasten to add that we don't do this by ourselves. Federal spectrum management involves the active engagement of every Federal agency that uses spectrum. I mean, we are not at NTIA in a position to design radar systems or to second-guess the Department of Justice as to what kind of covert law enforcement gear it needs to use on its undercover agents. So we have to depend on the agencies to do quality work and have the resources themselves to use the most state-of-the-art technology that they can use.

And I think the GAO report in its proper context should be read to be a call for resources, not just for NTIA but for all of the agencies that are employed in this effort to have the resources they need to do this work as best we can.

Ms. MATSUI. OK. Well, thank you, Mr. Strickling. I see my time is overrun.

Mr. WALDEN. I turn to the gentleman from Nebraska, Mr. Terry, for questions.

Mr. TERRY. Now, in your testimony or questions with Mr. Walden, Chairman Walden, you mentioned that you didn't think that any government agencies were using the spectrum inefficiently. But we are trying to figure out ways that we can get them to be more efficient, maybe new technologies that are coming out, just maybe a different plan of how to use this.

Can you run through some of the discussions, or how you are working with these government agencies to try and adapt to more modern technology so we can free up technologies?

Mr. STRICKLING. That is a difficult question. First off, I will say that our rules require that before an agency come to us and ask for an assignment of Federal spectrum, they have to exhaust efforts to use commercial spectrum. So as a result, the total amount of Federal spectrum assigned to land mobile radio is less than 30 megahertz, because if a Federal agency needs to use cellular phones, they generally buy commercial. And that is one of our

rules. So that is one way that we can minimize Federal spectrum use is by requiring agencies to use commercial when they can. And that is in our rules.

The question of are they using the most modern technology, it is really a tough issue for each of these agencies as they have to balance all of their agency imperatives against the cost of upgrading a particular equipment against being able to perform some other part of their mission. We can't second-guess them on that. We would not refuse a Federal agency a spectrum assignment saying, well, you are not using this piece of equipment over here that is more efficient, if they say to us, well, we can't afford that right now. We have to go with what we have got.

There has also been a reluctance within the administration to provide for upgrades of technology to some of the agencies. So for example, we have talked about the AWS relocation from 1710 to 1755. Well, some of those operations were moved out of that band into 1755 to 1850. So we are now looking again at the same systems in the evaluation we are doing now that were targeted and ticketed for relocation as part of the review that was done several years ago for AWS-1.

Had some of those agencies had the opportunity to upgrade to different kind of technology, a digital technology and a totally different band, we wouldn't be having to go through this again. But some agencies were restricted in terms of what technology they could acquire when they relocated, and so we are now having to look at them a second time within 10 years because of that.

Mr. TERRY. And I think you raise an interesting point regarding how the agencies can keep up with technologies. And so I guess it begs the question of, are you aware of maybe any White House initiative or just overall initiative of working with these individual agencies—Defense Department is a big user, as your map showed—to start thinking ahead of how we can use it, these newer technologies now, instead of missing the boat and then being stuck with the older technologies which is, frankly, inherent to government anyway. But is anyone out there on the executive side, the agency side, saying hey, we need to do a holistic big-picture look at how we use this spectrum and how we have actually a management plan to upgrade and move more people or use it more efficiently?

Mr. STRICKLING. All right. Yes is the answer to your question.

Mr. TERRY. Who is doing it?

Mr. STRICKLING. I am sorry?

Mr. TERRY. Who is in charge of that? Is that yours or is it—since it has so much of the Defense Department in there, who is doing it?

Mr. STRICKLING. Well, I think the current thinking on it is being driven out the Office of Science and Technology Policy at the White House. And as part of the National Wireless Initiative I think some provisions were suggested about creating some dollars that could be used to do research and perhaps even be used as grants to other agencies to allow them to do some of this cutting-edge research on new wireless technologies.

The Department of Defense has over 600 people, employees and contractors, in their Joint Spectrum Center, and they do spend

time working on these issues. Other agencies aren't as fortunate, and they are smaller users of the spectrum and have less ability to conduct research of their own. They are really dependent on what the industry provides for them.

Mr. TERRY. Last question, real quick. Any lessons from T-Mobile spectrum relocation in the AWS? You have 1 second.

Mr. STRICKLING. The relocation of AWS—with permission, I will run past your time. We actually think the relocation of AWS-1 worked pretty well in terms of agencies living up to the commitments they made at the time of the auction. I have already pointed out that perhaps with better—with more resources, they might have had better estimates.

But where the problems arose with T-Mobile was over the early entry provisions, which were voluntary negotiations between T-Mobile and certain of the agencies, to see if they might be able to get out of their band in certain locations sooner than they had committed to as part of the official auction process. And yes, there were issues where T-Mobile felt that agencies weren't moving as fast as their business imperative would like. But again, these were all voluntary discussions between the company and the agency.

We intervened where we could to help things along because, again, we all have an interest in seeing more of this spectrum used for commercial purposes. But it still came down to what ability the agencies had to get out faster than they said they were going to.

Mr. WALDEN. I now turn to the gentleman, Mr. Barrow, for 5 minutes.

Mr. BARROW. I thank the chairman.

Administrator Strickling, you talked earlier about requiring government users to make—to avail themselves of commercial facilities when available, and I can certainly see the utility of that from both points of view.

Some commercial wireless servers are willing to share spectrum with government users on a nonexclusive basis. And yet, I gather some government agencies are kind of reluctant to move away from a system of exclusive allocation and control of certain spectrum to some sort of a shared-use type of regime.

What is your view, do you have any idea of the potential of something like this, a system where at least for some parts of our spectrum, the commercial user got dibs on the spectrum when the government users don't need it; when the government user needs it, they get dibs on the same spectrum? Is there any kind of way—what do you see as the potential for something like that?

Mr. STRICKLING. Well, it has to develop. I mean, we are running out of options of taking bands, clearing them totally, and making them available exclusively for commercial providers. And actually the reluctance to do sharing, we see much more on the commercial side in terms of the willingness of commercial providers to share with the existing government uses. It is more that than the other way around, that somehow the Federal users are reluctant to share. I mean, again, Federal users will become customers of the commercial providers when they offer services that meet their needs. So we have to be devoted to finding more ways where the commercial and the government operations can coexist in the same band.

These exclusion zones we talked about for the satellite systems is one example of that. In the 3550 to 3650 range, there the commercial use, once it develops, will have to coexist with Naval radar systems. And these systems are very powerful. If a ship is along the coast line and turns those radar systems on, they will blow out whatever commercial service might be, you know, on the land side of that system. And so we, again, carve out exclusion zones to accommodate the possibility that the radars might be in use anywhere along the coast line, even though we know that at any given point in time, few if any areas will be impacted by these radar systems. But this is all part of the overall spectrum management, that we have to be engaged in finding these opportunities for coexistence.

Mr. BARROW. I certainly understand the commercial users' reluctance to give up and to share use of what has been allocated to them. But with regard to the flip side, the part that has been allocated to government use, are you aware of any reluctance on the part of government users to share spectrum where that can be done with deference to the priority of use for the government users?

Mr. STRICKLING. I am not aware of it. But again, it assumes that the Federal users' assignment contains extra spectrum that they could share with someone else. That is not our philosophy as we assign spectrum for use. So the situation hasn't really presented itself in real life yet.

Mr. BARROW. Thank you very much.

Mr. WALDEN. The gentleman yields back his time. I recognize the gentleman from Florida, Mr. Stearns.

Mr. STEARNS. Thank you, Mr. Chairman.

Mr. Strickling, in your opening statement I think you indicated that you need additional funding for spectrum planning and for reallocation management; is that true?

Mr. STRICKLING. I am suggesting that this is what the Federal agencies need, yes, if we want to improve the process by which we do these.

Mr. STEARNS. The answer is yes or no. You are saying the NTIA needs more funding; isn't that true?

Mr. STRICKLING. I have not said the NTIA needs more funding, although I will say that, given some of the legislation that is out there that would impose new responsibilities on us, yes, we would need additional resources to perform additional tasks beyond what we are doing today.

Mr. STEARNS. We looked at the President's 2012 budget and I didn't see any new funding request there, so if you needed it, I am just curious why you didn't——

Mr. STRICKLING. At the time that budget was prepared, these new tasks hadn't been identified to us that are currently in some of the legislation that are pending.

Mr. STEARNS. You note in your written testimony that the President proposed doubling in the next 10 years the amount of spectrum available for commercial use. How many, how much megahertz can we expect to come from this repurposed Federal spectrum?

Mr. STRICKLING. Of the 500 megahertz, the FCC had indicated it could deliver roughly 280 to 300 megahertz, and so that would assume, then, that the Federal side would provide at least 200 megahertz, and that is the assumption we have been working on.

Mr. STEARNS. One of the things that—the last time we in this country did government spectrum allocation and asked users to vacate bands that were reallocated for commercial use, I think the auction was by the FCC in 2006; is that correct?

Mr. STRICKLING. The AWS auction was about $13 billion to $14 billion, yes.

Mr. STEARNS. But isn't it true that even today we are still trying to get people to relocate out of the spectrum? I mean, hasn't this taken an inordinate amount of time to accomplish that?

Mr. STRICKLING. As I indicated earlier, I think 81 percent of the agencies have relocated. All the agencies that said they would relocate within 3 years have relocated.

Mr. STEARNS. I mean, what you are talking about is something—the auction was in 2006, and I think they started in 2007; yet here we are this amount of time later and you are still talking about reallocation of people out of the spectrum. Isn't that true?

Mr. STRICKLING. In certain bands, that is correct.

Mr. STEARNS. Why has it taken too long, and what have you learned from that that could assure the American public that when you reallocate again, that people actually leave?

Mr. STRICKLING. Well, people are leaving on the schedules they committed to at the time of the auction, and in fact, we have tried to be pretty tough on the agencies. Last year, I had three agencies ask for extensions of time beyond the deadlines they had committed to, and we rejected those requests. Now, we did suggest to the agency that if they could work out an accommodation with the licensee, that that would be oK with us, and that, in fact, is what the those agencies did.

But in some of these cases, we are talking about a relocation of a point-to-point microwave that isn't interfering with, wouldn't interfere with the commercial entity if it started service or it could be in an area that the commercial entity hasn't started to build out in yet. There is plenty of AWS spectrum that the licensees have not started to build out yet.

Mr. STEARNS. So you think you have learned so that it would not be this slow again?

Mr. STRICKLING. I guess I am taking some issue with the——

Mr. STEARNS. An amount of time.

Mr. STRICKLING. It is on schedule. It is on the schedule the agencies committed to.

Mr. STEARNS. OK. Here is my last question if I can get it out here.

While you state in your testimony that NTIA does not have the expertise in the multitude of agency missions to direct how agencies should utilize spectrum to meet their needs, it seems to me that the government agencies lack incentives to use spectrum as efficiently as possible, and what has NTIA done to address this issue?

Mr. STRICKLING. Well, that goes to the question I had earlier. First and foremost, we require agencies to buy commercial where

they can because if they are developing radio systems for particular missions, it is correct that we don't second-guess that.

I have no ability to determine that the radio systems that control an unmanned aerial drone are properly sized or scaled to perform the function that the Department of Defense has decided it needs that particular drone to perform. We have to accept that on face value, and that is true I think for a whole variety of these systems that are being designed and developed to allow agencies to perform their missions.

Mr. WALDEN. I now recognize the gentleman from Illinois, Mr. Shimkus.

Mr. SHIMKUS. I will hold for my comments.

Mr. WALDEN. I now recognize the gentlewoman from Tennessee, Ms. Blackburn.

Mrs. BLACKBURN. Thank you, Mr. Chairman, and again, thank you for being here, Mr. Secretary.

Let me ask you just a little bit. I want to go back. You talked a little bit about the cost-benefit analysis and making certain that agencies have the resources to undertake these issues. I want to highlight one item with you that I think some of our colleagues may kind of share this concern.

I recall a hearing about 6 years ago where I asked one of our agencies why they had not moved to a template for managing their financial resources in a timely manner, and the response to me was, well, they didn't have a timeline because they knew they had a continuing appropriation. And I think that this highlights quite succinctly what we see as a resistance from some spectrum managers in the government to get with the program and to get this done.

We know we are facing a spectrum shortage in the commercial market. We know that by the end of the decade, there are going to be 1 trillion devices that are attached to the broadband. Now, if we are going to create jobs and if we are going to keep the focus on jobs and if we are going to see a resurgence in the technology area and if we are going to continue to be the exceptional innovators, it means people have got to get with the program, and that as you are able to pack that broadband down and you are able to layer and use that spectrum, we want to know that, first of all, they are doing that efficiently and that you-all have some benchmarks and requirements.

Do you have stated benchmarks and requirements for them? What is your plan specifically on where they are to use commercial product, not just in cell phones but in other areas? What are you giving them? What are you doing to deal with some of the Federal agency managers that are resistant and are kicking the can down the road?

You know, people get tired with Congress kicking the can down the road when it comes to dealing with the debt, and we are looking at spectrum that can be auctioned to help with that. We are also looking at putting this spectrum in the marketplace to create jobs and products that you need, whether it is in financial services or whether it is in health IT, whether it is in entertainment. I have talked to innovators in all of these areas, and what we want to

know is that you are serious about this and not saying, well, we have got a continuing appropriation.

And you know, Federal Government doesn't create jobs; private sector does. We know that. We want to know that you all appreciate that and that you have got a plan that you are making requirements and that you have a timeline. So can you articulate that?

Mr. STRICKLING. Yes, ma'am, I think you are making some very good points.

Mrs. BLACKBURN. Thank you.

Mr. STRICKLING. First and foremost, let me say that our search for 500 MHz is probably as important an undertaking as any in terms of dealing with the imperatives that you described in your question.

Mrs. BLACKBURN. Do you think you can go above the 500 MHz?

Mr. STRICKLING. I think it is too soon to tell that. We have a candidate list between us and the FCC of 2,200 MHz of spectrum to——

Mrs. BLACKBURN. In total?

Mr. STRICKLING. In total, to look at, which includes some bands that are currently possibly underutilized on the commercial side, because if we are going to demand efficiency, I think both we and the FCC agree it should be demanded from both government users and——

Mrs. BLACKBURN. And I agree with that.

Mr. STRICKLING. —commercial users. Beyond that, on this issue of kicking the can down the road, one recommendation the GAO did make to us that we are moving to implement is this question of the 5-year review. Once an agency gets an assignment, they don't have it in perpetuity. It has to be reviewed——

Mrs. BLACKBURN. If I can just make a comment on that, and I appreciate that they have got a 5-year review, but you know, when you are looking at the life cycle of a technology product in the marketplace, you have got 18 months. And so the exponential growth of this is enormous, and I think that what we need to know is that they are not slow walking because they have got 5 years. They need to pick the pace up because things change about every 18 months, and I know, sir, that you appreciate that.

Mr. STRICKLING. Yes. And keep in mind that while what you are saying is true of the commercial world, many of these Federal systems do have long lives. I mean, as I mentioned, the satellites have got life spans of 20 to 25 years that have to be taken into account, but in any event, you are making some very good points and we are taking those in into account as we look to improve the process by which we conduct these periodic reviews of assignments.

Mrs. BLACKBURN. Excellent. Thank you. Yield back.

Mr. WALDEN. The gentlelady yields back. I turn to the gentleman from Illinois, Mr. Shimkus.

Mr. SHIMKUS. Thank you, Mr. Chairman, and Mr. Strickling, welcome back. It is good to have you here, and I did appreciate your testimony.

If done right, you believe, as we believe, that reallocation is really a win-win for both the government and for the economy and for the communications sector; would that be fair to say?

Mr. STRICKLING. We need to get to that point. I will tell you my impression from Federal agencies is they haven't quite yet seen what the win is for them, but I think that some of the suggestions that we have made for improving the CSEA in terms of allowing some upgrade in technology by Federal agencies would go a long way toward making it a true——

Mr. SHIMKUS. And I guess that is what the whole crux of the hearing is, how do we instead of being the big hammer, how do we work with the agencies, how do we move them into the commercial use when that is a very credible opportunity and option, except for if it is national security or stuff? That is clearly why we are having the hearing is, how do we get them moved because the great thing I have said numerous times about this subcommittee is that this is where jobs are created, and as Marsha Blackburn said, if we have a spectrum crunch, we lose this opportunity to really take advantage at a time in this country when we need to be creating jobs.

So I have always focused on, in my analysis of looking at the FCC, as—and ties to Lee Terry's question is, who is managing the whole thing when you have got satellite, cellular, microwave, bits and pieces. I think the FCC is a stovepipe. I don't think there is one entity looking how this all merges together and then you get stuff like this.

I think process equals policy, and I think we have, because of the way we are organized, questionable process because of being stovepiped in sectors and not over—it is an editorial opinion, but it is one that I think that is why I am a erase, get the white board, erase the organizational structure and rewrite it based upon a new technological age. We can't balance the Federal budget, so I can't expect us to do that, but I do think that is where the debate needs to be, and you guys need to help intervene in how do we do this.

I heard your comments on T-Mobile, I think the flip side would be they were trying to incentivize or release the spectrum, but the goalpost kept moving. So if there is more money given to an agency to help them move and then you don't see movement, then it kind of stems to that point of how do we—I mean, how do we get them to do it without a big hammer?

Mr. STRICKLING. Well, first off, I am not sure what your comment about goalpost moving was.

Mr. SHIMKUS. I would say that money was offered—asked by some agencies, maybe companies stepped forward to do that, and then the timelines aren't met.

Mr. STRICKLING. Actually, T-Mobile would have loved to have been able to have contributed dollars to help agencies move, and it is not allowed under the law.

Mr. SHIMKUS. That is an issue of, why not? I mean, if we are trying to reform the system and they are willing to come front to help them do that, then why not?

Mr. STRICKLING. I think that would be a great question for the committee to take a look at.

Mr. SHIMKUS. That would be a policy——

Mr. STRICKLING. It is a much broader policy issue than just spectrum. It comes to the whole question of businesses making gifts to government and the circumstances under which that would——

Mr. SHIMKUS. And I have a military background, so I appreciate especially our men and women in uniform and making sure they have a legitimate use in communication and all the new gears, but if we can marry the two, I think we would both win, which I think was the opening part of my comment.

Let me just end on this. You propose, in essence, some lengthy time frames for reallocating government encumbered operations but you also state that you can accommodate requests for additional government users in as few as 9 days. And the question would be, why can't NTIA accomplish the moves in shorter time frames? Is it availability of equipment or what is the holdup?

Mr. STRICKLING. Right. So the 9 days is when we get a request to assign spectrum to an agency. Presumably that agency already has the equipment it needs. It is simply seeking an authorization to install equipment in a particular geographic location.

Mr. SHIMKUS. And I guess I say we shouldn't—I mean, you are assuming and I have learned a long time that maybe we shouldn't assume; maybe we ought to know if they have the equipment to be able to use if you can grant that in 9 days.

Mr. STRICKLING. Now, when they need to move, when we are talking about taking all of the microwave circuits that all of these agencies have and moving them out of 1755 to 1850, now we are talking about an acquisition by all of these agencies of new equipment and, in effect, going in and taking out the old equipment, installing new equipment.

In some cases, these circuits are in very inaccessible locations. All told, we have tens of thousands of these circuits overall in our assignment database. I think we have roughly between one and 2000 in the 1755 to 1850 band, and so it is question of resources and time, and that is just for the microwave, which was one of the pictures I used in my slide deck.

Mr. SHIMKUS. Thank you very much. Thank you, Mr. Chairman.

Mr. WALDEN. And I think a good example of that is DTV conversion and how long that took and how complicated that was is another example.

Mr. STRICKLING. And if I could point out, even when the commercial side tries to relocate, they don't do it very quickly themselves. I mean, we have just been through with Sprint/Nextel was involved in roughly 2 GHz, getting electronic news organization to move. That was a process that started I think back in 2006, 2007, and it is still not done.

Mr. SHIMKUS. But they lose market share. They lose stock price. If they don't move, there is a big hammer on them.

Mr. WALDEN. Different incentive process.

Now, look to the gentleman from New Hampshire, Mr. Bass, for his time.

Mr. BASS. Mr. Chairman, I want to thank you for having this hearing. I apologize for being a little late today. I will pass on questions at this time.

Mr. WALDEN. Then I would turn to the gentleman from Louisiana, Mr. Scalise, for five.

Mr. SCALISE. Thank you, Mr. Chairman. Appreciate the hearing.

Mr. Strickling, appreciate you coming here, too.

The fast-track evaluation report had recommended a total of 115 MHz be made available for commercial use within 5 years. Can you kind of expand upon if there are any measurable goals, any kind of concrete things that y'all have put in place to achieve that?

Mr. STRICKLING. Well, yes. We believe that that spectrum can be reallocated at commercial use within 5 years. It is, though, up to the FCC to make that happen. We have sent—I think in January this year we sent a formal request to the FCC to proceed with that reallocation. They will have to conduct a proceeding to lay out the terms of how that spectrum will be made available. They will have to conduct whatever auction would be undertaken should they choose to auction it, and so that is really out of our control at this point.

Mr. SCALISE. So from NTIA's perspective, there is nothing else that y'all can do to see that that is met? It is up to the FCC at this point; there is nothing else measurable that you can do?

Mr. STRICKLING. They have the authority. We will support them in any way we can, but yes, it is theirs now.

Mr. SCALISE. OK. Thanks. In your testimony, you talk about the GAO report that had been critical of some of the agency's spectrum management plan as it relates to at least NTIA and how it is going about things, and you talk in there about some of the things that you think need to be done to improve. I guess if an agency could just tell you that they still need their spectrum, then that is good enough, that is all you can go buy, and it seems like you are indicating there should be a higher bar that an agency has to prove that it still needs that spectrum, as opposed to saying they just want it. And we all see how Federal agencies, nature of the beast, once they get something, whether it is a budget request or something else, when you try to chop it away, they say they can't do without it, and all of the sudden, you take something away, and they manage to do with what they have.

And so if about agency tells you and you are managing their plan but that you might have some limitations, if they tell you, well, I still need that, right now is it that all that you can go by is their attestation that that is something they need as opposed to maybe requiring a higher bar to prove that they still need it because in some cases, maybe they have got it and they just don't want to let it go and they could let it go if there was some higher requirements. If you can kind of touch on the GAO criticism and then your response, it seems like you were indicating some policy changes that could be made to improve that.

Mr. STRICKLING. Yes. The GAO suggested that we should perhaps consider requiring, you know, sworn to statements from the agency either requesting a new assignment or seeking to continue an existing assignment and directed us to—or suggested we should consult with the agencies that form the IRAC with us to manage all of this spectrum. We are in the process of doing just that to determine which of their recommendations make sense to implement and how quickly we can implement them.

I will say that it is in the incentive of an agency to give us accurate information, because when the next agency comes in line and is interested in using spectrum and the same band and roughly the same location, it is very important that the first agency not suffer

interference from that second use. So, because of the need to protect against interference between agencies, I think every agency has a pretty strong incentive to give us accurate information.

Nonetheless, the recommendations from the GAO seemed useful to us, and we are working with the other agencies to go forward and implement certain of them.

Mr. SCALISE. OK. And I am going to get your take, as you look at all Federal agencies' use of spectrum, there is a lot of review right now by the FCC and others regarding LightSquared and how these issues with some of the other users of the spectrum near theirs can possibly be worked out. Is it something that is reconcilable from your view as it relates to Federal agencies? Especially, is this something that you see a reconcilable solution short of some kind of major sort of interference with FCC and how are you working with them on that?

Mr. STRICKLING. With respect to the LightSquared situation, the FCC in its waiver order from last January or February indicated it would only move forward and allow LightSquared to commence commercial operations after consulting with us and after reviewing a wealth of testing that has been conducted over the last several months. Those testing reports are just coming in now. My folks are in the process of evaluating those to determine at what point LightSquared might be allowed to go into commercial operation and under what condition.

I think the one conclusion everyone, including LightSquared, has reached so far is that their original operational plan is not going to be one that they can pursue because of the interference it will cause to GPS receivers, and we are in the process now of evaluating the test data to determine what are the options for a different form of operation by LightSquared.

Mr. SCALISE. Do you know when you will have those recommendations?

Mr. STRICKLING. Do I know when we will have those recommendations? The FCC has put the test reports it has received out for public comment. I am not sure what the close date is for that. Our people, my experts, are looking at the data now. We will certainly want to inform our conclusions from whatever public comment there is on that. So I think we are still a month or two away.

Mr. SCALISE. Thank you, Mr. Chairman. That is all I have. I yield back.

Mr. TERRY [presiding]. Thank you.

The gentleman from Ohio is recognized for 5 minutes.

Mr. LATTA. Thank you very much, Mr. Chairman. Appreciate it.

And Mr. Secretary, thank you very much for being with us today.

I think that in listening to the questions from my colleagues on the committee, I think you are also hearing the same thing, that we are all very, very interested in this topic and especially when it comes to the question as to creating more jobs. And we all see what broadband can do and if we get these things out to market faster, and we have to make sure that, you know, bands are going where they are going to be going.

On the second page of your testimony, if I can just start there, you state that, "First, valuable spectrum that is currently underutilized will be freed up through voluntary incentive auctions," and I

have got legislation out there to do just that. But one of the things in talking with folks in the private sector that we all want to make sure that they are fairly compensated if someone does give up that spectrum, and sometimes, they fear, you know, if they do, there might be a little strong-arm tactics sometimes out there—that it is truly voluntary, and I was wondering if you could touch on that voluntary incentive auctions as you see them.

Mr. STRICKLING. I think along the lines that you suggested, the administration position is that these auctions, that the FCC does need this authority to conduct incentive actions and that they would be voluntary auctions.

Mr. LATTA. And let me also go on with this, and I know that Mrs. Blackburn brought this up about, especially on the private sector side, and also, I believe it was Mr. Stearns that also had a line of questions about how long it is going to take you to take that freed-up spectrum and get it out so that the private sector can be utilizing it.

You know, the cost to private industry that I am worried about—I know that other Members are worried about—is that if we are going to have this, how much time do we have to get this out to market, so you are not creating something today that—my greatest fear is when I buy a new computer at home, I never look in the paper to see what these things are on sale for because usually the week after I buy it, they are 50 percent off. And I think the same thing is happening in technology out there, that things move so quickly. And again, if you could just elaborate a little bit more how we can assure business out there that we can get this spectrum to them, so they can utilize it, so they can, you know, get it developed with, you know,—I don't care if it is the laptops or you name it, that or as in your testimony, you list the different areas that folks would be using, smartphones, tablets and laptops, but we want to make sure they can be developing it today knowing that within 18 or 20 months, it could be out there.

Mr. STRICKLING. It is a very good question. The first thing I would refer you to is the AWS-1 auction that was conducted back in 2007, I believe. A lot of that spectrum still has not been built out by the people who bought it at auction, even though they have the full ability to do so. So we are taking a long time horizon at this. We can see the growing demand. We can see that there is going to be a continuing need for more spectrum.

Our spectrum that we are identifying now, again, some of it can be made available within 5 years. Our overall target is that whatever we recommend needs to be made available within 10 years. We think that that gives it a good progression for industry to see where the additional spectrum is going to be coming from to meet their needs, but keep in mind that there is a lot of underutilized commercial spectrum out there right now.

Mr. LATTA. And with my time remaining, I want to ask you this, especially with the WiFi technology as it is becoming more popular and being embedded in more and more devices. WiFi is also considered technology that service providers are turning to in an effort to try to offload data traffic from their crowded networks. You know, what plan does the Federal Government have right now, if

any, to evaluate whether more spectrum can be made available, especially for WiFi at the 5 GHz range?

Mr. STRICKLING. The 5 GHz range is an interesting band to talk about because that is a band in which the WiFi is sharing spectrum with radar systems, including Federal Aviation Administration wind sheer radars. When that sharing was approved, the manufacturers of the WiFi equipment were given radar characteristics, you know, that the FAA was using to ensure that their equipment would not interfere with these radar systems. In fact, we have found instances where that is happening, where there is interference, and when you are dealing with wind sheer radars, you don't want to get into a situation where something might happen to disable those systems. They are very important to the safety of human life in terms of the planes that could be affected by wind sheer. So we are learning a lot about sharing as a result of this.

For example, the FAA now would like to modernize its radar systems so they will now have different characteristics that will affect those WiFi sets in a different way than the original designs. Yet how do you get the WiFi industry to go in and modify its designs to accommodate an upgrade in the modernization that our FAA feels is necessary to take, again, to protect human life in airplanes?

So we are dealing with a whole variety of these issues and trying to learn from them because this is the wave of the future. We are going to have to find more and more of these opportunities where the commercial use can coexist with the government use, and we have to find ways to minimize and prevent harmful interference from taking place.

Mr. LATTA. Thank you.

Mr. Chairman, I see my time has expire and I yield back.

Mr. STEARNS [presiding]. Thank you. Well, we have another—Charlie, have you thought of a question?

All right. Well, that concludes—that was your last chance to keep Mr. Strickling here for 5 more minutes. So then that concludes all of the questioning, Mr. Strickling.

Thank you for being up here. It has been a very informative hearing. We are adjourned.

[Whereupon, at 3:24 p.m., the subcommittee was adjourned.]

[Material submitted for inclusion in the record follows:]

PREPARED STATEMENT OF HON. FRED UPTON

Today's hearing is the latest in a series on how good spectrum policy can expand wireless broadband, promote an interoperable public safety broadband network, create needed jobs, and reduce the deficit. This hearing will focus on the use of spectrum by the federal government.

The U.S. Government is the largest single user of spectrum in the country. Everything from RADAR systems to remote environmental sensors are examples of government wireless spectrum use. The questions for us today are "how can we ensure that the government uses spectrum in the most efficient way possible and what spectrum can be cleared for reassignment and auction to commercial uses?"

I applaud Assistant Secretary Strickling and his staff at the NTIA for beginning this difficult task and identifying spectrum for potential reassignment in its 5- and 10-year spectrum plans. This is a good start to the process, and I look forward to working together with the NTIA and my friends on the other side of the aisle as we explore opportunities to make the most of the spectrum. Spectrum policy can play a critical role in creating jobs and reducing the deficit; reassigning spectrum from government uses to the commercial sector is a tough but critical step in this process. I thank Assistant Secretary Strickling for his testimony today and look for-

ward to hearing his approach to the challenges and opportunities of spectrum reassignment.

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