

**PROMOTING BROADBAND, JOBS, AND ECONOMIC  
GROWTH THROUGH COMMERCIAL SPECTRUM  
AUCTIONS**

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**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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## **PROMOTING BROADBAND, JOBS, AND ECONOMIC GROWTH THROUGH COMMERCIAL SPECTRUM AUCTIONS**

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**WEDNESDAY, JUNE 1, 2011**

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

The subcommittee met, pursuant to call, at 12:03 p.m., in room 2123 of the Rayburn House Office Building, Hon. Greg Walden (chairman of the subcommittee) presiding.

Members present: Representatives Walden, Terry, Stearns, Bilbray, Blackburn, Scalise, Latta, Guthrie, Kinzinger, Eshoo, Matsui, Barrow, Rush, DeGette, Dingell, and Waxman (ex officio).

Staff present: Caroline Basile, Staff Assistant; Ray Baum, Senior Policy Advisor/Director of Coalitions; Nicholas Degani, FCC Detailee; Neil Fried, Chief Counsel, Communications and Technology; Debbee Keller, Press Secretary; Carly McWilliams, Legislative Clerk; Andrew Powaleny, Press Assistant; David Redl, Counsel, Telecom; Charlotte Savercool, Executive Assistant; Alex Yergin, Legislative Clerk; Roger Sherman, Democratic Chief Counsel; Shawn Chang, Democratic Counsel; Jeff Cohen, Democratic FCC Detailee; Sarah Fisher, Democratic Policy Analyst; Phil Barnett, Democratic Staff Director; and Alex Reynolds, Democratic Legal Intern.

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

Mr. WALDEN. I would like to call the Subcommittee on Communications and Technology to order, and begin our hearing on "Promoting Broadband, Jobs, and Economic Growth Through Commercial Spectrum Auctions," and welcome all of our witnesses who are here today.

Spectrum legislation presents a tremendous opportunity to promote wireless broadband to spur economic growth, to create jobs, and generate significant revenue for the American taxpayer. This hearing will focus not only on how we might advance our goals by auctioning currently available spectrum, but also how we might create a marketplace where licenses can voluntarily return spectrum for broadband in exchange for a share of auction proceedings.

The communications industry in America is in a time of massive change. Americans' voracious appetite for mobility has made wireless service an overwhelmingly popular way for Americans to stay

connected. In fact, nearly one in four Americans has cut the cord, as it were, relying solely on wireless for their voice communications needs. Similarly, wireless is the fastest growing area of broadband connectivity. The convenience of mobility that moved us towards wireless voice is having the same effect in the broadband arena.

Last week we had our hearing on public safety spectrum, and I continue to have concerns that reallocating the D block rather than auctioning it may be a mistake. The Advanced Wireless Services 3 spectrum is another block already available for auction, although many believe it would best be paired with spectrum currently occupied by federal users. All of this spectrum needs to be part of the discussion.

Another avenue for consideration is voluntary incentive auctions, something that both the FCC's National Broadband Plan and the President's budget identify. Current license holders, such as some television broadcasters and satellite operators, might be willing to relinquish spectrum and use the auction proceeds to fund operations of new innovative ventures. For example, the DTV transition has allowed broadcasters to transmit in high-definition and add additional over-the-air channels. Additional funding could help pay for expanded mobile, Internet, and even broadband offerings. We can, and should, act to preserve and promote this important service.

I support incentive auctions. But any incentive auction in which a licensee forfeits spectrum rights must be voluntary. This is not only good spectrum policy, it is good economic policy. Incentive auctions help match willing buyers and willing sellers. If a broadcast station values its spectrum more than a potential wireless broadband provider is willing to pay, the station will not be forced off the air. However, as Mr. Ellis will attest in his testimony today, there are broadcasters interested in participating in incentive auctions.

This opportunity for broadcasters presents opportunities for our Nation's economy, as well. Broadcasters who agree to surrender their licenses through an incentive auction, or those who choose to only return a portion of the license and channel share with another broadcaster, could provide the U.S. government with the opportunity to re-auction their licenses to wireless providers who desperately need additional spectrum to meet consumer demand. Those auctions will generate revenue for the Treasury for debt reduction. Moreover, they will help create badly needed jobs. Build out of wireless networks is an infrastructure project that requires the labor of Americans across a broad cross-section of geography, education, and skill levels. And of course increased wireless broadband will boost productivity and create new and innovative lines of business.

The wireless industry's track record for innovation is second-to-none. But wireless is not the sole venue for innovation. As we move forward with additional changes to the broadcast television service, we should work with broadcasters to identify regulations that are hindering additional innovation within their service. Over-the-air broadcasting remains a vital and important part of the communications infrastructure of America-fostering its innovation is in everyone's interest.

I remain confident that a properly crafted incentive auction can benefit broadcasters, whether they participate or not, as well as wireless providers, the U.S. Treasury, and the American economy. So today's hearing is designed to help explore how the auctions can be structured to ensure a positive outcome for everyone involved.

I thank the witnesses for their participation today. I look forward to your testimony and your responses to the questions that our subcommittee has.

[The prepared statement of Mr. Walden follows:]

#### PREPARED STATEMENT OF HON. GREG WALDEN

Spectrum legislation presents a tremendous opportunity to promote wireless broadband, spur economic growth, create jobs, and generate significant revenue for the American taxpayer. This hearing will focus not only on how we might advance our goals by auctioning currently available spectrum, but how we might also create a marketplace where licensees can voluntarily return spectrum for broadband in exchange for a share of the auction proceeds.

The communications industry in America is in a time of massive change. Americans' voracious appetite for mobility has made wireless service an overwhelmingly popular way for Americans to stay connected. In fact, nearly one-in-four Americans has "cut the cord," relying solely on wireless for their voice communications needs. Similarly, wireless is the fastest growing area of broadband connectivity. The convenience of mobility that moved us toward wireless voice is having the same effect in the broadband arena.

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ury, and the American economy. Today's hearing should help explore how the auctions can be structured to ensure a positive outcome for all involved. I thank the witnesses for their participation today and look forward to your testimony.

Mr. WALDEN. And with that, I would yield back my—I only have 36 seconds left. I will yield back the time and will go to Ms. Eshoo for an opening statement.

**OPENING STATEMENT OF HON. ANNA G. ESHOO, A  
REPRESENTATIVE FROM THE STATE OF CALIFORNIA**

Ms. ESHOO. Thank you, Mr. Chairman, and good afternoon everyone and thank you to all the witnesses that are here today. I am looking forward to your testimony and to the Q&A.

Today's hearing continues our in-depth examination on spectrum reform. As we evaluate ways to promote broadband, jobs, and economic growth, we should be guided by, I think, a simple principle. Use spectrum to its maximum efficiency, and be fiscally responsible in the plan that we commit to.

Thirty years ago, most Americans relied on over-the-air broadcasting as their only means for news, information, and entertainment. Then cable and satellite established an alternative vehicle for delivering television into the home, giving consumers access to hundreds of channels.

The world is changing once again, and today, broadband is enabling a new set of programming options like Hulu, Amazon Instant Video, Netflix, that can be watched at home or on the go. Voluntary incentive auctions are one such way to address the growing demand for wireless while providing a financial incentive for broadcasters wishing to give back spectrum.

Legislation developed in this subcommittee, I think, should incorporate feedback from impacted stakeholders and provide the FCC with sufficient flexibility to carry out an auction and handle the repacking process. We should also consider the significant benefits of dedicating spectrum for unlicensed use. Unlicensed spectrum has unlocked tremendous innovation, and in the coming years will drive the growth of smart grid, access to patient records in hospitals, and much, much more. By one estimate, unlicensed applications could generate between \$16 and \$37 billion per year in economic value for the U.S. economy over the course of the next 15 years.

The TV white spaces and 5 megahertz band are two areas which I hope today's witnesses will address. Our panel provides a broad range of views, and I look forward to hearing their thoughts on how best to structure a voluntary incentive auction while providing fair compensation to broadcasters who chose to relinquish their spectrum or must relocate as part of the repacking process.

And with that, I will yield the balance of my time to Representative Matsui.

Ms. MATSUI. Thank you very much, Ranking Member Eshoo, for yielding to me, and I would also like to thank the witnesses for being with us today. Thank you very much.

We all know there is a looming spectrum crisis and we must get additional spectrum into the marketplace. The FCC should have the flexibility to structure and conduct incentive auctions that

would 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 incentivizes R&D efforts and promotes unlicensed spectrum use, not only for emerging wireless technologies and applications, but also as a way to support and further advance American leadership in existing unlicensed technologies. It is important that we continue to promote policies that lead to greater innovation and the ever-evolving telecommunications and technology sectors.

And with that, I yield my time to—I yield back the balance of my time.

Mr. WALDEN. The gentlelady yields back the balance of the time, and now I would recognize the gentleman from Nebraska, 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. It is our responsibility to ensure that the process by which we allocate the lifeblood of wireless information delivery, spectrum, promotes the needs of broadband carriers while simultaneously recognizing the value of this spectrum to the existing license holders, not only for existing critical uses, but for the future innovations. This process must be fair, economically sound, and provide certainty and predictability to existing holders of spectrum licenses. By doing so, economic growth will lead to job creation, innovation can flourish, and critical broadcast resources will remain secure and available.

This hearing is a great opportunity for us to learn more about how to best structure this process. Any spectrum auction must be—must account for several important factors. First, we must ensure that we are not coercing existing license holders into giving up spectrum they wish to continue to utilize. If and when existing holders do choose to participate in either an auction or reallocation, not only must we compensate them fairly and be consistent with the spectrum's value to the existing holder; any repacking of spectrum should be done in such a way that the consumer's access to critical information and resources is not adversely affected by interference or signal degradation.

With these goals in mind, I look forward to working with my colleagues in crafting solutions. Our witnesses today here bring much expertise from across stakeholder community, and I look forward to listening and learning from them here today.

I yield back.

Mr. WALDEN. Mr. Stearns, do you have comments?

Mr. STEARNS. Thank you, Mr. Chairman. I will just take a little over a minute.

Last October, the FCC estimated that a spectrum deficit approaching 300 megahertz is likely by the year 2014, not very far away. Simply the benefit of releasing additional spectrum is unlikely to provide \$100 billion to the Treasury, not a very small fig-

ure, in fact. So I think we should, Mr. Chairman, act quickly to draft legislation that provides the FCC with authority to conduct commercial auctions so that by 2014 we will not face this crisis of shortage.

We know that the convergence of the smartphones and tablets and TVs and broadband is continuing onward, and we see that day to day. They continue to guzzle up the broadband. So the demand for these devices is increasing, and we need to get more spectrum. I would like to emphasize that the incentive auctions is the way to go, so it is truly voluntary, and when broadcasters are repacked, they should be able to maintain the same service areas that they originally held, and be compensated for switching channels.

So I look forward to our testimony, and I think everybody on the panel should provide some recommendation of what type of flexibility the FCC should have. Should Congress specify to the FCC on how to do the auction, or should the FCC be unfettered? I think that is the key question we have today.

I thank you, Mr. Chairman, for the opportunity to have my opening statement.

Mr. WALDEN. Mr. Latta or Mr. Guthrie, do you have any comments?

Mr. LATTA. Thank you very much, Mr. Chairman, I appreciate it.

Just real briefly, I thank you very much for having these hearings today. I recently introduced legislation for a voluntary incentive auction, and the revenue sharing, and we are looking at the jobs and the technology out there that we can be moving forward. Also, additional revenue then to the Treasury to reduce the deficit. I applaud you for the hearings today. Thank you.

Mr. WALDEN. Thank you. Mrs. Blackburn, do you have an opening statement you wanted to share?

#### **OPENING STATEMENT OF HON. MARSHA BLACKBURN, A REPRESENTATIVE FROM THE STATE OF TENNESSEE**

Mrs. BLACKBURN. Thank you, Mr. Chairman. I do, and I will submit my full statement for the record.

I just wanted to say, I think that when it comes to spectrum that we have to make some bold, tough decisions. I think one thing that we should all be focusing on a bit is the FCC has demonstrated that what they call a spectrum deficit approaching 300 megahertz is likely by 2014. We need to be looking at that and be serious in how we go about approaching this and resolving that need for spectrum.

I was visiting with someone last week and they were talking about how we will soon have 1 trillion devices attached to the broadband, and why it is so important for us as we look at the use of the spectrum to think in terms of how we accommodate whether it is through the line or wireless, all of the use that is coming toward us.

So I thank you for the hearing, and I yield back.

[The prepared statement of Mrs. Blackburn follows:]

#### **PREPARED STATEMENT OF HON. MARSHA BLACKBURN**

Thank you, Mr. Chairman.

Policymakers must make bold, tough decisions on spectrum.

Congress should allow for auctions and repackaging so commercial broadband can facilitate capital investment, job growth, and deficit reduction.

Instead of underutilizing spectrum to serve a diminishing number of Americans, Congress should put spectrum to its most efficient use.

Consumer demand for mobile broadband has exploded. Everyone agrees that we are facing a spectrum crisis.

The FCC has demonstrated that “a spectrum deficit approaching 300 megahertz is likely by 2014, and that the benefit of releasing additional spectrum is likely to exceed \$100 billion.”

Inaction is too costly. Let’s focus our spectrum policy on what Americans are asking for—more opportunities, jobs, and deficit reduction.

I look forward to today’s testimony.

**Mr. WALDEN.** Thank you. All time is expired for opening statements—no, we go to Mr. Waxman. I almost did that again, I am sorry. Mr. Waxman?

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

**Mr. WAXMAN.** Thank you, Mr. Chairman.

Since April 12, the Communications and Technology subcommittee has held three hearings on the spectrum policy. Last week, we focused on public safety spectrum and needs for public safety spectrum, while this week we will examine how we might make additional spectrum available for commercial broadband through incentive auctions. I am pleased that Chairman Walden and Ranking Member Eshoo are working together to focus the subcommittee’s attention on spectrum matters.

Smart spectrum policy can help improve public safety, promote broadband, create jobs, and reduce the deficit. I know members on both sides of the aisle recognize what a rare opportunity we have to accomplish several important policy goals by enacting legislation in this area.

Incentive auctions are not the only element of smart spectrum policy that we need to address. We also should consider how to utilize federal spectrum resources better, how to encourage spectrum sharing, how to maximize spectrum efficiency across all spectrum bands, and how to balance our mix of licensed and unlicensed spectrum. But authorizing the FCC to conduct incentive auctions, that should be the foundation of our spectrum policy efforts. This is a concept that has bipartisan, bicameral support. At the Energy and Commerce Committee, Representatives Barrow and Latta have both introduced measures that would grant the FCC the ability to conduct incentive auctions. It is also backed by economic experts. In April, more than 100 prominent economists with varying political perspectives wrote to President Obama to endorse incentive auctions as a good way to repurpose spectrum while minimizing transaction costs. Notably, these economists believe that Congress should give the FCC great flexibility to design appropriate auction rules to maximize the benefits of incentive auctions. They note that in 1993, Congress took the then-controversial step of authorizing spectrum auctions and allowing the FCC flexibility to design how spectrum auctions should work. The result was a huge success.

Since Congress authorized spectrum auctions, the increase in consumer welfare has been dramatic, and the economic benefits to

our Nation substantial. The system implemented by the FCC has been replicated around the world.

As we move forward towards authorizing incentive auctions, and I hope we will do so soon, we need to be wary about limiting the FCC's flexibility to design an efficient auction. We should take full advantage of the FCC's world-class expertise on auction design, and give the Agency the ability to work with auction experts to set up the best possible incentive auction. We should not micromanage the Agency in this area.

I recognize some are concerned about whether we can ensure that incentive auctions are truly voluntary. I remain confident that we can find a way to avoid unfairly disadvantaging broadcasters in this process, and I appreciate that broadcasters' stated willingness to work with us to figure this out. Broadcasters provide vital services that should not be interrupted or degraded. Our job should not be to focus on the specific legislative language that would provide—our job should be to focus on the specific legislative language that would provide assurances to broadcasters that they are not being forced to sell spectrum in the voluntary auction.

We have an excellent panel today. I look forward to hearing testimony from them. Thank you, Mr. Chairman, for recognizing me for this opening statement.

Mr. WALDEN. Thank you, Mr. Waxman. We look forward to working with you and others on both sides of the aisle on this issue.

Now I think all members have had a chance for opening statements, so we will now go to start with Mr. Todd Schurz, who is the Chief Executive Officer, President, and Director of Schurz Communications, Incorporated. We look forward to your testimony, and thank you for coming today.

You may want to push that microphone button, and just for everybody on the panel, these microphones, for those in broadcasting, you actually have to work very closely. If they float away we don't hear as well, and then the little button should light up, I think. Then the little boxes in front of you should light up and tell you as your time is running out, you will get a yellow and then a red, and then I can't tell you what happens after that. It is not pleasant.

**STATEMENTS OF TODD SCHURZ, CHIEF EXECUTIVE OFFICER, PRESIDENT, AND DIRECTOR, SCHURZ COMMUNICATIONS, INC.; BURT ELLIS, PRESIDENT, TITAN BROADCAST MANAGEMENT; CHRISTOPHER GUTTMAN-MCCABE, VICE PRESIDENT, REGULATORY AFFAIRS, CTIA—THE WIRELESS ASSOCIATION; MICHELLE P. CONNOLLY, ASSOCIATE PROFESSOR OF THE PRACTICE, DEPARTMENT OF ECONOMICS, DUKE UNIVERSITY; DEAN BRENNER, VICE PRESIDENT, GOVERNMENT AFFAIRS, QUALCOMM INCORPORATED; AND HAROLD FELD, LEGAL DIRECTOR, PUBLIC KNOWLEDGE**

**STATEMENT OF TODD SCHURZ**

Mr. SCHURZ. Thank you very much. Good afternoon, Chairman Walden, Ranking Member Eshoo, and members of the subcommittee. My name is Todd Schurz, and I am the President and CEO of Schurz Communications, based in Mishawaka, Indiana. I

am testifying today on behalf of the National Association of Broadcasters.

Schurz Communications began broadcasting in 1922, which makes me a fourth generation broadcaster. Today, we have 10 television stations and my company has a presence in 14 States, including Michigan, California, Florida, Georgia, and Pennsylvania.

The beauty of television broadcasting is its one-to-many architecture. For high demand programming, like the Super Bowl, there is no limit to how many viewers can tune in. The same programming delivered on a broadband system would overload the network. The transition to digital television has thrown open the doors of opportunity and innovation. Whereas in analog, I can only provide a single stream of programming; today with digital, I can provide that same programming in high definition, and at the same time, offer additional multicast channels and mobile DTV.

Hundreds of broadcasters are taking advantage of new multicast opportunities, providing viewers with niche foreign language programming, religious programming, emergency local weather information, and even high school sports. The Bounce TV network recently launched by majority owners Martin Luther King, III and Andrew Young is the country's first broadcast network aimed at African American audiences. It is set to debut this fall on many multicast channels.

Going digital has also delivered on the promise of mobile television. With mobile DTV, viewers can tune in to live local news, emergency information, weather, sporting events, or entertainment programs from the convenience of their car, at the beach, wherever they may be. Today, over 70 stations are offering mobile DTV service, and hundreds more are moving forward with the nationwide rollout of mobile DTV.

Since the digital television transition, our company has added local news in high definition, multilingual newscasts, and expanded weather programming in our Tornado Alley stations. All of this is available for free.

The future offers additional possibility, such as data casting and 3D TV. Broadcasters want to make sure that viewers continue to be the beneficiaries of broadcast innovation, and innovation is necessary for us to stay competitive with an ever-growing number of new competitors.

Now remember, it was just 2 years ago that television broadcasters completed the digital television transition. As part of the DTV transition, television broadcasters returned 108 megahertz of spectrum, nearly 30 percent of our spectrum. This freed up spectrum for both public safety and new commercial wireless services. But as part of that give-back, the FCC repacked broadcasters under fewer channels, which is complex and disruptive for our viewers.

Now, just a couple of years later, the FCC has returned to broadcasters, asking us to do it again and asking for another 40 percent of our spectrum. We are committed to being a part of the broadband solution, but there is only so much that the laws of physics will allow us to do without crippling our ability to serve our local communities, now and in the future.

Broadcasters have never objected to truly voluntary incentive auctions, but we do feel strongly that protections need to be built into the spectrum legislation to ensure the future competitiveness and viability of local television broadcasting.

Here are four important safeguards.

One, no broadcaster should be forced to relocate to an inferior spectrum band. Two, any repacking by the FCC is to protect viewers by maintaining the current reach of a broadcaster's signal. Three, no station should be subjected to increased interference, and four, broadcasters should be held harmless from the cost of repacking.

Importantly in the drive to advance broadband and relieve network congestion, you cannot and should not focus only on the spectrum supply. There also needs to be a comprehensive examination of how we can capture more efficiencies from wireless carriers in the consumer electronics industry, including cell splitting and wi-fi technology, improved receivers, and—to voice over Internet protocol. We all know that the pace of technology is unrelenting, and tomorrow's innovations will help solve many of the anticipated wireless capacity issues.

In conclusion, we appreciate the committee's thoughtful and deliberate approach to the spectrum issue. Remember, once we reallocate the spectrum, once broadcasters who want to continue to provide service are repacked in a harmful way, there is no going back. We get only one shot at this. We need to do it right to ensure that viewers do not lose access to the news, entertainment, and vital emergency programming that broadcasters provide.

I am as excited about broadcasting's future as we are proud of our heritage. Our company has no plans to return our spectrum. For that reason, I ask that any spectrum legislation crafted to protect our ability to continue to serve the viewers of our local communities.

Thank you, and I would welcome any questions.

[The prepared statement of Mr. Schurz follows:]



**Hearing on "Promoting Broadband, Jobs and Economic Growth Through  
Commercial Spectrum Auctions"**  
**United States House of Representatives**  
**Energy and Commerce Committee**  
**Subcommittee on Communications and Technology**

June 1, 2011

**Statement of Todd F. Schurz**  
**President and CEO, Schurz Communications, Inc.**  
**On Behalf of the**  
**National Association of Broadcasters**

Good morning Chairman Walden, Ranking Member Eshoo, and the members of the Subcommittee. Thank you for the invitation to testify before you today about the important issues surrounding spectrum auctions and the nation's broader spectrum policy. I am Todd Schurz, President and CEO of Schurz Communications, and I am appearing before you today on behalf of the National Association of Broadcasters. NAB is a nonprofit trade association that advocates on behalf of local radio and television stations and broadcast networks before Congress, the Federal Communications Commission ("FCC") and other federal agencies, and the Courts.

Schurz Communications owns television and radio stations in six states. We also own cable systems in Maryland and Florida, publish newspapers, and are an investor in 4G wireless broadband services as well. As a broadcaster, a cable operator, a broadband Internet service provider, and a wireless broadband investor, we know the value of innovation in all of our lines of business. Schurz understands bandwidth constraints and the necessity for efficiencies needed to provide new, innovative, services like HD, 3D and high speed data to consumers at affordable prices.

I am also a member of the board of the CBS Television Networks Affiliates Association. The CBS Television Network Affiliates Association represents the 180 independently owned and operated television stations that are affiliated with the CBS Television Network. These stations are strongly committed to local journalism and to other local services. They seek to maintain, strengthen, and innovate the important local role played by local CBS affiliates. As with the television stations that Schurz operates, spectrum is the oxygen they need to provide these essential services.

At Schurz, each one of our television stations is invested in its community and strives to serve it every day with locally-responsive programming, including local news and information on emergencies and severe weather events. Spectrum is the lifeblood of our efforts, and it is essential to our ability to innovate in the future. We use multicast channels to provide additional diversity of choice to our communities of license, and we are aggressively pursuing the deployment of Mobile DTV service. Mobile, in particular, is a priority for Schurz -- we were a founding member of the Mobile 500 Alliance, which will roll out mobile service across the country, as well as the Open Mobile Video Coalition that represents the industry in launching this exciting new service.

Schurz plans to be a broadcast company for the long run. We are a fifth-generation family business with a long-term perspective – we began in radio in 1922 and television in 1952. We will be serving our communities on broadcast spectrum long after any auctions take place, should Congress choose to authorize them, and we are looking toward a long future of service to our communities. In the future we envision, we will innovate across multiple platforms to serve our viewers – high definition, multicast, mobile, and new technologies such as 3D and other advanced services. This promise cannot be realized if a post-auction process diminishes service areas or prevents us from effectively serving our viewers. In the communities we serve, in tornado alley and elsewhere, maximizing service is not a luxury – it can be a matter of life or death. With other broadcasters, we regularly deliver life-saving messages to those who receive our broadcast services over the air and through other video

platforms, and, when the storms pass, Schurz broadcast stations play key roles in our communities' recovery.

NAB is confident that this Subcommittee recognizes the vital services, including public safety services, provided by our nation's system of local television broadcasting. No other information platform can match the reach, reliability, or efficiency of free, over-the-air broadcasting. Broadcasting serves as the backbone of our information and entertainment ecosystem. Whether delivered directly to viewers over-the-air or retransmitted to homes by cable, wire, satellite, or the Internet, local broadcasting is the primary source of local news among *all* Americans, and that local reporting role is becoming more important over time as newspaper circulation continues to decline. Broadcasters offer ubiquitous access to local news, sports, weather, emergency alerts and information, entertainment, and other programming.

Today, broadcasters are offering free local high definition television ("HDTV"), diverse programming on multicast channels, and innovative new services such as mobile digital television ("mobile DTV"). Broadcasters also advance public safety by providing critical information during local and national emergencies, and mobile DTV provides a means of distributing public safety information to an unlimited number of viewers at the same time, even when cellular networks go down or experience delays. It has even been observed that "homeland security depends on

broadcast" because of this ability to blanket "an unlimited number of users with the same information" simultaneously, without "clogs."<sup>1</sup>

Expanding access to broadband, including access to mobile wireless communications services, is a worthy goal. NAB supports that goal, and we believe that it can and should be achieved without compromising the public's existing broadcast service or the public's ability to benefit from innovative and competitive services that broadcasters will provide in the future. We pledge to continue working constructively with Congress, the Administration, and the FCC to fashion a comprehensive plan for promoting the best possible broadcast and broadband systems.

At the outset, I would like to reiterate the position that we made clear nine months ago: NAB does not object to an incentive auction process that is truly voluntary in all important respects and that serves the public's interest in preserving and enhancing present and future broadcast services. For an auction process to be truly voluntary, however, broadcasters must not be coerced into participating in an incentive auction, nor should they face penalties for not participating, such as reduced interference protection, relocation to inferior channel allotments, diminished service areas, or onerous taxes in the form of spectrum fees.

I and the NAB thank Congress for its past recognition of local television broadcasting's undisputed strengths and the role it plays in the nation's local communities. In fact, it was the need to ensure viewers' continued, uninterrupted

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<sup>1</sup> Tom Wolzien, "Homeland Security Depends on Broadcast," *TVNewsCheck* (April 4, 2010) (also observing that "broadband circuits – wired or mobile – can clog up and the information-carrying data can't pass" when "many people need something at the same time").

access to local broadcast television service that led Congress, in 2009, to delay the nationwide transition to digital television for several months.<sup>2</sup> We hope that Congress will continue to recognize the key role that broadcasting plays in our nation's communications ecosystem as it moves forward with changes to our national spectrum policy.

The remainder of my testimony is in two parts. In the first part, I describe the key components of sound spectrum policy that should guide future legislative and FCC actions on commercial spectrum auctions. In the second part, I suggest concrete ways in which Congress, through legislation and its oversight authority over the FCC, should protect the public interest in efficient use of all spectrum devoted to public and private use and help ensure that Americans have both the finest broadband and the finest broadcast systems in the world.

#### **Policy Principles To Consider With Respect to Future Spectrum Auctions**

As Congress considers spectrum auctions and related issues, it should be guided by principles that protect the interests of the American public. These principles will help to ensure that American consumers do not lose out on the unique and varied offerings of local television broadcasters; are not deprived of broadcast television service (however delivered to the consumer) due to reduced service areas, inferior spectrum allotments, or increased interference; continue to benefit from broadcast

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<sup>2</sup> See DTV Delay Act, Pub. L. No. 111-4, 123 Stat. 112 (2009). And in connection with that transition, television broadcasters worked with the government to repack into a narrower band of spectrum and free some 108 MHz for other uses. The government, in turn, has auctioned some of the recovered spectrum to wireless service providers and allocated a portion to public safety.

innovation; and are not harmed by the imposition of spectrum taxes or other coercive measures that diminish the ability of local broadcasters to provide robust service to the public. To achieve these goals, Congress must make certain that broadcaster participation in incentive auctions is truly voluntary in all respects and that broadcasters who wish to continue to provide local service are not handicapped in doing so.

**(1) American consumers must not lose access to the digital offerings currently provided by television broadcasters.**

Stations that choose *not* to participate in an incentive auction should remain able to provide their viewers with the many offerings made possible with digital technology and the benefits of the DTV transition. These offerings include crystal-clear HDTV programming and diverse multicast programming, such as foreign-language offerings, 24-hour educational programming for children, and highly localized channels that target and serve the specific needs of individual communities. Barely one month ago, a new multicast network ("Bounce TV") aimed at serving African American audiences was announced. As one of its executives reported, "the more than 14 million African American TV households have just a few dedicated cable channels – and no over-the-air networks.... Bounce TV will fill the need for an over-the-air television network exclusively for African Americans."<sup>3</sup> The channel already has reached agreements with broadcasters in nearly 30 markets for its Fall launch, and continues to

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<sup>3</sup> Jon Lafayette, "EXCLUSIVE: Bounce TV, New Broadcast Net Aimed at African Americans, To Launch in Fall," *Broadcasting & Cable* (April 3, 2011).

negotiate with additional broadcast partners.<sup>4</sup> Many existing multicast channels also provide Spanish-language and other programming for the Hispanic community.<sup>5</sup>

Broadcasters also are rolling out innovative mobile DTV services, which enable viewers to receive live, local broadcast television programming—including local news, weather, sports, emergency information, and entertainment programming—on an “on the go” basis on mobile-DTV capable devices (including hand-held devices, mobile phones, and laptop and tablet computers). Over 70 stations have commenced offering mobile DTV service, and hundreds of stations across the country have announced plans to continue the nationwide roll-out of mobile DTV in the near-term. Mobile DTV is a reliable and spectrally efficient means of disseminating emergency information to viewers. Following the recent earthquake and tsunami in Japan, residents reported that the country’s mobile television service was a lifeline source of information, particularly in the wake of cellular network and power outages.<sup>6</sup> For high-demand live programming, such as NFL football games and other major sporting events, mobile DTV’s one-to-

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<sup>4</sup> Harry A. Jessell, “Bounce Set to Jump Into the Multicast Game,” *TVNewsCheck* (May 10, 2011), available at <http://www.tvnewscheck.com/article/2011/05/10/51130/bounce-set-to-jump-into-the-multicast-game>.

<sup>5</sup> See Justin Nielson, “TV Stations Multiplatform Analysis ‘11 Update: Multicasting Expands Programming Options, Mobile DTV Goes Live,” *Broadcast Investor* (SNL Kagan, Jan. 27, 2011) (as of end of 2010, 71% of commercial television stations were multicasting, “doubling the channel options for viewers with 1,240 additional digital channels, of which 142 are Spanish-language network affiliates”).

<sup>6</sup> See, e.g., Michael Plugh, “What I Left Behind In Japan,” *Salon.com* (March 22, 2011), available at [http://www.salon.com/life/feature/2011/03/22/japan\\_i\\_left\\_behind/index.html](http://www.salon.com/life/feature/2011/03/22/japan_i_left_behind/index.html). See also Live Blog: Japan Earthquake, *The Wall Street Journal* (March 11, 2011, 8:06 a.m. posting of Chester Dawson) (“Unable to use cell phones, many used their smartphones to tune into television broadcasts and find out what had happened. ‘It’s very convenient being able to watch live TV when the phones are down,’ said Minoru Naito, an employee of Royal Bank of Scotland in Tokyo. ‘Otherwise, we’d have no idea what is going on.’”).

many architecture provides distribution means and quality better than wireless broadband systems could ever provide. These new and innovative services provide unique benefits to consumers and much-needed competition in the video marketplace, including in the growing mobile video marketplace.

Stations should not be deprived of the ability to offer these services to their viewers through the incentive auction process or through the "repacking" of broadcasters into a smaller television spectrum band following an auction. Accordingly, any legislation that authorizes incentive auctions should ensure that broadcasters' participation is truly voluntary, and should, at a minimum, provide for the following:

- *Broadcasters who are willing to participate in an incentive auction should be permitted to do so in exchange for a share of auction proceeds.* At a minimum, a broadcaster should be able to set a "reserve price" for agreeing to participate in the auction (that is, the minimum amount of compensation for which the broadcaster voluntarily would incur the direct and opportunity costs of giving up all of its spectrum, channel-sharing, or moving to the VHF spectrum band).
- *Legislation should ensure that stations are not forced to share channels, move to the VHF spectrum band, or convert to a cellularized architecture.* Congress should recognize that changes to existing broadcast licenses, such as channel-sharing (arrangements whereby more than one broadcaster makes use of a single broadcast channel); relocation from the UHF spectrum band to the VHF band; or converting broadcasting to a cellularized transmission architecture, would impair a broadcaster's ability to provide, and viewers' ability to receive, HDTV service, multicast offerings, mobile DTV services, and other new services.
- *A station that does not want to give up its spectrum should not be compelled to do so. Any station moved to another channel because of repacking or otherwise adversely affected by an incentive auction should receive full compensation for all costs incurred.*<sup>7</sup> Participation in an incentive auction also could be coerced,

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<sup>7</sup> These costs include, but are not limited to, tower/antenna/transmitter/transmission line costs; other equipment costs; installation/construction costs; costs for upgrade/replacement/relocation of associated translator and booster stations; consumer education costs; and all other costs directly or indirectly associated with repacking. We support the creation of a "Broadcaster Relocation Fund," to be funded with the proceeds from an auction of broadcast television spectrum, and the establishment of a set date for payment of relocation costs.

or future service could be undermined, if legislation does not provide for prompt compensation to be provided to broadcasters for the costs associated with relocating their facilities to new channels and/or sites. Similarly, even though a broadcaster did not have to relocate to a new channel, that broadcaster may incur equipment modification or other costs as a result of the repacking of the broadcast bands. All such costs should be fully reimbursed by the government.

**(2) American consumers must not lose access to broadcast television services due to signal strength degradations or other impairment.**

As was described to this Committee during its April 12 spectrum hearing, a repacking of the television bands has the potential to harm, and in some cases to wholly disenfranchise, viewers. For example, changing a station's channel—particularly changing a station's channel from the UHF spectrum band to the VHF spectrum band—could substantially harm viewers' ability to receive the station's free, over-the-air broadcast programming and could impair the reception of stations' signal by cable systems that retransmit those signals to their subscribers. Such a move also could deprive the station's viewers of the ability to receive emergency information and other programming through services such as mobile DTV.

As demonstrated during the recently completed digital transition, reducing a station's power level, tower height, interference protection, and/or transmission site also could seriously harm the public's ability to receive that station's signal. In fact, this Committee heard first-hand from Bob Good, Assistant General Manager, Director of Operations, and Chief Engineer for WGAL-TV, about the problems that can occur for a local station from broadcast band repacking. WGAL continues to struggle with the technical and service impacts of being repacked during the DTV transition, and viewer relationships with that station have been impaired for nearly two years. And as Bob pointed out to this Committee, he is not sure that WGAL ever will be able to serve all of the viewers who could see WGAL's signal before the DTV transition.

Stations that choose not to participate in a voluntary incentive auction must not be subjected to degradation of their service areas or reduced interference protections. Relatedly, Congress should ensure that any move of a television station from the UHF spectrum band to the VHF spectrum band (or from the high VHF spectrum band to the low VHF spectrum band) is done solely on a voluntary basis. Without such protections in any spectrum auction legislation, viewers would be at risk of serious service disruptions and permanent losses to their service. Further, without such protection, the risk of these harms could compel stations to participate in an incentive auction, although they would not do so if they were assured that their service areas and population coverage would not be degraded, interference protections were preserved, and their community of license maintained.

We also note that many viewers receive the programming of full-power broadcast stations through the signals of low-power translator and booster stations, both in rural areas and in urban areas. NAB urges Congress to provide for protection of these stations, ensuring, just like for full-power stations, that they are able to replicate their service to the public following any repacking of the television broadcast band.<sup>8</sup>

**(3) Consumers must continue to benefit from video innovation.**

Broadcasting's "one to many" architecture provides the most spectrally efficient means of delivering high quality local programming to viewers, whether those viewers are using wide-screen HDTV television sets or mobile-DTV-enabled handheld

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<sup>8</sup> A repacking, if it occurs, should be geared towards minimizing service disruptions and maximizing the public's broadcast television service, including by accommodating VHF to UHF channel moves, if desired by current VHF stations.

devices. Broadcasting and wireless broadband are *complementary*, not "either/or," communications systems. In this regard, NAB notes two important facts: (1) two-thirds of the projected new wireless demand is for distribution of mobile video services<sup>9</sup> and (2) broadcast programming is by far the most popular programming for American viewers—in the 2009-2010 television season, broadcast programming represented 98 out of the top 100 programs.<sup>10</sup> Broadcasters are well-positioned to meet mobile video demand in a spectrally-efficient manner, and can help to offset capacity demands made on the networks of wireless Internet providers. Thus, broadcasting is an asset not just for those viewers that rely directly on broadcast services but also for wireless Internet providers and their customers, who will benefit due to mobile DTV's ability to "off-load" high-demand content and free up network capacity. And additional innovations are on their way, including delivery of on-demand programming.

For broadcasters to continue to bring these services to the public, and for broadcasters and investors to invest in developing and rolling out innovative new services, broadcasters need assurances that they will be able to depend on their spectrum allocations in the future. Mere months after completing the transition to digital television and narrowing the television band by some 108 megahertz of spectrum, broadcasters now face new proposals to reallocate up to 120 MHz of additional spectrum and to require additional costly and disruptive changes to their channel

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<sup>9</sup> Cisco recently forecast that "[t]wo-thirds of the world's mobile data traffic will be video by 2015." *Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2010–2015*, at 2.

<sup>10</sup> Broadcast programs were also 302 of the top 312 programs. TVB, "TV Basics" at 11, available online at: [http://www.tvb.org/media/file/TV\\_Basics.pdf](http://www.tvb.org/media/file/TV_Basics.pdf).

assignments. Uncertainty with respect to the availability of spectrum for broadcast services, and the instability of the broadcast spectrum allocation generally, complicates the ability of local broadcasters to grow, invest, innovate, and hire new workers, to the detriment of the public. Congress must ensure that broadcasters can depend on their spectrum allocations for many years into the future without facing additional threats to their continued spectrum use. Thus, any legislation on incentive auctions should include a sunset on the authority of the FCC to use those auctions to repurpose broadcast spectrum and further protections against additional reallocations of broadcast spectrum to other services.

**(4) Americans must not lose access to quality local television because of new spectrum taxes or other coercive measures.**

Onerous new spectrum taxes would make it increasingly difficult for stations to finance local programming, operations, and newsgathering efforts. Spectrum taxes would undermine the public's local broadcasting service, and Congress therefore should ensure from the outset that stations that choose to continue broadcasting will not be subject to such taxes. Indeed, the prospect of burdensome new spectrum taxes could coerce stations into participating in an incentive auction.

Congress also should prohibit other measures that would undermine the public's broadcast service and that could pressure stations into participating in an incentive auction. As described above, such measures would include forced channel-sharing and forced moves from UHF to VHF channels, or losses in service area, signal contour, population coverage, or interference protections. Participation in an incentive auction also could be coerced, or future service could be undermined, if legislation does not provide for prompt compensation to be provided to broadcasters for the costs

associated with relocating their facilities to new channels and/or sites. Finally, legislation also should clarify that broadcasters that do choose to participate in an incentive auction will be permitted to set reserve prices and will be compensated promptly after the auction is completed.

#### **A Roadmap For The Future of Spectrum Policy**

The reality is that spectrum auctions are just one part of a broader debate about how the Federal government allocates spectrum amongst competing services. Using legislation and its oversight authority over the FCC, Congress should ensure that the FCC employs a holistic approach that considers the many interrelated issues implicated by its spectrum policies and proposals. In comments that it filed in March with the FCC, NAB outlined a five-part roadmap for the future of spectrum policy that I summarize below. The roadmap includes constructive, concrete steps that will help in achieving Congress's and the Administration's overarching goals of expanding broadband access without compromising the public's local television service.<sup>11</sup>

**(1) Assess the wireless industry's capability to deploy resources more effectively.**

A key first step for addressing the capacity demands of wireless services is to determine how various technologies and techniques could enhance the ability of the wireless industry to use its current spectrum holdings more efficiently. An overemphasis on spectrum reallocation is counterproductive and could harm

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<sup>11</sup> Comments of NAB and the Association for Maximum Service Television, Inc., Innovation in the Broadcast Television Bands: Allocations, Channel Sharing and Improvements to VHF, ET Docket No. 10-235 (March 18, 2011). See also Reply Comments of NAB and the Association of Maximum Service Television, Inc., Innovation in the Broadcast Television Bands: Allocations, Channel Sharing and Improvements to VHF, ET Docket No. 10-235 (April 25, 2011).

consumers, and we support legislation that would require an open-minded and frank assessment of how the wireless industry can improve its system capacity.<sup>12</sup> Some possibilities for deploying existing wireless spectrum more efficiently include upgrading network technology, adopting network management practices, and using more efficient consumer architecture (such as picocells, femtocells, and wi-fi). And other wireless carriers are moving forward with market-based means of addressing their projected future spectrum needs, as AT&T's proposed acquisition of T-Mobile shows.<sup>13</sup> In addition, as described above, broadcast architecture can play an important and complementary role in our communications infrastructure. Congress should ensure that broadcasting's spectrally-efficient role is leveraged, not minimized, in order to meet the communications needs of the future.

Congress also should ensure that the FCC critically tests the wireless industry's spectrum needs projections. A key factor in projected mobile data growth rates is the spread of smartphones, the market for which is approaching saturation. Thus, a recent Cisco Visual Networking Index analysis predicts that growth rates in mobile data will fall by 60% to 80% over the coming years.<sup>14</sup> In light of such projections,

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<sup>12</sup> See the Reforming Airwaves by Developing Incentives and Opportunistic Sharing Act ("RADIOS Act"), S. 455, 112th Cong. (2011).

<sup>13</sup> See Rebecca Arbogast and David Kaut, "AT&T/T-Mo Deal Tough, But Not Unthinkable and AT&T Benefits for Even Trying," Stifel Nicolas (March 21, 2011) at 2 (noting that, if the two companies can satisfy spectrum needs by joining forces, it would reduce demand for spectrum and also possibly lower auction revenue estimates).

<sup>14</sup> David Burstein, "Cisco: U.S. Mobile Data Growth Falling 60-80%," *Fast Net News* (March 29, 2011), available online at <http://www.fastnetnews.com/a-wireless-cloud/61-w/4040-cisco-us-mobile-data-growth-falling-60-80>. See also Jonathan Healey, "Spectrum Crisis? What Spectrum Crisis?" *The Los Angeles Times* (April 1, 2011) ("A new projection by networking equipment kingpin Cisco predicts that demand for mobile bandwidth will increase at a slower and slower rate in the coming years, as the penetration of smartphones slows. That makes (continued...)")

analysts are indicating that mobile data growth rates are “manageable” if needed wireless “network upgrades” are planned and made – and that these mobile data growth “numbers certainly don’t suggest a ‘crisis.’”<sup>15</sup>

A recent report issued by Uzoma Onyeije, a former FCC staffer who focused on wireless broadband issues while at the Commission, reached similar conclusions regarding the existence of a spectrum crisis.<sup>16</sup> According to Onyeije, “Wireless carriers do not suffer from a nationwide spectrum crisis; they face a capacity crunch in a limited number of locations.”<sup>17</sup> And in fact, carriers already have a number of tools at their disposal to address capacity constraints without additional spectrum reallocation. And proper utilization of marketplace solutions, combined with rational limited changes to spectrum policy by the Commission (like reclaiming spectrum from warehousers, conducting a thorough spectrum inventory, increasing licensee flexibility, and establishing receiver standards), “will easily meet demands on wireless network capacity.”<sup>18</sup> Clearly, Congress should consider all these technological and marketplace developments, which show that there are additional ways to address wireless network

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sense.... Once everyone has an iPhone, an Android phone or the equivalent, much of the growth goes away.”).

<sup>15</sup> Burstein, “Cisco: U.S. Mobile Data Growth Falling 60-80%,” *Fast Net News*.

<sup>16</sup> Uzoma Onyeije, *Solving the Capacity Crunch: Options for Enhancing Data Capacity on Wireless Networks* (April 2011), available at [http://www.nab.org/documents/newsRoom/pdfs/042511\\_Solving\\_the\\_Capacity\\_Crunch.pdf](http://www.nab.org/documents/newsRoom/pdfs/042511_Solving_the_Capacity_Crunch.pdf)

<sup>17</sup> *Id.* at i.

<sup>18</sup> *Id.* at iii.

capacity issues that are less disruptive and less potentially harmful than wholesale spectrum reallocations.<sup>19</sup>

**(2) Undertake spectrum inventory and usage studies.**

NAB supports the proposals in numerous pieces of legislation that would require a detailed and comprehensive review of how spectrum is being used today, including measurement of actual spectrum utilization, not just licensing or build-out data.<sup>20</sup> In fact nearly a year ago, the President directed government agencies to inventory usage of spectrum allocated to them so that the Administration can better understand how the Federal government actually utilizes its spectrum.<sup>21</sup> This effort has assisted the National Telecommunications and Information Administration ("NTIA") in its effort to begin identifying federal spectrum that can be reallocated for commercial wireless use. A similar detailed review of commercial spectrum usage just makes sense

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<sup>19</sup> For example, according to James Taitlet, chief executive of American Tower Corp., a large independent owner and operator of cell sites, "AT&T and other wireless operators could *double the amount of capacity they supply with current spectrum* by investing more in new wireless equipment on existing cell towers." Spencer Ante and Amy Schatz, "Skepticism Greets AT&T Theory," *The Wall Street Journal* (April 4, 2011) (emphasis added). In fact, in announcing its intent to acquire T-Mobile, AT&T stated that the transaction would enable it to "gain cell sites equivalent to what would have taken on average five years to build without the transaction," and that the transaction would "increase AT&T's network density by approximately 30 percent in some of its most populated areas, while avoiding the need to construct additional cell towers." See <http://www.mobilizeeverything.com/home.php>

<sup>20</sup> See, e.g., the RADIOS Act and the Spectrum Inventory and Auction Act of 2011, H.R. 911, 112th Cong. (2011).

<sup>21</sup> Memorandum of June 28, 2010, "Unleashing the Wireless Broadband Revolution," 75 FED. REG. 38387 (July 1, 2010).

from an overall spectrum policy perspective, and it is not just broadcasters that are calling for such spectrum inventory/usage studies.<sup>22</sup>

A complete combined inventory of the spectrum currently managed by the FCC and NTIA would facilitate future efforts to maximize spectrum-use efficiency. Importantly, it also would help to inform the current debate over spectrum needs. It would demonstrate broadcasting's high spectral efficiency and could reveal areas where other licensees could use their spectrum holdings more efficiently. Wireless carriers have been slow to deploy much of their current spectrum holdings,<sup>23</sup> and a spectrum inventory would quantify how much additional under-utilized spectrum could be put to use in the near to immediate term future and help to avoid compromising the public's free, over-the-air broadcast service unnecessarily.

**(3) Assess the harms of reallocating spectrum from broadcasting to wireless services.**

Broadcast television service offers a diverse and competitive alternative to pay-television service, and mobile DTV is an evolving competitive alternative to other mobile video offerings. Interest in and reliance on free, over-the-air television service is increasing, as some consumers are "cutting the cord" with pay television providers and relying on the expanded digital offerings of broadcast stations supplemented with online

<sup>22</sup> See, e.g., Google Inc. Comments, Promoting More Efficient Use of Spectrum Through Dynamic Spectrum Use Technologies, ET Docket No. 10-237 (Feb. 28, 2011), at 5-7 (calling "[a] comprehensive inventory of Federal and non-Federal spectrum usage" a "necessary step.").

<sup>23</sup> See, e.g., Sam Churchill, "Phony Spectrum Scarcity," *DailyWireless.Org* (June 18, 2010) (indicating that wireless carriers are sitting on as much as \$15 billion in spectrum that has yet to be deployed); Dave Burstein, "70-90% of AT&T Spectrum Capacity Unused" (March 22, 2011), available at <http://www.fastnetnews.com/a-wireless-cloud/61-w/4193-70-90-of-atat-spectrum-capacity-unused>

video. Seven percent of current pay television subscribers are considering canceling their service, according to a recent *Consumer Reports* survey,<sup>24</sup> and Convergence Consulting Group estimates that between 2008 and the end of 2011, 2.07 million U.S. television subscribers will have cut the cord.<sup>25</sup> In 2010, the number of exclusively over-the-air television households increased, and in some communities, over-the-air viewing is highly prevalent.<sup>26</sup> Many other households that subscribe to pay-television service have additional receivers that rely on over-the-air reception. Moreover, virtually every viewer that subscribes to pay-television service relies on the retransmission of local television broadcasts for their local news and information.<sup>27</sup>

Diminishing the spectrum available for broadcast television, including for mobile DTV service, will diminish the competition and diversity of services available to American consumers. It also would lead to a slower, more expensive, and less efficient system for delivering news-oriented video content. Congress and the FCC must weigh

<sup>24</sup> Todd Spangler, "Survey: 7% of Pay-TV Subs Pondering Pulling the Plug," *Multichannel News* (April 5, 2011).

<sup>25</sup> Don Reisinger, "Study: More TV Viewers in U.S. 'Cutting the Cord,'" *CNET News* (April 6, 2011) (between 2008 and 2009, 550,000 households cut the cord and, in 2010, one million households did the same).

<sup>26</sup> See Jason Bazinet, Kristina Warmut, Michael Rollins, and Kevin Toomey, Citigroup Global Markets, "Video, Data, & Voice Distribution" (March 2, 2011), at 3 (indicating that 14.7% of households rely entirely on over-the-air service). And the Hispanic population—the most-rapidly growing population in the United States—relies heavily on over-the-air service. In major Hispanic markets such as Houston and Dallas, 44 and 50 percent of the population, respectively, relies on over-the-air television. See Comments of Univision Communications, Inc., Innovation in the Broadcast Television Bands: Allocations, Channel Sharing and Improvements to VHF, ET Docket No. 10-235 (March 18, 2011), at 2-3.

<sup>27</sup> Despite the emergence of new media platforms, local television news is in fact "the top source of news for Americans." Pew Research Center, "Understanding the Participatory News Consumer" (March 1, 2010), at 11. On a typical day, 78% of Americans get news from a local television station. *Id.* at 3.

and understand the public policy harms of reallocating spectrum away from free, over-the-air television before taking irreversible steps down that path.

**(4) Explore other means of expanding broadband access.**

NAB has encouraged the FCC to study additional means of expanding broadband access, and we urge Congress to do likewise. Some possibilities include affording current broadcast licensees with flexible spectrum usage rights and the ability to participate in the secondary spectrum markets.<sup>28</sup> Alternatives such as these deserve consideration, as they may provide a quicker and more efficient means of making additional spectrum available for wireless services.

**(5) Proceed on a comprehensive and holistic basis.**

Meeting the broadband and broadcast needs of the future will not be a simple task. The FCC and stakeholders will need to consider and address numerous issues as we move forward. Not only are the issues complex, they are interrelated. As it oversees the FCC in this process, Congress should ensure that the FCC keeps the broader picture in mind. For example, as described above, incentive auction procedures cannot be considered in a vacuum. The incentive auction is integrally related to other proposals, such as those concerning channel sharing and repacking of the broadcast television band. Congress should also consider the extent to which

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<sup>28</sup> Economists and policy analysts have increasingly come to agree that flexible rights for licensees, coupled with a vibrant secondary market for these rights, are the most efficient way to repurpose spectrum. See, e.g., Jeffrey A. Eisenach, Ph.D., *Spectrum Reallocation and the National Broadband Plan* (Oct. 2010). Indeed, the FCC has acknowledged that its own regulatory restrictions have “limited [broadcasters’] flexibility to evolve their business model or industry structure over time in response to changing consumer preferences and habits.” FCC, “Spectrum Analysis: Options for Broadcast Spectrum” (OBI Technical Paper No. 3, June 2010), at 10.

technological advancements and other marketplace developments can solve wireless network capacity issues without wholesale, disruptive spectrum reallocations. The public deserves the benefit of a comprehensive approach in which the FCC asks the right questions and considers public comment holistically before drawing conclusions about particular issues on the basis of an incomplete or hurried process. In addition, good governance requires transparency for the FCC's proposals for repacking and conducting the incentive auction, as well as for the technical tools it intends to use to implement these proposals.<sup>29</sup>

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NAB appreciates Congress's leadership on these important spectrum policy issues. We stand ready to participate constructively in this process to ensure that the American public's broadcast service, including free, over-the-air television service and innovative new offerings such as mobile DTV, remains viable and vital; to ensure that any incentive auction and spectrum reallocation process is truly voluntary; and to promote action based on sound spectrum management principles that explore all options to address future capacity needs. The public's interest in a robust broadcasting system, including the free, local, and competitive service that it provides, is at stake.

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<sup>29</sup> According to the FCC, its "Allotment Optimization Model" is essential to determining "how many stations in which markets could participate voluntarily in an incentive auction in order to make progress towards freeing 120 megahertz with the minimal possible impact on service areas and consumers, or potentially develop[ing] alternative scenarios to meet the spectrum objective." FCC, "Spectrum Analysis: Options for Broadcast Spectrum" (OBI Technical Paper No. 3, June 2010) at 5. This model is not yet completed and has not been released to the public.

Mr. WALDEN. Mr. Schurz, thank you for your testimony, and for your family's long history of serving your communities.

Now I would like to go to Mr. Burt Ellis, who is President of Titan Broadcast Management. Mr. Ellis, we welcome you here today and look forward to your testimony as well.

#### **STATEMENT OF BURT ELLIS**

Mr. ELLIS. Good afternoon, Congressmen and Congresswomen. My name is Burt Ellis, and I am the President of Titan Broadcasting. We currently own and/or operate 13 television stations.

The FCC would like us broadcasters to repack down to channels 14 to 30 to free up an additional 120 megahertz of spectrum. There are several major problems with this proposal.

First, there are just too many broadcast signals currently on the air and primarily, the top 10 to 20 markets, to repack into these 17 remaining UHF channels. Consequently, some small number of television stations, 75 by my count, must be purchased and shut down, presumably through a voluntary incentive-based auction. Now if Dr. Connolly and the FCC can design a reserve auction system that is to their advantage, so be it, so long as the broadcaster's decision to sell or repack is still totally voluntary. Voluntary means the FCC cannot set the selling price for these stations via cap, via percentages, or any other such valuation restriction, only via market forces.

As the chairman said, my company is under certain circumstances willing to sell the spectrum for some of our stations. We are open to this consideration. However, the FCC still needs to repack all the remaining stations, such that the stations are not impaired financially or via signal. Mr. Schurz has already addressed this, so I will not rehash that, but I stand by those concerns as well.

But finally, in my view, the FCC needs to use this whole process to provide a win/win for the broadcast industry and for Americans in general. Fortunately, the FCC and Congress does have the power to offer up two very powerful incentives to the industry that also advance the national broadband plan.

Option number one, the FCC and Congress can either mandate or use their bully pulpit to convince the wireless carriers and the handset tablet manufacturers to incorporate mobile tuners into all new handsets and tablets. This would help the broadcast industry fast launch mobile services, and not just mobile services for personal entertainment, but also mobile services that could be the basis for a national emergency alert communications network. We have incorporated plans for just such a national emergency network into the mobile 500 rollout plans that were announced only yesterday.

Now I have been told over and over and over again that this tuner option is DOA, but I just don't believe it. It would seem very simple to me to make this a condition of the wireless companies participating in the spectrum auctions, as well as in the AT&T/T-Mobile merger approval. I am sure Qualcomm, to my left, would gladly make these new chips.

Option two, the FCC can finance and facilitate the transition from our current 8 BSB broadcast modulation technology to OFDM.

A new OFDM broadcast standard would come with three huge advantages for the FCC, the broadcast industry, and the consumer. One, the FCC—OFDM would allow the FCC to much more densely repack broadcast stations, allowing more channels in each market to be used. Two, the broadcast industry—it will allow one broadcast channel to broadcast almost twice the current capability of 19.4 megabits. This would enable broadcasters to support a national LTE-based emergency alert network. Mobile broadcasting offers the best and fastest means for the U.S. to create such a national emergency network.

Third, to the consumer, OFDM allows broadcast signals on any device to be picked up by one chip. Consequently, this chip can be manufactured in large numbers very cheaply and can be imbedded in handsets, tablets, computers, and televisions. This will allow a seamless mobile viewing methodology. A person can watch a newscast, a ballgame, anything on their handset, then their tablet, then their television, in a seamless manner. They will not miss a frame of viewing. This is the holy grail of future mobile. This is what the consumer wants.

Broadcasters have a great deal to offer, but much of the current thinking seems to want to relegate us to the technology trash bin. We want to be part of the emerging digital future. The four—soon to be three, maybe—major wireless carriers already control 90 percent of the available mobile spectrum. You want to sell more of our broadcast spectrum to these wireless guys and give us broadcasters the opportunity to fully compete with them on the mobile front. If they want to go down in numbers, let us get in the game with them. Do not let them close us out of the mobile—from the mobile consumer.

All of us in the media business want to be in the mobile video business in order to survive and thrive in the future. The more competition is better for the consumer. The FCC needs to compensate broadcast stations to repack. By their own estimate, it will cost about \$1 million per station, about \$1 billion. For about \$2 billion, \$2 to \$3 billion, the stations cannot only be repacked, but can also switch over to this new OFDM technology that can support a broadcast overlay for LTE, as I said. This is the time to do both, repack and upgrade our technology, and also mandate the mobile DTV chips. Then we can have a totally mobile broadband enabled population.

With such a system in place, we broadcasters can and will create an immediately accessible mobile video network for instantaneous communications to all of our citizens in the event of a local, regional, or national emergency. Mobile broadcasting was the technology that worked in Japan during their crisis. The one-to-one architecture of the cellular system failed, but mobile broadcasting worked.

There is a win-win agenda here. I support such. Thank you.  
[The prepared statement of Mr. Ellis follows:]

### Testimony

Witness: U. Bertram Ellis, Jr.  
 Committee: House Subcommittee on Communications and Technology  
 Date: June 1, 2011

My name is Bert Ellis and I am the President of Titan Broadcasting. Along with my partners, we currently own and/or operate 13 television stations. I have also founded and operated two prior broadcast groups of 8 and 13 television stations respectively. Therefore, I have owned and or operated over 34 television stations in markets as large Los Angeles (market 2) and as small as Wilmington, NC (market 134). I have at one time or another operated an affiliate of every US-based English language broadcast network and have also operated several pure independent stations and several Hispanic stations. I have raised the capital for most of these stations or groups and am therefore intimately familiar with the economics of broadcast television operations.

I am also very active within our broadcast industry and currently serve as one of the founding Board Members of the Mobile 500 Alliance - a cooperative of some 44 broadcast groups working on plans to launch mobile television services.

I am here to address the issues of broadcast spectrum and the potential to repack the broadcast spectrum and auction off the spectrum freed up by such a process. I am here as a broadcaster that may well sell off the spectrum of some of our stations under the right conditions, but who also plans on investing further capital into and operating the majority of our stations well into the future.

I would like to make a very complicated process as simple as possible. First a little history...television broadcasters most recently gave up 108MHz of spectrum, channels 52-69, in 2009 as part of the analog to digital conversion, and we previously surrendered an additional 84MHz for channels 70-83 in 1983. In 2009 we broadcasters agreed to a voluntary repacking into channels 2-51, but in return, we were granted the right to broadcast 19.4Mbps over 6 MHz channels thereby getting the capacity to deliver HD signals and also to multicast. This was a tradeoff that broadcasters were happy to do and we did it. Everyone viewed this as a win-win.

The FCC would now like us to repack down into channels 2-31 to free up an additional 120MHz of spectrum. There are two major problems with this proposal. First, VHF channels do not work in the digital world and therefore in certain markets (mostly the Top 10 markets and a few adjacent markets) there are just too many broadcast signals currently on the air to repack into these remaining UHF channels. Consequently, some small number of television stations, 75 by my count, must be purchased and shut down, presumably through a voluntary incentive-based auction as is being proposed. This repacking can be done and the broadcast industry may support this so long as this process is totally voluntary and there are no disincentives for non-participation...none to individual station owners and none to the industry as a whole. Stations should be allowed to sell their spectrum and exit the business of television broadcasting only if they get an acceptable price. This price may or may not have anything to do with the owner's current carrying cost and/or the current "broadcast value" of the station. The auction value in this process must be that which each station owner establishes for his station or it will not be voluntary. If the FCC tries to control this valuation process with valuation caps and/or disincentives

for non-participation (i.e., spectrum fees etc) this will no longer be a voluntary process and then the entire process will break down into a litigious legislative morass. Everyone will lose.

The FCC can certainly run an auction process whereby stations submit selling bids (floor prices if you will) and if there are more stations willing to sell their spectrum than the FCC needs to buy to clear the market, then the FCC can certainly lower their overall spectrum clearance cost by accepting the bids from the lowest priced bidders. However, the spectrum auction still needs to be a process based on market forces and not compulsion.

In addition, the FCC needs to repack all of the stations in a manner such that the FCC a) does not diminish the current over the air coverage of all stations that remain on the air, b) does not increase the signal interference from adjacent channels or adjacent markets, and c) does not impair the newly repacked stations' abilities to launch new digital initiatives, most notably, mobile broadcasting. No station should be forcibly repacked into the VHF spectrum (VHF does not work for mobile broadcasting) and the FCC engineers need to carefully assess co-channel and adjacent channel interference in their repacking plan. This will not be easy.

In addition, the FCC must arrange cooperation from its regulatory counterparts in both Canada and Mexico to cause them to similarly repack at least their respective stations adjacent to our border markets...particularly Seattle, Detroit, Buffalo, and Rochester on the Canadian border and San Diego, El Paso, Yuma, and Brownsville on the Mexican border. This will require some diplomatic skill to pull off and without such the US cannot clear large portions of this broadcast spectrum nationwide. This effort should begin immediately to determine whether our neighbors are going to even consider such a proposal.

Finally, the FCC needs to use this whole process to provide a win-win for the broadcast industry and Americans in general. The stations that sell their spectrum and exit broadcasting may indeed view this as a win-win if they get to sell at a price that they think is satisfactory and not a price forced down their throat. But the remainder of the industry gets nothing of value...at best the individual stations are no worse off but the television broadcast industry will have had its spectrum reduced further and we will have set the precedent for the FCC and Congress and the wireless industries to come at us again and again to get even more spectrum. Therefore, I recommend that some offsetting advantage be offered to our industry within your legislation.

Fortunately, the FCC and Congress do have the power to offer up two very powerful incentives to the industry that also advance the National Broadband Plan.

**Option #1:** The FCC and Congress can either mandate or use their bully pulpit to convince the wireless carriers and the handset/tablet manufacturers to incorporate mobile tuners into all new handsets and tablets. This would help the broadcast industry fast-launch mobile services....and not just mobile services for personal entertainment but also mobile services that could be the basis for a nationwide emergency alert and communications network.

**Option #2:** The FCC can finance and facilitate the transition from the 8VSB modulation technology that is currently deployed by US television broadcasters to OFDM technology

similar to DVB-T2 – an international standard. Financial support for this transition to OFDM can be generated from spectrum auction revenues.

A properly defined new U.S. OFDM standard could come with 3 huge advantages for the FCC, the broadcast industry, and the consumer:

- 1) OFDM would permit the FCC to much more densely repack the broadcast stations, allowing more channels to be used. Using the existing 8VSB technology, adjacent channels cannot be used unless all stations broadcast from the same tower farm. It will be much more difficult to repack the Top 10-20 television markets with 8VSB technology
- 2) OFDM will allow one 6MHz broadcast channel to broadcast almost twice the current capability of 19.4 Mbps. This would enable broadcasters to offer software upgradable next-generation video compression, provide for a flexible/extensible architecture that could better manage high-bandwidth content distribution, and support a national LTE-based Emergency/First Responders interoperable network. Mobile broadcasting offers the best and fastest means for the US to create such a national emergency communications network.
- 3) OFDM allows broadcast signals on any device to be picked up by one chip. Consequently, this chip can be manufactured in large numbers very cheaply and can be embedded in handsets, tablets, computers, and televisions. This will allow a seamless mobile viewing methodology...a person can watch a newscast, a show, a movie, or a ball game on their handset, then their tablet, then their TV without ever missing a frame of viewing. This is the holy grail of future mobile video.

Broadcasters have a great deal to offer to the National Broadband Plan but much of the current thinking seems to relegate broadcasting to the technology trash bin. We want to continue to evolve and be an active part of the digital media future. The FCC should not strip broadcasters of our spectrum and then simply auction off this spectrum to four (soon to be 3) wireless carriers who currently own 90% of the available mobile spectrum in the US. If Congress and the FCC sell them more of our broadcast spectrum, then give us broadcasters the opportunity to fully compete with them on the mobile front. Do not let them close us out from the mobile consumer. No matter how much spectrum the government sells or allocates to these few wireless carriers, it will not be enough to handle future mobile video demand if these wireless carriers continue to deliver video on a one-to-one basis as their industry's technology is designed to do. Even the CTO of Verizon, Tony Melone, has been quoted as follows: "We're working with all of our infrastructure providers...to develop the technology to incorporate a **broadcast capability**. We think that will be a solution to this problem down the road."

Why let these few wireless carriers have this much spectrum and devote it to 4G one-to-one technologies when even they know they must develop a broadcast/multicast strategy to handle demand. Broadcasters already have this technology and the high power infrastructure to most efficiently support it. Help us develop it further. OFDM will allow us to develop even better broadcast strategies and will therefore allow us to compete even better with the wireless carriers. All of us in the media business want to be in the mobile video business in order to survive and thrive in the future. And more competition is better for the consumer.

The FCC intends to compensate broadcast stations to repack. By their own estimate, it will cost about \$1+ million per station or \$1+ billion to do this. For \$2-3 billion, stations can not only be repacked but can also switch-over to a new OFDM-based standard that can support a broadcast overlay for LTE and other services. This is the time to do both and also mandate such OFDM chips to be embedded in all handsets, tablets, computers and TV sets. Then we will have a totally mobile broadband enabled population. Furthermore, with such a system in place, we broadcasters can and will create an immediately accessible mobile video network for instantaneous communication to all of our citizens in the event of local, regional or national emergencies. Mobile broadcasting was technology by which many Japanese received critical information during their recent crisis. Their wireless system was completely overloaded with its one-to one infrastructure. Mobile broadcasting remained effective during this crisis.

We broadcasters are ready to actively participate in the National Broadband Plan. Give us some assets to further develop our business and we will repack and give up some of our spectrum and work with the FCC and the wireless industry to make the National Broadband Plan even more effective. First, Congress should mandate the installment of tuners in all new handsets and tablets to enable a pervasive mobile broadcast business with the same potential consumer penetration as wireless. Secondly, Congress should use a small part of these auction proceeds to buy out the stations that cannot be repacked, and an even smaller amount of these auction proceeds to finance both the repacking and conversion to OFDM of the remaining broadcasters so our industry can evolve and compete. Even after having done this, the lion's share of these spectrum auction proceeds can still be used by Congress to pay down the deficit and/or finance other initiatives.

There is a win-win agenda here that can be supported by the broadcasters.

Thank You.

Mr. WALDEN. Mr. Ellis, thank you for your suggestions, your testimony, and your service.

Now we will go to Mr. Christopher Guttman-McCabe, who is Vice President for Regulatory Affairs of CTIA—The Wireless Association. We appreciate your testimony today, and look forward to it. Thank you for being here.

#### **STATEMENT OF CHRISTOPHER GUTTMAN-MCCABE**

Mr. GUTTMAN-MCCABE. Sure, thank you. Good afternoon, Chairman Walden, Ranking Member Eshoo, and members of the subcommittee. On behalf of CTIA, thank you for the chance to speak to you today about promoting broadband, jobs, and economic growth through commercial spectrum auctions. CTIA believes these objectives are achievable, and mutually reinforcing. For that reason, we urge you to act at the earliest possible date to enact legislation that will authorize incentive auctions and allow additional license spectrum to be made available for commercial wireless use.

Today, we are the world's clear leader in wireless broadband. Although the United States is home to less than 5 percent of the world's population and just shy of 6 percent of global wireless subscribers, the U.S. claims more than 20 percent of global high speed wireless broadband subscribers. This leadership helps to create a competitive advantage to the United States.

But to maintain this advantage, we need to ensure that there is a sufficient pipeline of spectrum available to meet the exploding demand for wireless broadband services. We urge you to address this with dispatch. A delay puts at risk not only our world leadership in this critical industry, but also lost or delayed investment, innovation, and productivity that are critical to our Nation's economy.

The growth and the demand for mobile broadband and the corresponding need for additional spectrum has been well-documented both by the government and respective private sector parties. Even conservative estimates project U.S. mobile data traffic to grow by a factor of more than 20 between the end of last year and 2015. This demand is being driven by consumer's migration from feature phone to smartphone and tablets that while employing advances in spectral and computing efficiency, allow consumers to demand more and thus strain wireless networks to an unprecedented manner. The evolution of machine to machine communications will only exacerbate this challenge. Efficiency gains and infrastructure investment will help, but neither will be sufficient to answer the challenge we face in delivering the critical infrastructure for the economy of the 21st century.

The good news is that there are ways to help meet the need for additional spectrum. By authorizing incentive auctions and repacking the bands allocated for television broadcasting, by directing NTIA to facilitate access to bands currently occupied, but often underutilized by government, and by enacting improvements to the spectrum relocation process, Congress can provide the wireless industry with a path to help America stay ahead of its Asian and European competitors in this critical industry.

Taking these steps will produce manifest benefits to our Nation. The last two auctions produced more than \$32 billion for the United States Treasury. While I cannot project what future auc-

tions might produce, the bands discussed in my testimony have significant value and would likely be highly desired at auction. Auction revenues, however, are just one of the benefits that flow from facilitating the movement of spectrum to its highest and best use. Once spectrum is in the hands of those who value it, significant investment, entrepreneurial activity, and productivity will result.

Since 2006, CTIA's carrier members have been directly responsible for nearly \$111 billion in network investment. Because a dollar invested in wireless deployment is estimated to result in as much as \$7 to \$10 in expanded GDP, this past investment has contributed to keeping the U.S. economy afloat during a difficult economic period.

Going forward, wireless investment and this multiplier will be critical to helping create sustainable economic growth in the United States. Perhaps more importantly, unlocking additional spectrum can help to create new employment opportunities, from the forging of steel for new towers and the construction of additional cell sites to the development of new network equipment, and the writing of our next must-have application. Bringing spectrum to market will create thousands of American jobs. Some economists estimate that the job growth related to the investment in next generation wireless technologies could be as high as 200,000 new positions, and that estimate does not account for positions in adjacent fields, as wireless becomes a key input into areas such as healthcare, energy, education, transportation, and logistics.

Enabling the next generation of service and ensuring our world leadership in wireless should be a national imperative. Done properly, we can make needed spectrum available for ubiquitous mobile broadband, treat relocated broadcasters and government users fairly, produce significant revenue for the U.S. Treasury, and help grow the U.S. economy.

CTIA looks forward to working with you to achieve these objectives, and I look forward to your questions. Thank you.

[The prepared statement of Mr. Guttman-McCabe follows:]

**Testimony of  
Chris Guttman-McCabe, Vice President, Regulatory Affairs,  
CTIA – The Wireless Association®  
on “Promoting Broadband, Jobs and Economic Growth  
through Commercial Spectrum Auctions”  
Before the House Subcommittee on Communications and Technology  
June 1, 2011**

On behalf of CTIA – The Wireless Association® (“CTIA”), thank you for the opportunity to speak to you today about “Promoting Broadband, Jobs and Economic Growth through Commercial Spectrum Auctions.” CTIA believes these objectives are achievable and mutually reinforcing. For that reason, we urge you to act at the earliest possible date to enact legislation that will authorize incentive auctions and allow additional licensed spectrum to be made available for commercial wireless use.

Today, the United States is the world’s clear leader in wireless broadband. Although the United States is home to just 4.6 percent of the world’s population and 5.8 percent of global wireless subscribers, the U.S. claims 20.4 percent of global high-speed wireless broadband (3G and 4G) subscribers.<sup>1</sup> This leadership helps to create a competitive advantage for the United States, but to maintain this advantage we need to work with you to ensure that there is a sufficient pipeline of spectrum available to meet the exploding demand for wireless broadband services. We urge you to address this with dispatch, as delay puts at risk not only our world leadership in this critical industry but also lost or delayed investment, innovation, and productivity that are critical to our economy.

The growth in the demand for mobile broadband and the corresponding need for additional spectrum has been well-documented both by the government and respected private sector parties like the Yankee Group, CODA, and Kleiner Perkins. Even conservative estimates such as Cisco’s recently released Visual Networking Index project U.S. mobile data traffic to grow by a factor of 21x between the end of last year and 2015.<sup>2</sup> This demand is being driven by consumers’ migration from feature phones to smartphones and tablets that, while employing advances in spectral and computing efficiency, allow consumers to demand more and thus strain wireless networks in an unprecedented manner. The evolution of machine-to-machine

communications will only exacerbate this challenge. Efficiency gains and infrastructure investment will help, and our members are committed to both, but neither will be sufficient to answering the challenge we face in delivering what we believe is the critical infrastructure for the economy of the 21<sup>st</sup> century.

The good news is that there are ways to help meet the need for additional spectrum. By authorizing incentive auctions and repacking the bands allocated for television broadcasting, directing NTIA to facilitate access to bands currently occupied, but often underutilized, by government users, and enacting improvements to the spectrum relocation process, Congress can provide the wireless industry with a path to help America continue to stay ahead of its Asian and European competitors in this critical industry.

CTIA believes that as much as 120 MHz of spectrum for next generation wireless broadband services could be made available if Congress authorizes voluntary incentive auctions and the FCC repacks broadcasters into a new television core. Broadcasters opting to participate in incentive auctions, share channels, or adopt a cellularized architecture<sup>3</sup>, could be compensated from auction revenues. Broadcasters choosing not to participate could be held harmless in the repacking process through the allocation of a modest amount of auction revenues to relocate stations to channels from 7 to 30. Such a process would preserve over-the-air broadcasting while enabling a significant and valuable tranche of spectrum to be auctioned under a flexible use approach likely to enhance wireless broadband offerings. The incentive auction approach could, and should, apply to MSS spectrum as well.

While authorizing incentive auctions is critical, it also should not be the sole focus in the effort to create a more reliable and predictable spectrum pipeline. CTIA also urges Congress to direct NTIA to facilitate access to bands currently devoted to government users. In particular, we believe the bands between 1755 and 1850 MHz, and more specifically the bands between 1755 and 1780 MHz, especially if paired with spectrum located between 2155 and 2180 MHz, provide an excellent space for mobile broadband offerings and would be likely to command significant value for the Treasury at auction. By encouraging federal users to maximize their

efficiency and rely on commercial providers wherever possible, Congress can help ensure that additional spectrum can be repurposed for commercial use.

As federal allocations are repurposed for commercial use and auction, it also would be wise to make some adjustments to the relocation process enabled by the Commercial Spectrum Enhancement Act (CSEA) crafted by then-Subcommittee Chairman Upton during the 108<sup>th</sup> Congress. The CSEA is a significant improvement in the framework for relocating government users, but we have learned from the experience of the AWS-1 relocations that minor changes could improve the process for both the government and the private sector. Three specific improvements we urge are for the CSEA framework to be expanded to permit agencies to use relocation funds to engage in spectrum planning activities, for better pre-auction information about relocation costs and schedules to be made available, and for the agency relocation process to be subject to deadlines. These changes will enhance the efficiency and transparency associated with the relocation process, with the likely result being not only a smoother process but also enhanced auction revenues since bidders will have access to more information before going to auction.

Taking these steps will produce manifest benefits for the nation. The last two auctions, of the AWS-1 bands in 2006 and the 700 MHz bands in 2008, produced more than \$32 billion for the U.S. Treasury. While I cannot project what future auctions might produce, the bands discussed above have significant value and would likely be highly sought after at auction. Auction revenues, however, are just one of the benefits that can flow from facilitating the movement of spectrum to its highest and best use.

Once spectrum is in the hands of those who value it, significant investment, entrepreneurial activity, and productivity will result. Since 2006, CTIA's carrier members have been directly responsible for nearly \$111 billion in network investment (net of any amounts paid to acquire spectrum licenses). Because a dollar invested in wireless deployment is estimated to result in as much as \$7 to \$10 in expanded GDP,<sup>4</sup> this past investment has contributed to keeping the U.S. economy afloat during a difficult period. Going forward, wireless investment and this multiplier will be critical to helping create sustainable economic growth.

Perhaps more importantly, in this time of persistently high-unemployment, we believe that unlocking additional spectrum can help to create new employment opportunities. From the forging of steel for new towers and the construction of additional cell sites to the development of new network equipment and the writing of the next “must have” application, bringing spectrum to market will create thousands of American jobs. Some economists estimate that the job growth related to the investment in next generation wireless technologies could be as high as two-hundred thousand positions,<sup>5</sup> and that estimate does not account for positions in adjacent fields as wireless becomes a key input into areas such as health care, energy, education, transportation and logistics.

As the Chairman of the Federal Communications Commission noted in March, wireless broadband “is being adopted faster than any computing platform in history, and could surpass all prior platforms in their potential to drive economic growth and opportunity.”<sup>6</sup> Enabling the next generation of service and ensuring our world leadership in wireless should be a national imperative. Done properly, we can make needed spectrum available for ubiquitous wireless broadband, treat relocated broadcasters and government users fairly, produce significant revenue for the U.S. Treasury, and help grow the U.S. economy. CTIA looks forward to working with you to achieve these objectives.

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<sup>1</sup> Informa Telecoms and Media Group, WCIS Database, accessed May 26, 2011.

<sup>2</sup> Cisco Visual Networking Index, March 2011, at slide 9.

<sup>3</sup> See Comments of Ericsson, ET Docket 10-235, March 18, 2011, suggesting that it is possible to support TV services with 84 MHz of spectrum via LTE MBMS, in contrast to the nearly 300 MHz used by the ATSC TV broadcast system.

<sup>4</sup> Larry Summers, “Technological Opportunities, Job Creation, and Economic Growth,” Remarks at the New America Foundation, June 28, 2010. Available at <http://www.whitehouse.gov/administration/eop/nec/speeches/technological-opportunities-job-creation-economic-growth>.

<sup>5</sup> Robert Crandall and Hal Singer, “The Economic Impact of Broadband Investment,” March 2010, at 3.

<sup>6</sup> FCC Chairman Julius Genachowski, Remarks as Prepared for Delivery, CTIA Wireless 2011, March 22, 2011, at 5. Available at [http://transition.fcc.gov/Daily\\_Releases/Daily\\_Business/2011/db0322/DOC-305309A1.pdf](http://transition.fcc.gov/Daily_Releases/Daily_Business/2011/db0322/DOC-305309A1.pdf).

Mr. WALDEN. Thank you, Mr. Guttman-McCabe. We appreciate your testimony.

We are now going to turn to Dr. Michelle P. Connolly, who is an Associate Professor of the Practice, Department of Economics, at Duke University. We look forward to your comments, Dr. Connolly, and thank you for being here today.

#### **STATEMENT OF MICHELLE P. CONNOLLY**

Ms. CONNOLLY. Thank you Chairman Walden and Ranking Member Eshoo, and other members of the subcommittee. My name is Michelle Connolly. I am an associate professor of The Practice at the Department of Economics at Duke University. I also served as the chief economist at the FCC from 2006 to 2007, and then again in 2008 to 2009. I would like to note that I was serving under a Republican Administration, so my support for this proposal has nothing to do with my political affiliation. It is simply because as an economist, I believe that this is a great gain economically and socially for our economy, and it is in that capacity that I am testifying today.

From this perspective, when everyone is looking at policy, I want to make sure that the gains of choosing this new policy outweigh any costs to our economy and to our society, and specifically, we are concerned about the cost to the broadcasters, and the costs to the people who rely on over-the-air broadcasts.

So when I am looking at this, I wanted to bring a little bit of information to the discussion. Firstly, we know that over-the-air viewing is done by less than—10 percent or less of the current TV-viewing population, so we are talking about a small and declining population. Secondly, the—two of the three options that would be provided to broadcasters do not involve cessation of over-the-air broadcasting, so this would minimize any impact on television viewers. And thirdly, with an incentive auction, broadcasters will only participate if the benefits to them outweigh the costs. And to that extent, I think this will help minimize any costs to implementing this plan. And by costs, I mean welfare costs.

In terms of the benefits, there has been a lot of macroeconomic evidence that suggests that information can lead to technology has a great benefit to our macroeconomy. In the late 1990s, several studies confirmed that between 56 to 67 percent of labor productivity growth could be attributed to information communications technology. And then from 2000 to 2006, that estimate was about 38 percent.

One thing to note is that when firm level studies have been done, the gains in terms of productivity are not equally spread, so gains in terms of productivity are specific to certain communities who are able to take advantage to certain industries and certain communities who are able to take advantage of broadband. That is on the production side.

On the consumption side, of course, this is nothing—all the gains are to consumers equally and there is no region specificity to it.

I also want to talk a little bit about incentive auctions, simply because this is an area that is very complicated. I still don't understand it entirely, and I thought it might be useful to give a little bit of background on what is really being proposed here.

So the idea is that there would first be what economists would call a reverse auction for broadcasters, and in this, the FCC would specify certain actions that could be taken, they can discuss before, and the broadcasters would offer bids for being willing to undertake these different auctions, should the bid be accepted. So if the bid is accepted, they would be required to then undertake that action. If the bid is not accepted, they would not be required to take one of those three actions. And I think that this is useful for the broadcasters, because this is what makes it a voluntary action.

I was asked by the committee to try and estimate a possible range of bids that broadcasters might make. I am smart enough to know that my estimate will be incorrect, but I would estimate based on the fact that they have these options that the range might be in the range of about \$0.05 per megahertz POP at the low end, to maybe .08 megahertz POP on the high end. This is assuming that there is sufficient competition in the auction, and this is, I think, a key point. So there will be markets where there may not be—there might be a broadcaster in a channel that is in the key area that we need to have continuous spectrum. The FCC must be allowed to move people involuntarily out of that spectrum to another location, because otherwise, you will get holdouts. There won't be enough competition. Someone knows that they are placed strategically, and they can bid five times their valuation in an attempt to extract that extra money because then they know if they don't get their bid, they won't be able to be moved, and then the whole auction will serve no purpose.

So the reason why the FCC is requesting that after the bidding process occurs that they be allowed to relocate people who are still located in that key region, and compensate them economically for the cost of the move so that they aren't burdened by that is because without that, you will not get a true auction. You will not get a true competition. There—even with that, there may be other things that might interfere with the bids, but if we don't have that bidding we will get true valuation bids. There are no two ways about that, so I think that is a crucial thing to mention.

The last thing is the forward option. Once this occurs, we can estimate a supply curve that we would need to generate the amount of spectrum, conceded spectrum that the FCC would want. At that point, there is the forward option. I assume that the range of values would be at least on par with the 700 megahertz spectrum auction that we had recently, so the range might be anywhere from \$0.03 per megahertz POP to up to \$3.86 per megahertz POP. That is a huge range which shows you that markets matter. But one keeping is the more rules that are imposed on the usage for the winning bids, the lower the valuation will be, and any rules that increase uncertainty over the usage will lower the value.

So overall, I think the revenue resources to the government can be large, but dwarfing any revenue to the government I think is the economic value to our economy, and I think that will outweigh any of the gains that the government will have in revenue, but those are also greater costs.

[The prepared statement of Ms. Connolly follows:]

**STATEMENT  
OF  
MICHELLE CONNOLLY, PH.D.  
DEPARTMENT OF ECONOMICS, DUKE UNIVERSITY**

**FOR HEARING  
“PROMOTING BROADBAND, JOBS AND ECONOMIC GROWTH  
THROUGH COMMERCIAL SPECTRUM AUCTIONS.”**

**BEFORE THE  
SUBCOMMITTEE ON COMMUNICATIONS AND TECHNOLOGY  
COMMITTEE ON ENERGY AND COMMERCE  
UNITED STATES HOUSE OF REPRESENTATIVES**

**JUNE 1, 2011**

Thank you, Chairman Walden, Ranking Member Eshoo, and other members of the subcommittee for this opportunity to testify on the topic of promoting Broadband, jobs and economic growth through commercial spectrum auctions.

My name is Michelle Connolly. I am an Associate Professor of the Practice in the Economics Department and served as the Chief Economist of the FCC from 2006-2007 and again in 2008-2009. Please also note that I worked under the Republican administration and am supporting the FCC proposal because of its economic and social value and not because of any political affiliations.

It is in my capacity as an economist and someone familiar with FCC and its auction design that I am here today. The FCC is currently requesting authorization from Congress to undertake incentive auctions to allow up to 120 MHz of high quality spectrum currently used by Television (TV) broadcasters to be reallocated to a more economically beneficial use. The goal is to free up additional spectrum for broadband. Inherently this assumes that the economic and social gains to our country from gaining additional spectrum for broadband outweigh the economic and social costs of compensating TV broadcasters for voluntarily agreeing to vacate their current channels in favor of either relocation to new channels, channel sharing, or ceasing over the air transmissions.

#### **Economic and Social Benefits**

Given the fact that the TV broadcasters will only participate in this auction if the gains from participation outweigh the costs to the broadcasters and that two of the three options for the Broadcasters would not tremendously affect the availability of over the air broadcasts, incentive auctions will help to minimize the impact on broadcasters.

In terms of the economic impact of broadband, there is extensive evidence from academic research of positive effects of broadband on productivity and welfare. Macroeconomic level studies have generally focused on Information Communications Technology (ICT) and its impact on labor productivity and per capita gross domestic product (GDP). For example academic research by different authors has found that ICT contributed to between 56 to 67% of labor productivity in the U.S. in the late 1990s and 38% of labor productivity growth from 2000 to 2006.<sup>i</sup>

More disaggregated studies suggest that these observed aggregate effects are specific to particular communities and industries. In other words, the observed positive effects of broadband appear to occur in particular industries and/or communities with specific traits and do not appear to lead to productivity and growth effects in other industries/communities.<sup>ii</sup> Conversely, on the consumer side, gains are not region-specific, but are likely affected by network effects.

Broadband availability, speed, and usage are crucial to continued U.S. growth, innovation, and welfare. This means that our goals should not only be to make more spectrum available for broadband, but also that we should make it available as soon as possible. Allowing Broadcasters to voluntarily participate in a reverse-auction (“incentive auction”) and thereby receive compensation for vacating their licensed spectrum is expedient and will allow for more timely repurposing of hopefully a large amount of this premium spectrum. To this effect, I think that the current FCC proposal for incentive auctions are of great potential benefit to our economy, and further, will help generate income for the government.

#### **Incentive Auctions**

FCC has a tremendous amount of experience and expertise in the design of auctions. Still this will be a far more complex auction than held in the past and will require a great deal of research and planning. The FCC undertook similar research when it first began auctioning spectrum. This included, but not limited to, working with academic specialists in auction theory and design. I have confidence in the ability of the FCC staff to again undertake such a task. However, given that the FCC itself does not yet know exactly how to optimally execute the auction, it will need flexibility in designing the auction.

I have been asked to estimate a range of possible prices/MHz/pop for both the reverse and forward portions of an auction of the spectrum under consideration. This is a delicate proposition given that there will likely be a wide range of valuations both on the sell and the buy side.

From the perspective of the broadcasters, they will participate (if they wish) in the reverse-auction. A reverse-auction is an auction where bids reflect the price required by bidders to undertake a certain action. In this case, it will the price required by a broadcaster to be willing to

vacate their current channel. Hence, broadcasters will be bidding based on the impact of this action on their profits. Broadcasters who lose fewer profits from vacating their current bands, will be willing to move for less compensation, and hence will bid a lower price. Those who would lose greater profits and are less willing to vacate their channel will require a higher price to commit to relinquishing their channel.

Note that this reverse-auction will likely ask for different bids for offers to do different pre-specified actions. For example, the FCC may ask for bids for offers from the broadcasters to do one of three possible things: 1) channel share in the same market, 2) move to an upper VHF or lower VHF band, or 3) discontinue over the air broadcasting. The bids by a broadcaster would differ for each of these since the impact on their profits would differ based on which of these offers is accepted in the auction. Individual TV broadcasters will know their true valuation of these possible outcomes. If there is sufficient competition within a market, and the reverse-auction is designed properly, they will have the incentive to bid their true valuations.

The issue of sufficient competition within a market is not trivial in this case. In order to encourage full competition amongst TV broadcasters within a market, it is necessary that the FCC have the ability to relocate broadcasters to other channels, while compensating the broadcasters being moved for the actual costs of the move. If the FCC were not able to do so, then a broadcaster within channels that the FCC needs to clear to create enough contiguous spectrum, could hold out in an attempt to command a higher than its true valuation required for moving. By allowing the FCC to relocate broadcasters, then all broadcasters within the same market (even if located outside the primary band the FCC hopes to clear) will be competing for the lowest bid.

Since it is impossible for me to know the exact impact on profits each of these actions might have on a given Broadcaster, I cannot accurately estimate the range of bids. It is possible to estimate a wide range based on the minimal and maximal possible impact on profits. The lowest bid will be offered by broadcaster's who's profits are least affected. The highest bid will be offered by broadcasters whose profits would be greatly disrupted by these offers.

To the extent that moving to a different channel might have the least impact on profits, especially if the FCC additionally compensates for the physical costs of moving, then the lower bound on

the range is likely quite low, perhaps as low as \$.05/megahertz-pop. The upper range would occur in the markets with greatest profitability per population. Moreover, the highest bid in that market would likely occur for an offer to discontinue over the air transmission in such a market. With true valuation, that bid would be based on the contribution of over the air households to the broadcaster's overall profitability. An upper estimate of this could be estimated based on the percentage of TV viewing households that rely exclusively on over the air broadcasts. This would further assume that over the air households contribute the same profitability to a broadcaster as all other TV viewing households. Both of these assumptions are likely overestimating the potential impact of losing over the air viewers and hence are reasonable for considering an upper bound. Using the FCC's estimate for the total value of the Broadcast TV Industry of \$63.7 Billion and its estimate that in 2010 only 10 percent of all U.S. TV households watched primarily over the air broadcasts, then the upper range for bids would be \$.08/megahertz-pop.<sup>iii</sup> Of course, if there is not sufficient competition within a market, this range could go significantly higher.<sup>iv</sup>

To estimate a possible range of bids from the forward market, FCC Auction 73 (700 MHz Auction) is quite useful, since the bands under consideration are reasonably similar in traits to the bands in the 2008 auction. In that auction there was wide variation by market. The lowest winning bid was for \$.03/megahertz-pop and the highest bid was for \$3.86/megahertz-pop. Overall values also depended on the exact frequencies being sold. In this proposed auction, there will be similar variation by market and frequency.

It is crucial to further realize that any additional rules imposed either by the FCC or Congress over the use of these bands of spectrum will lower the overall value to bidders in the forward auction and will lower the winning bids. As important as the impact of rules imposed on the spectrum being auctioned, is the impact of uncertainty. Rules that increase uncertainty for bidders will also lead to lower bids.

The FCC will work to find the least costly way to clear various amounts of contiguous spectrum in each market based on the price offers from TV broadcasters. This will allow the FCC to estimate the potential supply of spectrum at different prices. Bids from the forward-market will allow the FCC to estimate the demand for this spectrum at different prices. Given that the goal is to only repurpose up to 120 MHz of spectrum, along with general estimates of the value placed

on use of that spectrum by TV broadcasters relative to mobile broadband, there will be a wide difference in the offer prices and the purchase prices. Hence, even with payments to TV broadcasters, the FCC incentive auction would likely generate large revenues for the government, perhaps in the range of that generated by the 700 MHz auction, which generated close to \$19 billion. More importantly for the overall U.S. economy, it will help move a scarce resource to a more valuable use to our economy and society. The value of optimal usage of this spectrum will likely dwarf the revenues to the government.

This will be a difficult undertaking for the FCC. However, if given the authority and flexibility to properly design the incentive auction, it is an undertaking of which the FCC is capable. The benefits of this auction will so greatly outweigh the costs that it is my sincere hope that congress will allow the FCC to undertake this incentive auction.

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<sup>i</sup> Jorgenson (2001). Oliner and Sichel (2000). Stiroh's (2002) Jorgenson, Ho, and Stiroh (2008). Other papers demonstrating positive effects of ICT include Brynjolfsson and Hitt (2003), Waverman, Meschi, and Fuss (2005) Bloom, Sadun, and Van Reenen (2007), and Greenstein and Spiller (1995). For a more complete overview of these studies see Connolly and Priefer (2010).

<sup>ii</sup> Bresnahan, Brynjolfsson, and Hitt (2002), Autor (2001), Corali and Van Reenen (2001), Beaudry, Doms, and Lewis (2006), Kolko (1999, 2002), Autor, Levy, and Murnane (2003), Brynjolfsson and Yang (1997), Koellinger (2006), and Yildmaz and Dinc (2002). Jorgenson, Ho, Samuels, and Stiroh (2007) estimate that "... much of the post-2000 gains reflect faster TFP growth in industries that were the most intensive users of information technology." For a more complete overview of these studies see Connolly and Priefer (2010).

<sup>iii</sup> FCC OBI Technical Paper No. 3, "Spectrum Analysis: Options for Broadcast Spectrum," June 2010, p. 7.

<sup>iv</sup> In the 2010 OBI Technical Paper No. 3 the FCC made a valuation of the range as being from \$0.11 to \$.15. This calculation was however based on an assumption that Broadcasters might fully loose OTA based profits and including both primary and secondary OTA households which would raise the range to between 14 to 19% of total TV households.

Mr. WALDEN. Thank you, Dr. Connolly. We appreciate your comments.

Mr. BRENNER, we are going to go to you next, Vice President of Government Affairs for Qualcomm, Incorporated. Thank you for being here, and proceed with your testimony, sir.

#### **STATEMENT OF DEAN BRENNER**

Mr. BRENNER. Good afternoon, Chairman Walden—

Mr. WALDEN. OK, now you got to push the button and bring the mic closer. There you go.

Mr. BRENNER. Good afternoon, Chairman Walden, Ranking Member Eshoo, and members of the subcommittee. It is a special honor for me to testify here this morning. Thirty years ago to the day, I began working as an intern for this very subcommittee. What a great experience that was for a college student.

I am here today, along with my colleagues, Alice Turnquist and John Cozin on behalf of Qualcomm, a company that didn't exist 30 years ago. Five years after my internship here, Qualcomm was formed. Today, Qualcomm is the world's leading manufacturer for cell phones, smartphones, and other wireless devices.

The policies pursued by this subcommittee, in particular, the move to spectrum auctions in the early 1990s, the reallocation of spectrum for the first PCS auctions, and the DTV transition have helped fuel the enormous growth in the American wireless industry. At Qualcomm, we spend over \$2 billion each year in research and development to invent the most spectrally efficient technologies, to achieve the greatest capacity and best performance from every sliver of spectrum, licensed and unlicensed.

We know that spectrum is precious and expensive, based on our own experience with spectrum auctions. Although our main business is developing wireless technologies, licensing them to other companies, and selling chips based on those technologies, we purchased licensed spectrum at auctions held in the United States, the United Kingdom, and India to facilitate the deployment of our new technologies.

Qualcomm's technologies are used in the 3G and 4G devices that Americans just can't get enough of. We all want our mobile devices to work all the time and wherever we happen to be, and that requires the use of licensed spectrum. Let me explain why I say that.

We make chips that support wi-fi, Bluetooth, and other unlicensed technologies to provide wireless connectivity in local areas, such as inside homes or on college or corporate campuses. In those settings, these chips enable wireless traffic to be offloaded from the licensed spectrum that wireless carriers use for their 3G and 4G networks.

This is an important growing business for vendors like Qualcomm, and we are excited about it. Just this week we announced the new line of wi-fi chips using spectrum in the 2.4 gigahertz, 5 gigahertz, and 60 gigahertz bands. But to provide ubiquitous wide area wireless coverage all over the Nation on a cost effective and interference-free basis, licensed spectrum is required.

And that brings me to the topic of today's hearing, because there isn't enough licensed spectrum available to keep pace with the ex-

ploding demand for mobile broadband. The FCC's October 2010 report found that by 2014, total U.S. mobile data traffic is likely to be 35 times the 2009 level. We are working on many new wireless technologies, but we don't have any technology on the drawing board that can increase capacity 35 times. More licensed spectrum is needed. The FCC doesn't have nearly enough new spectrum in its inventory to meet this gap. To promote broadband jobs and economic growth, we have got to close this gap.

A number of steps must be taken and are being taken in parallel to help solve the spectrum crunch. These steps include things that the private sector is doing, such as developing and deploying new technologies, and things the government is working on, such as as reallocating underutilized U.S. Government spectrum. But these steps won't be nearly sufficient to solve the spectrum crunch. To do that, it is crucial that Congress enact legislation to allow the FCC to conduct voluntary incentive auctions to reallocate more licensed spectrum for mobile broadband.

The legislation that we support would allow the FCC to conduct a two-sided auction, composed of sellers who voluntarily decide to sell their spectrum because they think it would be worth more to a mobile broadband provider, and buyers who want to use the spectrum for mobile broadband. No one would be forced to participate as a seller or a buyer in a voluntary incentive auction, but under current law, there is no way for the FCC to get the spectrum out of the hands of the sellers who are willing to sell and into the hands of the mobile broadband buyers.

Current law permits a TV station owner to sell its spectrum only to someone else who would use the spectrum to run a TV station. A TV station owner cannot sell its spectrum to a buyer so that the buyer can use it to provide mobile broadband. The legislation would allow the FCC to run a two-sided auction with all the station owners who want to sell on one side, and all the mobile broadband providers and new entrants who want to buy on the other.

Qualcomm, both on our own and as a member of a group of companies who sell wireless equipment, including Alcatel Lucent, Apple, Cisco, Ericsson, Intel, Nokia, and Research in Motion, urges Congress to pass legislation to give the FCC authority to conduct voluntary incentive auctions to free up much-needed additional licensed spectrum for mobile broadband. Now, our group includes companies that compete against one another in the marketplace all the time. We make equipment using both licensed and unlicensed spectrum, but we all agree on three points. First, the spectrum crunch is real. Second, more licensed spectrum is necessary to solve the spectrum crunch. And third, authorizing the FCC to conduct voluntary incentive auctions is essential to solving the spectrum crunch.

Passage of legislation authorizing voluntary incentive auctions would be a win-win-win-win. The first win would be for the sellers in a voluntary incentive auction, those who decide that their spectrum is more valuable for mobile broadband than in its current allocation will win because the legislation would allow them to sell. The second win is for the buyers. The buyers will win because they are going to get the additional licensed spectrum from mobile broadband so they can keep pace with consumer demand. They

need the certainty and speed of an FCC-conducted incentive auction in which the auction itself efficiently and quickly aggregates spectrum. The third win would be for the U.S. Treasury. Voluntary incentive auctions will raise significant revenues without raising anyone's taxes or cutting any programs. Finally, the fourth win is the most important win of all. The real winners will be the American public. Mobile broadband has the potential to improve so many facets of American life. Giving the FCC authority to conduct voluntary incentive auctions is essential. Thank you.

[The prepared statement of Mr. Brenner follows:]

Before the  
U.S. House of Representatives  
Subcommittee on Communications & Technology

Hearing on "Promoting Broadband, Jobs, and Economic Growth Through  
Commercial Spectrum Auctions"

Statement of  
Dean R. Brenner  
Vice President, Government Affairs  
QUALCOMM Incorporated

June 1, 2011

### Summary

Qualcomm, both on our own and as a member of a group of companies who sell wireless equipment including Alcatel Lucent, Apple, Cisco, Ericsson, Intel, Nokia, and Research in Motion, urges Congress to pass legislation to give the FCC authority to conduct voluntary incentive auctions to free up much-needed additional licensed spectrum for mobile broadband.

The FCC's October 2010 report found that by 2014, US mobile data traffic is likely to be 35 times the 2009 level. New technologies will not increase wireless capacity by 35 times. More licensed spectrum is needed for mobile broadband.

A number of steps must be taken, and are being taken, in parallel to help solve the spectrum crunch. These steps include things that the private sector is doing, such as developing and deploying new technologies, and things that the government is working on, such as reallocating under-utilized US government spectrum. But, these steps won't be nearly sufficient to solve the spectrum crunch. They won't increase capacity 35 times. To solve the problem, it is crucial that Congress enact legislation to allow the FCC to conduct voluntary incentive auctions to reallocate more licensed spectrum for mobile broadband.

Passage of legislation authorizing voluntary incentive auctions would be a win-win-win-win. The first win is for the sellers in an incentive auction. They own spectrum not allocated now for mobile broadband. They will win because the legislation would allow them to sell their spectrum to a buyer who wants to use it for mobile broadband, an option not allowed under current law. But, the legislation would not require anyone to sell spectrum.

The second win is for the buyers in an incentive auction. The buyers will win because they need more licensed spectrum. Even if it were legally permissible, they can't get enough spectrum by going one-by-one around the country in each and every local market negotiating with each TV station. They need the certainty and speed of a FCC-conducted incentive auction, in which the FCC auction would efficiently and quickly aggregate spectrum for purchase.

A third win is for the US Treasury. Voluntary incentive auctions will raise significant revenues for the federal government without raising anyone's taxes and without cutting any programs.

The fourth win is the most important of all. The real winners will be the American public. We all want our mobile devices to work all the time, wherever we happen to be. Giving the FCC the authority to conduct voluntary incentive auctions is essential.

Good afternoon, Chairman Walden, Ranking Member Eshoo, and Members of the Subcommittee. It is a special honor for me to testify here this morning. Thirty years ago, to the day, I began working as an intern to this very Subcommittee. What a great experience that was for a college student. I am here today on behalf of Qualcomm, a company that did not even exist thirty years ago. Five years after my internship here, Qualcomm was formed. Today, Qualcomm is the world's leading manufacturer of chips for cell phones, smartphones, and other wireless devices. Policies pursued by this Committee, in particular the move to spectrum auctions in the early 1990s, the reallocation of spectrum for the PCS auctions, and the DTV transition, have helped to fuel enormous growth in the US wireless industry.

At Qualcomm, we spend over \$2 billion each year in research and development to invent the most spectrally efficient technologies—to achieve the greatest capacity and the best performance out of every sliver of spectrum, licensed and unlicensed. We strive to do that because we know that spectrum is precious and expensive, based on our own experience with spectrum auctions. Although our main business is developing wireless technologies, licensing them to other companies, and selling chips for mobile devices based on those technologies, over the years, we have purchased licensed spectrum in auctions held in the United States, the United Kingdom, and India to facilitate the deployment of our new wireless technologies.

Qualcomm's technologies are used in the 3G and 4G devices that Americans just can't get enough of. We all want our mobile devices to work all the time and wherever we happen to be. That requires the use of licensed spectrum. Let me explain why I say that. We make chips that support Wi-Fi, Bluetooth and other unlicensed technologies to provide wireless connectivity in local areas, such as inside homes or on college or corporate campuses. In those settings, these chips enable wireless traffic to be off-loaded from the licensed spectrum that wireless carriers use for their 3G and 4G networks. This is an important and growing business for equipment vendors like Qualcomm, and we're excited about it. But, to provide ubiquitous, wide area wireless coverage all over the nation on a cost-effective and interference-free basis, licensed

spectrum is required.<sup>1</sup> And, that brings me to the topic of today's hearing because there is not enough licensed spectrum available to keep pace with the exploding demand for mobile broadband.

The FCC's October 2010 report found that by 2014, total US mobile data traffic is likely to be 35 times the 2009 level.<sup>2</sup> While Qualcomm and its industry partners are working on many exciting, innovative new wireless technologies to squeeze more capacity out of existing spectrum, we don't have any technology on the drawing board that can increase capacity by 35 times. Simply stated, more licensed spectrum is needed.<sup>3</sup> The FCC doesn't have nearly enough new spectrum to auction to meet this gap. To promote broadband, jobs, and economic growth, we need to close this gap.

A number of steps must be taken, and are being taken, in parallel to help solve the spectrum crunch. These steps include things that the private sector is doing, such as developing and deploying new technologies, and things that the government is working on, such as reallocating under-utilized US government spectrum. But, these steps won't be nearly sufficient to solve the spectrum crunch. They won't increase capacity 35 times. To solve the problem, it is crucial that Congress enact legislation to allow the FCC to conduct voluntary incentive auctions to reallocate more licensed spectrum for mobile broadband.<sup>4</sup>

The legislation that Qualcomm supports would allow the FCC to conduct a two-sided auction composed of sellers who voluntarily decide to sell their spectrum because they think it would be

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<sup>1</sup> See, e.g., Comments of QUALCOMM Incorporated, FCC Docket No. 09-51, filed June 8, 2009, at Pgs. 15-16; Comments of QUALCOMM Incorporated, FCC Docket No. 09-51, filed October 23, 2009, at Pgs. iii-iv, 32-34.

<sup>2</sup> See FCC Staff Technical Paper, Mobile Broadband: the Benefits of Additional Spectrum, October 2010, at Pg. 9.

<sup>3</sup> See Comments of QUALCOMM Incorporated cited in n.1, supra.

<sup>4</sup> See, e.g., Comments of QUALCOMM Incorporated, FCC Docket No. 10-123, filed April 22, 2011, at Pgs. i-ii, 1-3; Comments of QUALCOMM Incorporated, FCC Docket No., 10-235, filed March 18, 2011, at Pgs. 1-4.

worth more to a mobile broadband provider, and buyers who want to use the spectrum for mobile broadband. No one would be forced to participate as a seller or buyer in a voluntary incentive auction. But, unless current law is changed to permit voluntary incentive auctions, there is no way for the FCC to get the spectrum out of the hands of the sellers who are willing to sell and into the hands of the mobile broadband buyers. Current law permits a TV station owner to sell its spectrum only to someone else who will use the spectrum to run a TV station. A TV station owner cannot sell its spectrum to a buyer who will use it to provide mobile broadband.<sup>5</sup> Voluntary incentive auction legislation would allow the FCC to run a two-sided auction with all the TV station owners who want to sell on one side, and all the mobile broadband providers who want to buy on the other.

Qualcomm, both on our own and as a member of a group of companies who sell wireless equipment including Alcatel Lucent, Apple, Cisco, Ericsson, Intel, Nokia, and Research in Motion, urges Congress to pass legislation to give the FCC authority to conduct voluntary incentive auctions to free up much-needed additional licensed spectrum for mobile broadband.<sup>6</sup> Our group includes companies that fiercely compete against one another in the marketplace. We make equipment using both licensed and unlicensed spectrum. But we all agree on these three points: First, the spectrum crunch is real. Second, more licensed spectrum is necessary to solve the spectrum crunch. And, third, authorizing the FCC to conduct voluntary incentive auctions is essential to solve the spectrum crunch.

Passage of legislation authorizing voluntary incentive auctions would be a win-win-win-win. The first win is for the sellers in an incentive auction. They own spectrum not currently allocated for mobile broadband. Those who decide that their spectrum is more valuable for mobile broadband than in its current allocation will win because the legislation would allow them to receive the higher value in the auction by selling the spectrum so it can be used for mobile broadband. They don't have this option available to them under current law. But, the legislation would not require anyone to sell spectrum.

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<sup>5</sup> See 47 C.F.R. Section 73.624.

<sup>6</sup> See Comments of QUALCOMM Incorporated, n. 4, *supra*; Comments of the High Tech Spectrum Coalition, FCC Docket No. 10-235, filed March 18, 2011, at Pgs. 1-4.

The second win is for the buyers in an incentive auction. The buyers will win because they will be able to buy what they need-- more licensed spectrum. Even if it were legally permissible, they can't get enough spectrum by going one-by-one around the country in each and every local market negotiating with each TV station. They need the certainty and speed of a FCC-conducted incentive auction, in which the FCC auction would efficiently and quickly aggregate spectrum for purchase.

A third win is for the US Treasury. Voluntary incentive auctions will raise significant revenues for the federal government without raising anyone's taxes and without cutting any programs.

The fourth win is the most important of all. The real winners will be the American public. As I said at the outset, we all want our mobile devices to work all the time, wherever we happen to be. Giving the FCC the authority to conduct voluntary incentive auctions is essential.

Thank you, and I look forward to answering your questions.

Mr. WALDEN. Thank you, Mr. Brenner, both for your testimony and for your internship, although I was not here to enjoy that.

We are going to go now to Mr. Feld. Harold Feld is the Legal Director for Public Knowledge. We appreciate your input in this matter. We look forward to your testimony.

#### **STATEMENT OF HAROLD FELD**

Mr. FELD. Thank you, Mr. Chairman—

Mr. WALDEN. Before you start, I am just going—they are going to ring bells here for a vote, a 15-minute vote. We are going to have you finish your testimony, and then when you are done we will plan to resume at about 1:25. So that will give everybody a little break here before we go into Q&A.

Mr. Feld, please continue.

Mr. FELD. My thanks to you, Mr. Chairman, Ms. Ranking Member, the subcommittee. I am the Legal Director of Public Knowledge. I am pleased to speak to you this morning on behalf of the Public Interest Spectrum Coalition about buttons and buttonholes.

Buttons are tangible objects. They are things that people easily understand and think about. Buttonholes are designated empty space. Most people don't think about the importance of buttonholes when they are buttoning their clothes, but without those empty spaces, you are not going to keep your coat closed. You need both. That is what I am here to talk about in terms of spectrum policy, which is the empty spaces in the spectrum, the white spaces, particularly in the broadcast spectrum.

The policy objectives that we have all talked about here today of encouraging innovation, increasing economic activity which helps to reduce the deficit, as well as improving all of our lives, all of these things are critically important and we can achieve them, but we must not look at this just through the lens of a Congressional Budget Office score. In fact, I will state further that if we focus only on raising revenue or more precisely, what we think sitting here now, years out from an auction, a very complicated structure that we think will raise revenue. The spectrum prices will become a spectrum Armageddon, resulting in higher costs, stifled innovation, and reduced global competitiveness. The worst thing that could happen is what if they gave an incentive auction and nobody came because we structured it poorly?

White spaces are unique in spectrum policy. They have been enthusiastically supported by Republican FCC chairmen and commissioners, and today's Democratic chairmen and commissioners. White spaces exist without preconceived uses, and so are open to any entrepreneur technologist with a good idea. They are the most deregulatory approach to spectrum policy we have. As FCC Commissioner McDowell said, "The Commission's actions of proving TV white spaces help to bring more broadband to consumers as quickly as innovation, rather than as quickly as government will allow."

The results have been spectacular for the U.S. economy. The short history of unlicensed spectrum has allowed the development of what were considered junk bands to yield tens of billions of dollars in economic gains and activities. The unlicensed spectrum now being considered in the prime broadcast bands promises to surpass that previous success. This is truly unlicensed 4G.

Allowing for additional allocation of national unlicensed spectrum under the 1 gigahertz band with its superior characteristics of penetration in long distance allow for the creation of gigabit capacity wireless LANs in offices, schools, high density residential areas, mesh networks capable of many miles of coverage at a fraction of the cost of current wi-fi technology. Such gains don't show up in a CBO score, but they result in increased revenues for the Federal Government through investment, job creation, and economic productivity on an annual basis.

Rural areas will be able to be served with high capacity wireless broadband service. Low barriers to entry for unlicensed allow these rural providers to serve their communities without winning licenses at auction, which they cannot afford to do. Indeed, areas that cannot be profitably served with licensed spectrum because of the cost of winning licenses are now being served with existing wi-fi without universal service subsidies, and will be better served and more broadly served with white spaces spectrum.

Already we are starting to see the fruits of projects like these in places as diverse as Claudville, Virginia, with a population of 916 to the much larger city of Houston.

In order for this future to come about, for there to be a spectrum for smart grid coordination, machine to machine communication, inventory tracking and the rest, Congress has to make certain that the white spaces are protected by giving the FCC discretion in structuring and conducting auctions. The investors and companies that are building this technology today must believe there is a future for this here in the United States. United Kingdom is also looking at white spaces technology, as are China and Brazil, and its investors and companies do not believe there is a future here for this innovative new technology. They will take their investment and their jobs elsewhere.

Providing the FCC flexible authority to conduct incentive auctions and allowing the Agency to pursue a broad approach to spectrum policy that is not exclusively tied to raising revenue will be the most effective means of promoting broadband, job creation, and economic growth. I just want to add that this is not an either/or. Rarely in policy do we have a chance to have it all. We can keep broadcasting as a vital service for this country. We can have significant new licenses for auction, and we can have a vibrant white spaces which will provide us with exciting new technologies for the benefit of all Americans.

Mr. Brenner just said he doesn't have the technology right now that would allow them to increase their capacity by 35 times. I don't have one either, but by creating a test bed, a place where these technologies can develop at very low cost and be deployed quickly and effectively, such as the white spaces, I have a very good suspicion of where that technology will come from.

Thank you, and I look forward to your questions.  
 [The prepared statement of Mr. Feld follows:]

Testimony of Harold Feld, Legal Director of Public Knowledge  
On behalf of the  
Public Interest Spectrum Coalition

Before the  
U.S. House of Representatives  
Committee on Energy and Commerce  
Subcommittee on Communications and Technology

Hearing On: "Promoting Broadband, Jobs and Economic Growth through Commercial Spectrum Auctions"

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June 1, 2011

Chairman Walden, Ranking Member Eshoo, and Members of the Subcommittee, thank you for the opportunity to testify before you on the critical issue of improving our spectrum policy to promote broadband, create jobs, and facilitate economic growth. My name is Harold Feld and I am the Legal Director for Public Knowledge, a nonprofit public interest organization that addresses the public's stake in a competitive and affordable telecommunications market. Today, I am pleased to represent the Public Interest Spectrum Coalition (PISC), a broad coalition of citizens groups consisting of civil rights organizations, consumer organizations, and organizations representing higher education.<sup>1</sup>

**Introduction**

In order for the Federal Communications Commission's (FCC) spectrum policies to successfully promote broadband access, economic growth, and job creation, while simultaneously addressing exponential growth in mobile data consumption, Congress must empower the FCC to facilitate a

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<sup>1</sup> PISC is an ad hoc coalition whose membership has varied from time to time and issue to issue. During PISC's advocacy for use of the white spaces and for its involvement in the 700 MHz auction proceeding, two proceedings most relevant to today's testimony, PISC's membership included, in alphabetical order: The CUWiN Foundation (CUWIN), Consumer Federation of America (CFA), Consumers Union (CU), EDUCAUSE, Free Press (FP), Media Access Project (MAP), the National Hispanic Media Coalition (NHMC), the New America Foundation (NAF), Public Knowledge (PK), and U.S. PIRG. For purposes of this testimony, PISC's membership includes: Public Knowledge, New America Foundation, and Media Access Project

mobile ecosystem that consists of a mixed use of licensed and unlicensed spectrum. Using unlicensed spectrum to increase access to spectrum for new entrants to provide more competition among commercial license holders will allow more ubiquitous access through a deregulatory, free market approach and exponentially grow capacity to match exponential growth in mobile data demand. Experts from industry, the public interest community, and the federal government alike have all celebrated the expanded use of unlicensed spectrum access as a compliment to expanding licensed access for purposes as diverse as rural broadband, offloading data from overburdened licensed networks, and stimulating the next generation in advanced “smart” wireless technologies.

At the same time, increased use of unlicensed spectrum, particularly in the unused television broadcast channels known as the “TV white spaces” (TVWS), will spur the development of new technologies that will benefit providers using licensed spectrum as well. Rarely does one find such unified and bipartisan support for a policy initiative. The recognition that unlicensed spectrum provides a deregulatory mechanism for spurring innovation, investment, and competition in new services has won support for the TVWS initiative from Republicans and Democrats alike. Republican Chairmen Michael Powell and Kevin Martin began and developed the TVWS rules with the support of their Democratic colleagues, while Democratic chairman Julius Genachowski concluded the rulemaking with the support of his Republican colleagues.

In order to free up additional spectrum, the White House, the FCC, and Members of Congress have advocated utilizing incentive auctions to increase the supply of spectrum for wireless broadband. Currently, PISC has no official position on incentive auctions because a large number of factors inherent in the concept are still generally unknown at this time. However, if compensating licensees for spectrum assets they obtained for free was done for the purpose of furthering the objectives Congress set out in Section 309(j) of the Communications Act, which is to promote competition and

opportunities for traditionally disenfranchised communities such as rural America, then incentive auctions can be a net good.

In order to meet these objectives though, Congress must avoid viewing spectrum policy strictly through the lens of a Congressional Budget Office (CBO) score. That is not to say that anything that is not calculated in a CBO score is lost revenue for the federal government, but rather that there is substantial economic evidence that spectrum policies not captured in a CBO score can actually provide revenue that far exceeds one-time spectrum auctions through economic growth. In fact, I will go further and state that if Congress passes legislation that forces the FCC to only focus on raising revenue for the federal government, the spectrum “crisis” the wireless industry is encountering today will become a spectrum *armageddon* resulting in higher costs, stifled innovation, and reduced global competitiveness.

#### **The Health of the Mobile Ecosystem Depends on a Mix of New Licensed and Unlicensed Options**

Despite commercial license holders investing more than \$20.4 billion in 2010 to improve wireless infrastructure and having received a substantial increase in spectrum with the recent 700 MHz auction, many experts agree that mobile data demand will continue to outstrip capacity.<sup>2</sup> This occurs for many reasons. First, we must recognize that government controlled spectrum auctions for commercial licenses can take several years and fundamentally represent a *linear* growth solution for an *exponential* growth problem. While there is no question that the existing commercial wireless business model – based on exclusive licensing, tower-based hub/spoke channelization, centralized infrastructure and metered billing – will require more exclusive-use spectrum in the short-run to meet

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<sup>2</sup> CTIA (2010, December 14) *2010 in Review: Wireless Industry Still #1 for Innovation, Competition and Investment* [Press release]. Retrieved from <http://blog.ctia.org/2010/12/14/2010-in-review-wireless-industry-still-1-for-innovation-competition-and-investment/>

peak mobile data demand, it should be equally clear that exclusive reliance on this model is not sustainable longer term.

Second, the number of uses for wireless data access far exceed the ability of any company, or group of existing companies, to keep up. Today, the consumer mobile market dwarfs all other market segments in its expanding and all consuming demand, and the largest wireless providers naturally focus on this and closely related enterprise and backhaul markets. But every day new uses for wireless access with very different needs emerge, addressed by companies and entrepreneurs focused on these new opportunities. The rise of “machine to machine” communication and the “internet of things” would quickly overwhelm networks better suited to critical uses and increased consumer demand without this dynamic sector of tech companies and new entrants with unlicensed spectrum access ready to take up the load. And while some of these uses, such as medical monitoring, do better on licensed networks, many other uses such as municipal meter readers, industrial inventory tracking, smart grid coordination, or any of an endless list of new applications innovators have only begun to recognize do better in the unlicensed environment with its flexibility and tolerance for interference.

Perhaps most importantly, licensed providers themselves recognize the value unlicensed spectrum plays in the ecosystem. The rise of the use of Wi-Fi hotspots and other ways in which providers such as AT&T and Verizon actively use unlicensed spectrum to offload data demonstrates how spectrum for unlicensed use also provides valuable benefits to traditional licensed providers.

In order for sufficient capacity to be built to meet exponential growth, the number of players involved in investing and building that capacity must expand to a point where virtually everyone from large businesses to the individual consumer can be involved. This requires low barriers to entry, economies of scale for the manufacture of equipment, and the flexibility that comes when inventors in garages can

apply their ingenuity. We have only to look at the amazing success of unlicensed and “Wi-Fi” to imagine what the next generation of “super Wi-Fi” will bring.

#### **Unlicensed Spectrum is the Most Deregulatory and Free Market Success Story in Wireless**

The enormous innovation facilitated by unlicensed spectrum has generated substantial consumer welfare. There are no government rules to unlicensed spectrum access and it is the only type of spectrum access where every single innovative entrepreneur can bring an idea to market without permission or barrier to entry. Unlicensed spectrum use through Wi-Fi alone has seen dramatic growth since its launch in 2001 with nearly 1 billion Wi-Fi chipsets sold between the years 2005 to 2008<sup>3</sup> and an estimated growth expected to reach 1.5 billion devices sold per year by 2014.<sup>4</sup> A study by USC economist Ergin Bayrak of the benefits of wireless home networking through Wi-Fi, estimated that unlicensed spectrum created considerable consumer welfare on the order of \$18 billion (nearly the same amount as the entire 700 MHz auction).<sup>5</sup>

Commercially licensed carriers have capitalized on the high bandwidth capabilities of unlicensed spectrum devices as a means to off-load mobile data traffic from their mobile networks in high density areas. This trend recognizes that consumers actually prefer utilizing these localized networks and consumer adoption of Wi-Fi offloading has proceeded at an unprecedented rate. For example, in 2008 AT&T purchased Wayport for \$275 million to add the company's 8,000 Wi-Fi hot spots to its currently held 12,000 Wi-Fi hot spots.<sup>6</sup> For the first three months of 2009, AT&T reported 10.5 million Wi-Fi

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3 Wi-Fi Alliance (2005, November 28) *Wi-Fi chipset sales grew 26 percent to 387 million in 2008* [Press release]. Retrieved from [http://www.wi-fi.org/news\\_articles.php?f=media\\_news&news\\_id=770](http://www.wi-fi.org/news_articles.php?f=media_news&news_id=770)

4 Thanki, Richard (2009, September 8) *The Economic Value Generated by Current and Future Allocations of Unlicensed Spectrum* (p. 18). Retrieved from <http://fjallfoss.fcc.gov/ecfs/document/view?id=7020039036>

5 Bayrak, Ergin *Welfare Effects of Spectrum Management Regimes*, SoCal NEGT Symposium, October 1, 2009, [http://medianetlab.ee.ucla.edu/SocalNEGT/slides/SoCal%20NEGT%20presentation\\_ergin\\_bayrak.pdf](http://medianetlab.ee.ucla.edu/SocalNEGT/slides/SoCal%20NEGT%20presentation_ergin_bayrak.pdf).

6 Marshall, Matt (2008, November 6) *AT&T acquires Wayport for \$275M — Now Has 80,000 Hot Spots*. [Online] In

connections on its hotspot network, which was more than triple the number during the first quarter of 2008 – and more than half the 20 million total Wi-Fi connections during all of 2008.<sup>7</sup> In the following three months in 2009, AT&T handled nearly 15 million Wi-Fi connections ending the year with a total of 85.5 million connections.<sup>8</sup> Finally, the most recent data shows that in the third quarter of 2010, consumers made a total of 106.9 million connections on AT&T's U.S. Wi-Fi network.<sup>9</sup>

Given the considerable breadth of unlicensed devices and multiplicity of uses, a completely comprehensive estimate of all of the economic value created by unlicensed spectrum is difficult, but some studies have sought to quantify the economic value of specific uses of unlicensed spectrum. One such study in 2009 by economist Richard Thanki analyzed the economic value generated by Wi-Fi broadband access within homes, wireless local area networks in hospitals, and radio-frequency identification (RFID) tags for in-store item-level tagging in the clothing retail sector. Thanki's analysis showed that over the next 15 years these applications together could generate *\$16 to \$37 billion per year* in economic value for the U.S. economy. It should be noted that Thanki's economic analysis does not account for other applications utilizing unlicensed spectrum such as white space devices or additional unlicensed utilization of spectrum below 1 GHz.

Virtually every sector of the economy relies on unlicensed spectrum and the number of certified devices that utilize unlicensed spectrum more than quadruples the number of certified devices in most

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<sup>6</sup> Venture Beat. Retrieved May 28, 2011 from <http://venturebeat.com/2008/11/06/att-acquires-wayport-for-275m-now-has-80000-hot-spots>

<sup>7</sup> Berg, Andrew (2009) *Wi-Fi & the Need for Cheap Ubiquity* [Online] In Wireless Week Magazine. Retrieved May 28, 2011 from <http://www.wirelessweek.com/Articles/2009/08/Wi-Fi-Need-Cheap-Ubiquity/>

<sup>8</sup> Malik, Om (2009) *With iPhone, Wi-Fi Use Grows on AT&T Networks* [Online] In GigaOm. Retrieved May 28, 2011 from <http://gigaom.com/2009/08/20/with-iphone-wi-fi-use-grows-on-att-networks/>

<sup>9</sup> PR Newswire (2010, October 22) *Third-Quarter Wi-Fi Connections on AT&T Network Exceed Total Connections for 2009* [Press release]. Retrieved from <http://www.prnewswire.com/news-releases/third-quarter-wi-fi-connections-on-att-network-exceed-total-connections-for-2009-105520733.html>

of the commercially licensed bands.<sup>10</sup> RFID tags alone are incorporated into any number of objects for the purposes of identification and tracking and operate over a number of unlicensed bands. Such uses include supply chain management, asset tracking, medical applications (linking a patient with key drugs, etc.), tracking for entrance management or security, manufacturing tracking of parts during manufacture, retail tracking, transport payments (such as Washington DC's SmarTrip system), warehouses real-time inventory, and livestock tracking. This wide ranging application is linked to the fact that unlicensed use of spectrum is dynamic and can respond to free market demands quicker than traditional government controlled commercial auctions.

The short history of unlicensed spectrum has demonstrated that even spectrum bands that were formerly considered "junk bands" could yield tens of billions of dollars in economic gains and activity. Allowing for an additional allocation of national unlicensed spectrum under the 1 GHz band, with its superior propagation characteristics of penetration and long distance, would allow for the creation of gigabit-capacity wireless LANs in schools, offices, high-density residential areas and mesh networks capable of several miles of coverage at a fraction of the cost of current Wi-Fi technology. While such gains will not show up in a CBO score, they will result in increased revenues for the federal government through investment, job creation, and economic productivity on an annual basis.

Critically, in 1989, when the FCC created the rules that provide the basis for current unlicensed technology, no one could have predicted this stunning success. For most of its history, the FCC approved individual technologies, such as specific garage door openers or "Mr. Microphone"-type novelty devices. In 1989, when the FCC went from this first generation unlicensed to the second generation of all purpose devices operating alongside licensed systems at low power, called

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<sup>10</sup> *Promoting More Efficient Use of Spectrum Through Dynamic Spectrum Use Technologies* by Key Bridge Global LLC. ET Docket No. 10-237 (p. 3) <http://fajlffoss.fcc.gov/ecfs/document/view?id=7021027412>

“underlays,” it assumed that the primary purposes of unlicensed devices would remain the same. No one anticipated the move from 2G unlicensed to 3G unlicensed with the adoption of protocols by the IEEE that enabled unlicensed wireless devices to provide wireless broadband.

The TVWS represents another breakthrough, from 3G unlicensed to 4G unlicensed. The promise of this change, enabled by the superior physical characteristics of the TV white spaces, has drawn investment from venture capitalists backing new start ups to established companies such as Microsoft and Motorola. It has made us once again a world leader in wireless technologies, with countries such as the UK, China and Brazil scrambling to follow where the U.S. leads.

#### **The TV Bands Database and Cognitive Radio are the Future in Spectrum Policy**

Over the years the FCC, on a unanimous and bipartisan basis under both Republican and Democratic Chairmen, has repeatedly taken steps to open up the white spaces within the TV bands to set the stage for next generation cognitive radios (white space devices). Promoting the development of white space devices and the database they rely on will increase efficiency in spectrum usage and can also open up access to spectrum held by federal agencies that may never be cleared for auction while providing additional long term revenue opportunities for the federal government. Access to the white spaces will also further a critical federal policy goal of bringing broadband to rural areas and is supported by the Wireless Internet Service Provider Association, which represents more than 300 wireless internet service providers, many of which serve exclusively rural communities with fixed wireless broadband services. The unique physical properties of the television band make it possible for these small businesses, as well as numerous non-profits and even private home owners, to send broadband signals for great distances, around difficult terrain, and through dense wooded areas that block existing Wi-Fi signals. The low barriers to entry for unlicensed allow these rural providers to serve their communities

without winning licenses at auction, which they cannot afford to do. Indeed, areas that cannot be profitably served with licensed spectrum because of the cost of winning licenses can be served sustainably, and without USF subsidies, with TVWS spectrum. For these reasons, the National Broadband Plan identified the TVWS proceeding as one of the important first steps in bringing broadband to rural America.<sup>11</sup>

Commissioner McDowell summed up the potential of white space technology well by stating that the “uses for this spectrum are limitless. Moreover, the protocol developed in this proceeding for smart use of this spectrum has great potential for enabling access to and improving efficiency in other frequency bands.” In addition, Commissioner McDowell stated that the “ubiquitous availability of white spaces provides consumers a competitive alternative to existing broadband providers, an additional check against potential anti-competitive mischief, and a means to relieve spectrum congestion in licensed bands. Furthermore, as with Wi-Fi, the unlicensed nature of white spaces use will accelerate its deployment and adoption much faster than if this spectrum was auctioned (if that were even practical to begin with). Our action thus helps to bring more broadband to consumers as quickly as innovation, rather than the government, will allow.”<sup>12</sup>

Following the FCC's September 23, 2010 decision to officially open up the TV white spaces, the pace of involvement by the private industry has been staggering with ten companies (Comsearch, Frequency Finder Inc., Google Inc., KB Enterprises LLC and LS Telcom, Key Bridge Global LLC, Neustar Inc., Spectrum Bridge Inc., Telcordia Technologies, WSdb LLC, and Microsoft) investing and competing in the creation of spectrum databases which the white space devices will utilize. Currently, the United

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<sup>11</sup> Federal Communications Commission, Connecting America: The National Broadband Plan (p. 88)

<sup>12</sup> Statement by Commissioner Robert M. McDowell (2010, September 23) *FCC Frees up Vacant TV Airwaves for "Super Wi-Fi" Technologies* [Press Release]. Retrieved from [http://transition.fcc.gov/Daily\\_Releases/Daily\\_Business/2010/db0923/DOC-301650A4.pdf](http://transition.fcc.gov/Daily_Releases/Daily_Business/2010/db0923/DOC-301650A4.pdf)

States is the world leader in utilizing first generation white space technology with the following experimental uses ongoing today:

- 1) **Plumas California** – The Plumas-Sierra Rural Electric Cooperative launched the nation's first "Smart Grid" wireless network trial while simultaneously providing broadband access to the local communities. The "Smart Grid" wireless network trial delivers real-time broadband connectivity allowing system operators to manage the electrical system remotely, request critical data from the substations, manage directed power flow and protect the systems and employees while maintaining the local grid.<sup>13</sup>
- 2) **Wilmington, North Carolina** - The city is currently relying on white space technology for its "Smart City" initiative, which focused on providing Wi-Fi access to both public safety officials and citizens in public areas, remote monitoring and management of wetland areas, and real-time traffic monitoring to reduce congestion, fuel consumption, travel time, and support local law enforcement during emergency situations.<sup>14</sup>
- 3) **Claudville, Virginia (population 916)** – A white space backhaul solution has effectively brought broadband access for the first time ever to this small town where only dial up Internet access existed well up until late 2009.<sup>15</sup>
- 4) **Logan, Ohio (population 6,704)** - The world's first white space broadband network trial for healthcare providers was launched here, enabling broadband access throughout the hospital,

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13 Spectrum Bridge (2010, June 23) *Nation's First "Smart Grid" White Spaces Network Trial* [Press release]. Retrieved from [http://www.spectrumbridge.com/news/pressreleases/10-06-23/Nation\\_s\\_First\\_%E2%80%9CSmart\\_Grid%E2%80%9D\\_White\\_Spaces\\_Network\\_Trial.aspx](http://www.spectrumbridge.com/news/pressreleases/10-06-23/Nation_s_First_%E2%80%9CSmart_Grid%E2%80%9D_White_Spaces_Network_Trial.aspx)

14 Anderson, Nate (2010, February 24) *Wilmington, NC Takes White Spaces to Swamp, Ballparks.* [Online] In Ars Technica. Retrieved May 28, 2011 from <http://arstechnica.com/tech-policy/news/2010/02/wilmington-nc-takes-white-spaces-to-swamp-ballparks.ars>

15 Anderson, Nate (2009, October 21) *First White Space Broadband Deployment in Small Virginia Town.* [Online] In Ars Technica. Retrieved May 28, 2011 from <http://arstechnica.com/tech-policy/news/2009/10/first-white-space-broadband-deployment-in-small-virginia-town.ars>

including patient rooms, waiting areas, cafeteria, and meeting rooms.<sup>16</sup>

- 5) **Houston, Texas** – Rice University researchers, utilizing a grant from the National Science Foundation, were able to modify an off the shelf Wi-Fi computer card and successfully achieve a point to point transmission distance of one mile over its original 400 to 500 feet.<sup>17</sup>

As the geo-location, spectrum sensing, and database technologies move past their first generation phase, expansive applications of this technology could yield a substantial increase in spectrum access for the private market and additional revenue opportunities for the federal government. It is estimated that the federal government exclusively controls over 13 percent of all allocated spectrum with much of it unused in most areas at most times. However, most of these bands cannot be cleared or reallocated as they serve critical national security and other essential functions, leaving shared access to this spectrum as the only viable alternative. By leveraging the advances in white space devices and the white space database, the federal government could lease access to federal spectrum that would otherwise lay fallow through the database by way of micro-payments, either by user fees collected up front or on a real-time basis, during periods of peak demand.

Kevin Werbach, a professor at the Wharton School and a former FCC technologist, suggests that “properly designed, this system [the TV Bands Database] could be the basis for a distributed dynamic routing database, analogous to the DNS (Domain Name System) on the wired Internet.”

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16 Business Wire (2010, September 14) *TV White Spaces Delivering Enhanced Broadband Access and Telemedicine Applications to Healthcare Providers* [Press release]. Retrieved from <http://www.businesswire.com/news/home/20100914005980/en>

17 Anderson, Nate (2011, April 26) *Extending Wi-Fi to one mile, thanks to empty TV channels*. [Online] In Ars Technica. Retrieved May 28, 2011 from <http://arstechnica.com/tech-policy/news/2011/04/extending-wifi-to-one-mile-thanks-to-empty-tv-channels.ars>

### TV White Spaces Technology and Incentive Auctions

I must point out though that all of the progress made so far on developing this technology relies heavily on the existence of sufficient white space spectrum on a national basis. Incentive auctions could potentially bring all of these advancements to a halt if sufficient flexibility is not granted to the FCC to preserve its work on promoting private industry investments in researching and developing cognitive radio technology.

Supporters of TVWS have long recognized that we can both reclaim broadcast spectrum for licensed wireless with incentive auctions *and* maintain sufficient availability of white space spectrum to ensure a robust and well developed market. For this reason, investment has flowed readily into this new technology and companies such as Microsoft that invest TVWS have also embraced incentive auctions.<sup>18</sup> Unfortunately, it is also possible to structure incentive auctions poorly. For example, if Congress precludes the FCC from ensuring sufficient national access to TVWS in the mistaken belief that this would increase revenue, it will significantly discourage investment and may prevent the promise of 4G unlicensed from becoming reality. Ironically, respected auction experts unaffiliated with any government agency have warned that attempts to micromanage the FCC's auction design are more likely to *reduce* revenue rather than raise revenue.<sup>19</sup> For these reasons, supporters of both TVWS and incentive auctions such as Commissioner McDowell have urged Chairman Genachowski to reassure TVWS developers that we can, and will, have both a successful incentive auction and a robust TVWS.

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<sup>18</sup> Humphries, Fred (2011, April 29) *Incentive Auctions, Smart Radio Technology and Unlicensed Spectrum – Tools to Meet the Exploding Wireless Broadband Demand*. [Online] In Microsoft on the Issues. Retrieved May 29, 2011 from [http://blogs.technet.com/b/microsoft\\_on\\_the\\_issues/archive/2011/04/29/incentive-auctions-smart-radio-technology-and-unlicensed-spectrum-tools-to-meet-the-exploding-wireless-broadband-demand.aspx](http://blogs.technet.com/b/microsoft_on_the_issues/archive/2011/04/29/incentive-auctions-smart-radio-technology-and-unlicensed-spectrum-tools-to-meet-the-exploding-wireless-broadband-demand.aspx)

<sup>19</sup> Jerome, Sara (2011, April 6) *White House Rallies Support for Airwave Auctions*. [Online] In The Hill. Retrieved May 30, 2011 from <http://thehill.com/blogs/hillcon-valley/technology/154235-auction-proponents-to-congress-stay-out-of-the-spectrum-weeds>

At the moment, the United States has a substantial lead in the development of TVWS technology. But other nations are looking to close this gap. OFCOM, the spectrum regulator for the United Kingdom, has proposed making TVWS available for unlicensed use as well.<sup>20</sup> China and Brazil are likewise looking into authorizing unlicensed use of TVWS. It is well to remember that ten years ago, the United States became the dominant provider of Wi-Fi technology because we had been the first country in the world to recognize the value of unlicensed spectrum use. It did not take long for other countries to recognize the advantages, and today companies like China's Huawei and Israel's Alvarion vigorously compete with American providers in the global market. Today, the focus of investment in 4G unlicensed TVWS technology remains in the United States. But if the United States actively discourages investment by forcing a false choice between unlicensed TVWS and reclaiming spectrum for incentive auctions, other countries will quickly pass us by. If we wish to capture these billions of dollars in new economic opportunity, Congress should send a clear signal that it embraces both unlicensed TVWS and expanded licensed use as valuable parts of our wireless future.

**Exclusive Focus on Raising Short Term Revenues Will Short Change America's Economic Potential**

Recognizing that another significant and expensive policy goal of creating an interoperable public safety broadband network will be connected with spectrum legislation that passes Congress, I urge this Committee to balance the multiple policy goals set before you and not focus exclusively on short term revenue opportunities. I am confident that it will be possible to have incentive auctions that would increase commercially licensed spectrum and unlicensed spectrum while retaining a suitable

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<sup>20</sup> Geere, Duncan (2010, November 9) *Ofcom to Turn 'White Space' into Mobile Broadband*. [Online] In Wired UK. Retrieved May 29, 2011 from <http://www.wired.co.uk/news/archive/2010-11/09/ofcom-white-space-broadband>

innovation platform for private investments in cognitive radio all while yielding significant short term and long term revenue gains. Congress in fact must use an all of the above approach in order to meet the challenges of exponential mobile data demand. However, if too great a focus is placed on **maximizing** short term revenues, we will essentially run the risk of sacrificing tens of billions in annual economic activity in exchange for a single infusion of billions in immediate revenue.

It is worth noting that the original CBO estimate on the 700 MHz auction was almost half of what revenues were actually raised by the federal government. By contrast, revenues for other auctions, such as the LMDS auction in 1999 or the initial 700 MHz auction in 2003, have fallen well short of initial estimates. Even current estimates of incentive auctions range by several billion dollars and frankly, all of the estimates could be accurate depending on a number of factors. If that sounds strange, consider how valuations can change for a house. A county assessor comes away with a guess based on factors like the general value in the neighborhood of similar houses. If you refinance, an appraiser will come by and make another assessment, considering what they can see from a quick evaluation and based on what other houses she considers similar. Put the house on the market 6 months later and you may get an entirely different amount (assuming it can be sold at all), either higher or lower, depending on such factors as what interest rates are doing and how many people are looking to buy a home this month.

Appraising houses is routine, but we still have wild variances. Spectrum auctions present the same variability with years intervening between auctions and factors playing a role such as the state of financial markets, the nature of the spectrum, and whether potential bidders expect other spectrum to come on the market anytime soon or not. Adding into this uncertainty is the question of how many broadcasters will voluntarily partake in incentive auctions and when they would participate. No one can predict with any degree of certainty what spectrum auctions will actually deliver in revenues, let

alone incentive based auctions. However, should Congress provide the FCC with incentive auction authority, it must heed the advice of the 112 economists who recently endorsed such an action but also called for agency flexibility in conducting the process.<sup>21</sup>

It should be noted though that spectrum itself is not fundamentally scarce, but rather it is government issued licenses of spectrum that is scarce and is the bottleneck in meeting mobile data demand. In order to either eliminate or reduce the impact of this government imposed chokepoint, PISC has advocated a number of new spectrum access models that leverage current and future opportunities created by the TVWS bands database for opportunistic access to spectrum bands that cannot be cleared quickly (or may never be cleared). The Committee should consider this when drafting language that would compel the federal government to clear specific bands for auction. Many of these bands, such as bands between 3500-3650, may be better used for sharing than for clearing and auction.

#### **Other Considerations in Auction Design**

In addition to giving the FCC sufficient flexibility to preserve the TVWS, Congress should carefully consider the dangers in trying to micromanage spectrum auctions. A recent panel of auction experts acknowledged, no one can predict what combination of auction rules will maximize auction revenue – let alone properly balance other social welfare goals such as promoting competition or ensuring that all Americans – especially traditionally disenfranchised communities such as rural businesses, minority-owned businesses, and women-owned businesses – have the opportunity to acquire licenses and benefit from the economic opportunities of spectrum policy.

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<sup>21</sup> Letter to President Barack Obama from the Stanford Institute for Economy Policy Research. Retrieved from [http://siepr.stanford.edu/system/files/shared/Letter\\_to\\_obama.pdf](http://siepr.stanford.edu/system/files/shared/Letter_to_obama.pdf)

When Congress authorized spectrum auctions in 1993, it provided a general list of goals for the FCC to further through spectrum auctions. This recognized that allocation of new spectrum is an opportunity that only happens once for a particular band. Efforts to make policy adjustments after the fact, either by rulemaking or reallocation, carry a high political cost. Particularly when it comes to the important goal of furthering competition, the FCC should have flexibility in designing auctions so that it can avoid more intrusive regulatory means for mitigating market concentration.

But even if Congress were to decide that, in this time of fiscal need, the FCC should focus solely on enhancing revenue. Congress would still be better served to leave discretion to the auction experts at the FCC than to try to micromanage auction design through the legislative process. Enhancing auction revenue requires just the right mix of established, deep pocket players and hopeful new entrants able to secure lines of credit. If potential bidders conclude that they cannot hope to win an auction against the largest, best-financed incumbents, then auction revenue falls as auction participants either seek to avoid bidding wars with incumbents they cannot win or simply stop participating in auctions altogether.<sup>22</sup> By contrast, several new entrants in the 700 MHz Auction remarked that their presence as robust competitors was a direct result of their perception that the FCC had made a serious effort to address the needs of new bidders.

Finally, if the Committee feels it necessary to put in place legislative mandates as opposed to relying on auction experts to determine what combination of rules will maximize revenue in whatever market conditions exist years from now when the auctions occur, Members should carefully weigh whether the increase in revenue will offset the cost and social benefits of such restrictions. Economists of a variety of different schools and political orientations have consistently agreed that benefit of auctions lies not

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22 Rose, Gregory & Lloyd, Mark (2006) The Failure of FCC Spectrum Auctions. Retrieved from [http://www.americanprogress.org/kf/spectrum\\_auctions\\_may06.pdf](http://www.americanprogress.org/kf/spectrum_auctions_may06.pdf)

so much in the revenue, which is negligible compared to the overall structural deficit and debt crisis, but in the enhanced economic activity and social welfare that comes from making new spectrum available for use. Ensuring that the spectrum becomes available in a way that maximizes overall economic and social utility is far more important, therefore than any possible marginal increase in revenue from any specific auction.

### **Conclusion**

As mobile data demand continues its exponential growth, it is essential that Congress broaden its spectrum policy approach beyond commercial spectrum auctions. The billions of dollars in economic activity driven by unlicensed use and the heavy reliance on unlicensed spectrum networks by commercial license holders demonstrates that the free market is very capable of maximizing the benefit of completely unregulated spectrum. As this Committee begins crafting legislation, I urge you to avoid undoing the years of hard work the FCC underwent on a bipartisan and unanimous basis to open up the TVWS to private investment in cognitive radio technology. The United States is the world leader in this technology and given the interest in keeping investment and jobs here in this country, special care must be taken to preserve sufficient white space spectrum when authorizing incentive auctions. If allowed to flourish, the technology could be leveraged to deliver revolutionary new ways to utilize spectrum.

Providing the FCC with flexible authority to conduct incentive auctions and allowing the agency to pursue a broad approach to spectrum policy that is not exclusively tied to raising revenues will be the most effective means of promoting broadband, job creation, and economic growth. Thank you again for inviting me to testify before the Subcommittee. I look forward to your questions.

Mr. WALDEN. Mr. Feld, thank you very much for your comments as well. We appreciate the testimony of all our witnesses.

We are in the middle of a vote now, so again, please plan to return no later than 1:25, and we will resume the hearing at that point for questions from the members.

With that, we stand in recess.

[Recess.]

Mr. WALDEN. We will call the subcommittee back to order, and I think we had concluded testimony from all of the witnesses prior to our recess for the vote on the House floor. We anticipate another vote in about 45 minutes or so.

I am going to start with the first round of questions, and I want to address the first questions I have to Mr. Schurz and Mr. Ellis.

I would ask if you could elaborate on some of the efforts by broadcasters to bring new and innovative services to the broadcast spectrum. One of the purposes of this hearing was really to evaluate since DTV conversion, you know, what is happening out there in the marketplace? What are you able to do? I know Mr. Ellis, you touched on this a bit, but I would also like to explore what the hurdles are in the way of innovation in the spectrum that you have going forward.

So if you could each take a minute or so just to kind of address what you are doing with it now, and what you think you could do with it.

Mr. SCHURZ. I think what we have done with it now in almost all of our markets, we have multitasked channels, serving different audiences. We have three stations, two are right in the middle of Tornado Alley, one is on the edge. All of them do a 24-7 weather channel with regular forecasts so people who are very interested in the weather can always get that.

What has also happened—the DTV transition happened 2 years ago. Mobile television, the standard was developed with that. Both Mr. Ellis and I are involved in those efforts. And so you are seeing that just starting now. A little over 70 stations are in mobile television.

But I think the other thing is I don't want to not talk about high definition in terms of the clarity and the quality of the picture and what that means for our constituents. High definition local news takes a lot of bandwidth, but is also a great consumer value proposition.

Mr. WALDEN. Mr. Ellis, do you want to use a minute or so to comment on new technologies?

Mr. ELLIS. The company we are putting together this time—this is my third broadcast group. The first couple groups I bet on the emergence of new programming. That was the trend I was trying to follow. This time, we are betting on the emergence of new technologies. The mobile technology is the most unique and different technology for broadcasters. That is where—you know, use the sports analogy, go where the puck is going. Mobile is where it is going. We are spending an awful lot of time on that, and the inhibitions of that business is the ability to get, you know, a signal into the mobile device. This is where the consumer is going we want to be able to access that device.

Mr. WALDEN. All right. Mr. Brenner, I want to go to you, because Mr. Ellis I believe mentioned OFDM and the ability to put chips in. Tell me what that would take and whether there would be acceptance of that in the market?

Mr. BRENNER. Yes, I am not exactly sure what Mr. Ellis is referring to, Chairman Walden. OFDM refers to an interface that is at the core of long term evolution, LTE, which is the 4G technology. OFDM is also used in wi-fi. OFDM is a modulation technique, and so it can mean all kinds of different things.

I think what Mr. Ellis was suggesting is that Qualcomm would incorporate some kind of mobile DTV capability into our chips. Obviously, we look very hard at the business pros and cons of adding a new capability to our chips. Our chips support multi-frequency bands, multiple technologies, and we strive to pack the most power into our chips at the least cost.

Mr. WALDEN. Is that capability you have now today to put mobile TV in a chip?

Mr. BRENNER. No, we have looked at it. We are—mobile DTV has been talked about—I looked back through my e-mail—since at least 2007 was the first announcement about it. We have looked at it extensively. We haven't seen a business case for it in our end. Whenever we consider putting a new technology into our chips, Chairman Walden, it is a very interactive process. We go back and forth with the device manufacturers, with the carriers and with application providers. We don't just make that decision in a vacuum, and we—it is not mature. We just don't see demand.

Mr. WALDEN. All right. Mr. Ellis, do you want to comment briefly on that?

Mr. ELLIS. In essence, if the carriers are not going to pay Qualcomm to put this thing in their chip, he is not going to make it.

Mr. WALDEN. Mr. Brenner?

Mr. BRENNER. That is a little too simple, quite frankly. So it is true, someone is going to have to give us a return on our investment when we put a new capability into our chips, but there is a web of relationships. There are folks who make devices, there are folks who come up with applications. We are also in a highly competitive market. If I don't put a capability—I shouldn't say I. When Qualcomm decides to pass on a capability, we consider very carefully the competition. Qualcomm is the leading chip set manufacturer, but it is hyper-competitive, so it is a little too simple to just say the carriers won't pay us. We have to see a business case to make a rate of return.

Mr. WALDEN. I want to go to Dr. Connolly now on a different issue. I am trying to get a rough range of what this spectrum is worth.

You say in your testimony that similar spectrum was sold for between 3 cents and \$3.86 per megahertz POP, as I understand it. Is this correct?

Ms. CONNOLLY. Yes.

Mr. WALDEN. With approximately 300 million people in the country, that means that even on the low end, each megahertz of a licensed spectrum could raise \$9 million, and on the high end, each megahertz could raise \$1 billion. Is that correct?

Ms. CONNOLLY. Yes.

Mr. WALDEN. OK, all right.

My time has expired. I would turn to the gentlelady, my ranking member, Ms. Eshoo, for 5 minutes.

Ms. ESHOO. Thank you, Mr. Chairman, and I want to thank each one of the witnesses. I think you did a terrific job coming from where each of you is coming from, but it was really valuable, valuable testimony.

To Mr. Feld, I loved your button and buttonhole analogy. I think we will remember that one for a long time. In your view, how much spectrum is needed to make the white spaces commercially viable for applications like smart grid and RFID tagging?

Mr. FELD. Well, the most important thing is to ensure that there is white spaces available, particularly in the largest urban markets, because that is what is going to drive economies of scale is the ability for people to put this into their laptops and their wi-fi routers.

In terms of an amount, the National Broadband Plan said we would like to have 20 megahertz of contiguous pure unlicensed spectrum. That would be real nice, but the beauty of unlicensed is it's a technology. You don't need that. As long as you have at least one or two available channels in the largest urban markets and sufficient—by which I mean not directly next to a broadcaster so you could use full power, and then sufficient in the rest of the country, which I think is not where the challenge is. There will be interest in developing and investing in this technology.

Ms. ESHOO. Thank you.

To Mr. Ellis, is Titan Broadcasting planning to offer mobile broadcasting, and what is your assessment of the potential market demand for this type of service?

Mr. ELLIS. Yes, we do intend to offer mobile broadcasting in our assessment. You know, it depends on whether the consumer can actually see our signal on a mobile device.

So we have to figure out whether you are going to start with the handset, which is controlled by the wireless carriers. Do you go to laptop, do you go to the N-card device, and how do you get the mobile consumer to actually see our signal?

Ms. ESHOO. You stated in your testimony that you are testifying as a broadcaster that may sell off the spectrum of some of your stations under the right conditions. Can you tell us what the right conditions are, in your view?

Mr. ELLIS. The right price.

Ms. ESHOO. There you go. Everybody has their price, right? And to Mr. Guttman-McCabe, Thank you for your testimony and the work that CTIA does.

The DTV transition freed up spectrum in the 700 megahertz band that's been auctioned. But in some cases, has yet to be deployed on a commercial basis. I think it's Mr. Barrow that has legislation that also mentions as part of the bill that there has to be an inventory done.

I'm concerned about those who have purchased spectrum and have yet to use it, 3 years after the auction was completed. So while we know that the wireless usage is growing at an expo-

nential rate, how do we determine future spectrum needs when there is still spectrum sitting unused?

Mr. GUTTMAN-MCCABE. Sure. Thank you, Congresswoman.

That is sort of a broad question and I will take it piecemeal, if you don't mind.

First of all, while the 700 megahertz auction was completed a little while back, it wasn't cleared until about a year ago. And it takes time to—Mr. Brenner and Qualcomm and companies like that, and Ericsson that do the infrastructure need to make sure that this spectrum is available and clear, then they begin the process of developing technology to implement on the network side and on the—

Ms. ESHOO. What is the average length of time to prepare the spectrum that is bought to bringing it to making use of it on the market?

Mr. GUTTMAN-MCCABE. Sure. I guess it depends upon if their standards have been developed, but it could be, you know, a year to 3 to 4 years. You must keep in mind that these companies spend tens of billions of dollars the last two auctions and raised \$33 billion, so they need to answer to Wall Street. They need to have a return on their investment, and they do move forward, and they move forward, you know, really quickly. In the last 10 years since I have been at CTIA, we have gone from analog to digital to third generation and now we're looking at fourth generation deployments, all in a 10-year period.

As far as your question about how do we determine what the future need is in terms of spectrum, whether it's Kleiner Perkins in your area or the folks in Silicon Valley or the Informa Group, or you could sort of go on and on. They've all suggested that there will be upwards of a 35 times increase in demand. We've tried to simplify that. I've tried to simplify that in my mind, and the simplest example I have is if someone came to you and said that California was going to experience a 35 times increase in the amount of cars on its roads, after you've picked yourself up off the floor, I think we would think OK, what can we do in terms of driving efficiencies? What do we have in terms of new roads planned? And that's what we're asking Congress is we can work on the efficiency side of the equation. We can implement picocells and femtocells. We need help with the roads, and our roads are spectrum. We need help preparing for that tremendous increase, which is happening. I mean, you say preparing, data traffic doubled from '09 to '10, so we're seeing that.

Ms. ESHOO. Thank you very much.

Mr. WALDEN. Thank you. We now go to the vice chair of the subcommittee, Mr. Terry.

Before I do that, Mr. Kinzinger has a document he would like to put into the record with unanimous consent from Radio Ink regarding radio stations involved in helping residents in Joplin after the tornadoes, Clear Channel especially, so—

Mr. KINZINGER. Thank you.

Mr. WALDEN [continuing]. Mr. Kinzinger, without objection that will be in the record.

[The information appears at the conclusion of the hearing.]

Mr. WALDEN. Mr. Terry?

Mr. TERRY. Thank you.

So Mr. Schurz, despite your affinity for Notre Dame——

Mr. SCHURZ. Yes, sir.

Mr. TERRY. I think Mr. Ellis probably answered this very bluntly, but I think a case has been made that more spectrum is needed. TV stations have spectrum and as I said in my opening, it is important that there is not a taking of your spectrum, that it has to be voluntary. But what will it take to get you—I am not negotiating here, but you on behalf of others, generally. Define voluntary for me. What is it going to take so that you would volunteer to give up some of your spectrum?

Mr. SCHURZ. The definition of voluntary means that there are no negative ramifications for participating or for not participating. So I think the FCC can design such an auction. My concern principally is that for those people who choose not to participate, that you—and kind of the things I chatted about in my statement in terms of no one being forced to relocate to an inferior spectrum band that all viewers can keep, seeing the channels and stations I see now. No station is subject to increased interference and that broadcasters should be held harmless from the cost of repacking.

I never heard the term win-win-win before today's hearing, and I like that term. I think what we are looking for is people want to stay in the business. It is don't lose. And really, it is not the broadcasters, it is the viewers in our communities.

Let me also add to the don't lose, that if there are spectrum fees and other costs, I think that is probably not in the spirit of voluntary.

Mr. TERRY. Such as?

Mr. SCHURZ. Such as that if we choose not to participate in the auction, repacking is involuntary. We understand that. We like to have the safeguards and protections on a going forward basis so there is no harm to the business and to the viewers in communities, but we would—we certainly don't expect or want to see increased fees—spectrum fees if we choose not to participate.

Mr. TERRY. And how do you answer Dr. Connolly's statement that if there isn't some mechanism for—to force holdouts, that it will actually degrade the value of the spectrum that may be auctioned off?

Do you agree that that could happen?

Mr. SCHURZ. From all the discussions I have seen about the way the auction is being considered, and there is no definitive auction yet, but there is a lot of discussion. My expectation is I think that they will probably find a way that will be equitable and maybe you would limit the holdouts.

The question is, no one is—Mr. Ellis is here because they said GU might sell, and he said that—people ask how much spectrum, who is selling? No one knows the answer to that question.

Mr. TERRY. Dr. Connolly, why don't we work though this a little bit more. How do we—how do you see that we can provide enough incentives to win-win-win or not lose-win-win, and not have a situation where we have to engage in a taking?

Ms. CONNOLLY. If the incentive—I mean, if the reverse auction is correctly designed, the broadcasters will only participate if they win. No one is going to participate and not win, because—and that

is by definition. And they can list different prices of which they are willing to do different things so they may be willing to do one thing and they offer a certain price. They may be completely unwilling to do other things, so they offer, you know, a very exorbitant price that they know won't be accepted, or simply refuse to participate in that auction.

The costs of any new packaging are, at least from what I hear, the FCC is offering to cover those. And so as long as what they are bidding on is well specified, then by definition, if their bid is accepted, they will win.

Mr. TERRY. Right. But we are talking about—and you look at any development and you always see that one little old house on the corner, because that person wouldn't sell out.

Ms. CONNOLLY. And that is why we do need the ability to relocate, because they will hold out. And even—well, there is a possibility of hold out. There is also the possibility that if you—I mean, when you are bidding within a market, you are competing against the other broadcasters in that market, so if someone is not in the range that they know they are trying to empty, they are not true competitors to those in the range that they are trying to vacate.

So by making relocation possible, you might have someone say on channel 21 who is willing to give up their location—their spectrum, go off the air or share or go somewhere else, and if someone on channel 40 is unwilling to, then 21 can sell their spectrum, you know, their rights to that spectrum and then we can move someone to channel 21.

So it means that more broadcasters within a given market will be competing for these bids to vacate spectrum, and by having that forced relocation, then the other people outside that key band become competitors. So not only is it an issue of hold out, but just general competition. The more competition there is, the more the bids are going to become true valuations for the broadcasters themselves. So it is not just for the one hold out, it is a general statement of overall competition in the bids.

Mr. WALDEN. Thank you. Mr. Dingell, Chairman Emeritus of the committee, we turn to you now for 5 minutes.

Mr. DINGELL. Thank you for your courtesy, and I want to thank the distinguished gentlewoman from California, Ms. Matsui, thank you.

This is not the first time we have visited this question. In earlier hearings, I have expressed my strong doubt that such auctions can, in fact, be truly voluntary. A great source of my alarm comes from the National Broadband Plan itself, where it states at page 79 that "The government's ability to reclaim, clear, and reauction spectrum is the ultimate backstop against market failure and is an appropriate tool when the voluntary process stalls entirely." I would note that we are looking at this against a lot of actions by the Commission and the Office of Management and Budget, which have taken place without us having a real understanding of what spectrum is going where and being used by who, and sat upon by who else.

So this seems to imply that the Commission's action could be forcefully taking this spectrum away from broadcasters if too few or none at all participate in the voluntary spectrum auctions.

Now to all witnesses, starting with Mr. Schurz, yes or no. Would you support such action by the Commission, yes or no?

Mr. SCHURZ. Which action?

Mr. DINGELL. Picking and taking the spectrum forcefully from broadcasters.

Mr. SCHURZ. No.

Mr. DINGELL. Mr. Ellis?

Mr. ELLIS. No.

Mr. GUTTMAN-MCCABE. We support voluntary auctions.

Mr. DINGELL. Ma'am, yes or no?

Ms. CONNOLLY. Yes.

Mr. DINGELL. You, sir?

Mr. BRENNER. I always talk about voluntary incentive auctions.

Mr. DINGELL. And sir?

Mr. FELD. Voluntary auctions.

Mr. DINGELL. All right. Now to all witnesses again, do you agree that broadcasters who are willing to participate in an incentive auction should be committed to do so in exchange for a fair share of such auctions proceeds, and set the reserve price of the spectrum it wishes to auction, yes or no? Mr. Schurz?

Mr. SCHURZ. Yes.

Mr. DINGELL. Mr. Ellis?

Mr. ELLIS. Yes.

Mr. GUTTMAN-MCCABE. Yes.

Mr. DINGELL. Ma'am, yes or no?

Ms. CONNOLLY. Who defines fair proceeds?

Mr. DINGELL. Well, I am not quite sure I can, but—

Ms. CONNOLLY. That is the question, so I would say no because I don't think anyone can define that, other than by the bid value.

Mr. DINGELL. Thank you. Next witness?

Mr. BRENNER. I am sorry to just raise a quibble here, but the use of the term reserve price, I don't quite understand.

Mr. DINGELL. Well, I am assuming the reserve price is the price that is fixed by the Commission as the price below which no auction would take place and no sale would take place. Yes or no?

Mr. BRENNER. OK. Just—can I just clarify, Congressman Dingell? The reason why I am asking is normally I have the same understanding of a reserve price. I bid in three auctions over the years, and there is an aggregate price for the entire auction that the auctioneer sets. It has nothing to do with the individual bid—

Mr. DINGELL. Time is limited, please, yes or no? I will put you down as a no.

Mr. BRENNER. I am not sure.

Mr. DINGELL. Next witness.

Mr. FELD. Depends on what result you want.

Mr. DINGELL. All right. To all witnesses, in other words, if the FCC is overly restrictive in how reauctioned spectrum can be used, we will end up with a fine mess on our hands, just like the auction of the D Block. Am I correct in that? Starting with you, Mr. Schurz.

Mr. SCHURZ. Yes.

Mr. DINGELL. Mr. Ellis?

Mr. ELLIS. Yes.

Mr. DINGELL. Next witness?

Mr. GUTTMAN-MCCABE. Yes, you are potentially correct.

Mr. DINGELL. Ma'am, if you please?

Ms. CONNOLLY. Yes.

Mr. DINGELL. Sir?

Mr. BRENNER. Yes.

Mr. DINGELL. Next witness?

Mr. FELD. Yes.

Mr. DINGELL. Thank you, ladies and gentlemen.

Now to all witnesses again, similarly, the goal of any incentive auction, in addition to fairness to those who surrender the spectrum should be to maximize the revenue to the Treasury. Yes or no, starting with Mr. Schurz?

Mr. SCHURZ. Yes.

Mr. DINGELL. Mr. Ellis?

Mr. ELLIS. No.

Mr. GUTTMAN-MCCABE. That should be a significant part of it, yes.

Mr. DINGELL. Ma'am?

Ms. CONNOLLY. No.

Mr. DINGELL. Sir?

Mr. BRENNER. Yes, a significant part.

Mr. DINGELL. Last witness?

Mr. FELD. Absolutely not.

Mr. DINGELL. All right. Now I would like to explore this channel relocation just a bit more. Now to Mr. Schurz and Ellis, both of you have considerable technical experience as broadcasters. Are my concerns about shifting from UHF to VHF valid? And I want to say that I have fears that doing so might restrict geographic reach of a given broadcaster. Second, I think going from UHF to VHF will impair the broadcaster's ability to transmit digital signals.

So are my concerns about shifting from UHF to VHF valid, yes or no?

Mr. SCHURZ. Yes, I know our company has had specific incidences of that, no question.

Mr. DINGELL. Mr. Ellis?

Mr. ELLIS. Yes, VHF does not work.

Mr. DINGELL. Now, again to Mr. Schurz and Mr. Ellis. Further, do you believe that reducing a broadcaster's ability to transmit digital signals puts it at a disadvantage vis-&-vis the other content provider, yes or no?

Mr. SCHURZ. Yes, I would agree with that.

Mr. DINGELL. Mr. Ellis?

Mr. ELLIS. Digital means over the air broadcasting only, yes, we are at a disadvantage to the wireless providers.

Mr. DINGELL. All right, to all of the witnesses, with Mr. Schurz's and Mr. Ellis's response and mine, do you believe it is fair to broadcasters to require that they move from the UHF band to the VHF band, yes or no, starting with our next witness?

Mr. GUTTMAN-MCCABE. I think there is a difference between the upper and lower VHF bands, a pretty significant difference, and I think, you know, that is a difficult question that we can work through as part of this process. There are a large number of broadcasters currently operating in both bands.

Mr. DINGELL. You can't say that it is—you can't say sitting there that it is fair at this time?

Mr. GUTTMAN-MCCABE. Well, Congressman, there are a large number of broadcasters operating in both of those bands at this moment and doing well.

Mr. DINGELL. But if they have already shifted—well, we will put you down as a no. Next witness, please.

Mr. WALDEN. Did you have another witness, Mr. Dingell, that was going to—

Mr. DINGELL. I don't—

Mr. WALDEN [continuing]. Dare answer, because we are over the clock here.

Mr. DINGELL. Well, I am willing to forego—I just want everybody to know that we are not walking into any tea party here. Thank you for your courtesy.

Mr. WALDEN. Although some of us have a time or two.

Mr. Stearns, we are going to yield to you for 5 minutes.

Mr. STEARNS. Let me ask each of you, and I think this is kind of basic to start the question off, and I will just start with Mr. Schurz. Do you think before we do any auction off the spectrum that we should do an inventory? Just right on down.

Mr. SCHURZ. As a businessman, before we determine where we need to go, we always start with where we are. Yes, I think an inventory is a good idea.

Mr. STEARNS. Mr. Ellis, we should do a spectrum inventory first?

Mr. ELLIS. Yes, but I think it can be done in a weekend.

Mr. STEARNS. In a weekend, OK. Next.

Mr. ELLIS. Yes, sir, this is not that complicated.

Mr. STEARNS. OK. Next?

Mr. GUTTMAN-MCCABE. I don't think it needs to be done prior to an incentive auction process.

Mr. STEARNS. So your answer is no, OK. Dr. Connolly?

Ms. CONNOLLY. My answer would be no.

Mr. STEARNS. No. Mr. Brenner?

Mr. BRENNER. No.

Mr. STEARNS. No. Mr. Feld?

Mr. FELD. No.

Mr. STEARNS. OK. Now let us say we do have a spectrum inventory, and you find out, you know, who has what and what they use. Do you think it is important in this layout that we determine how effectively this spectrum that they have is being used and what bands aren't yet deployed, and how long until deployment? Is that an important—I mean, some of you don't think we should do a spectrum, but it seems to me that if we do the spectrum inventory, we could find out how efficiently it is being used. I think members of Congress want to know that. Mr. Schurz, do you agree with that, that if we did a spectrum inventory we would want to find out how efficiently it is being used and what bands aren't yet deployed and how long until they are deployed?

Mr. SCHURZ. I think that what we are looking at right now is not only the total amount of spectrum, but no question how efficiently it is used. I think there is a question on how one would define that. Broadcasters have 6 megahertz. We use the 6 megahertz. So there

could be a lot of quibbling over the details, but yes, I think it is a good idea.

Mr. STEARNS. Mr. Ellis?

Mr. ELLIS. As a prudent business man, I think you should always know what—how you are using your product, yes.

Mr. STEARNS. OK.

Mr. GUTTMAN-MCCABE. Yes, our concern with an inventory is that you would—a suggestion that you might need to do it before you move forward with incentive auctions, and so—

Mr. STEARNS. That is what I am asking.

Mr. GUTTMAN-MCCABE. Yes, so we believe a solid legitimate inventory of the government side of the equation, the commercial side is fine—

Mr. STEARNS. Which would include how effectively it is being used.

Mr. GUTTMAN-MCCABE. Yes, although I think we would all share concerns about who would define that and how it would be defined. I mean, in our case—

Mr. STEARNS. Is it hard to define?

Mr. GUTTMAN-MCCABE. Yes.

Mr. STEARNS. OK. Dr. Connolly?

Ms. CONNOLLY. I agree complete that I have nothing against doing an inventory and trying—

Mr. STEARNS. You folks have said no, but—

Ms. CONNOLLY. No, but I disagree with conditioning—

Mr. STEARNS. I think it is axiomatic, trying to decide how efficiently it is being used and what bands are yet deployed and how long. I think those are important questions we should know.

Ms. CONNOLLY. But I would not condition the incentive auctions on doing that first, because I know that that can take years, and the value of the spectrum to our economy—

Mr. STEARNS. Mr. Ellis says it can take a weekend.

Ms. CONNOLLY. Well, I don't know if he has worked in the government.

Mr. ELLIS. I am definitely not working in government.

Mr. STEARNS. Touche. All right, Mr. Brenner?

Mr. ELLIS. If I could—

Mr. STEARNS. Mr. Brenner first.

Mr. BRENNER. So I want to be clear, Congressman Stearns, there should be an inventory and we should know—

Mr. STEARNS. But you said no.

Mr. BRENNER. I don't think we should hold up the auction process waiting because I am concerned that it will take forever, but just—

Mr. STEARNS. How can you auction off something you don't know anything about?

Mr. BRENNER. Well, we know—we are going to auction off spectrum that we know—

Mr. STEARNS. But don't you want to know how efficiently it is being used, by whom, and what bands aren't yet deployed and how long until—you wouldn't you want to know that?

Mr. BRENNER. So Congressman, when I advise our management, I give them a presentation once a quarter or once every two quarters on new spectrum bands, what they are being used for, what

the likely time period would be for an auction, so I think those facts are known. What isn't known is there are hundreds of thousands of FCC licensees across a whole range of services, ranging from private radio services, trucking companies, taxi cab companies, and we should find out if they are using the spectrum on an ongoing basis, and if they are not, let us get it back. I totally agree with you on that.

Mr. STEARNS. OK, Mr. Feld?

Mr. FELD. Just to clarify, because of the properties of the broadcast bands, it is pretty easy to say getting more of this stuff out there for use—for a number of different uses is a good thing. I don't need an inventory to tell me I would love some of that stuff. The inventory, however, is extremely useful both on saying where else is there useful spectrum, and where are the other services that are in the band, which just aren't the unlicensed. It is also wireless microphones, low power television translated, a whole bunch of things. Where are those going to land if we start to repack the band? So don't need it to tell me I want more spectrum out there, but I do need it for spectrum planning.

Mr. STEARNS. Thank you, Mr. Chairman.

Mr. WALDEN. Thank you, Mr. Stearns. Now we will go to the gentlelady from California, Ms. Matsui for 5 minutes.

Ms. MATSUI. Thank you, Mr. Chairman.

As I mentioned in my opening statement, I believe the FCC should have the flexibility to structure and conduct incentive auctions. Dr. Connolly, you stressed in your testimony that the FCC must have a great deal of flexibility to design and implement incentive auctions. In granting FCC this new authority, how should Congress balance the need for FCC flexibility while providing some legislative certainty to ensure that there is enough participation from existing licensees to ensure successful auctions, and these auctions would bring about the maximum value and public interest benefits for our consumers?

Ms. CONNOLLY. That is a very interesting question. I am not sure that there is anything that Congress could do to guarantee that people will come to the table. They will come to the table if it is in their incentive, and I think that that is why the FCC should be allowed to have these incentive auctions. I can't imagine that putting restrictions on the auction would somehow increase the interest in selling off—or being willing to vacate certain spectrum. I think if anything, it would decrease it. So I cannot imagine what Congress could put in there that would somehow increase the desire of the broadcasters to sell these rights.

Ms. MATSUI. So you are essentially saying that the marketplace would take care of this, and that therefore even though we have oversight, that you believe we should be a light touch, some principles, and that is it?

Ms. CONNOLLY. Yes, but moreover, I think that if the goal is to make sure that the auction is as efficient as possible, any touches are going to make it less efficient.

Ms. MATSUI. But could you balance out, though, the value as far as dollar value plus the public interest?

Ms. CONNOLLY. I think what would maximize the dollar value is also what maximizes the public interest in this case. Now there are

tradeoffs. For example, when it is decided what are the bids that win on both sides, the revenue is based on the different demand curves, how much the clients—and how much demand. They are not going to choose a price that clears everything 100 percent, right, so that is a decision that will affect how much megahertz is repurposed, and it will also affect how much revenue is given to the government.

So that will be a call to the extent that they have a target of 120 megahertz, I think that gives a certain amount of a restriction there in terms of how far they are likely to go. But I have had enough experience with auctions to see that, you know, anytime additional conditions are put on the—there are very strong consequences, and I would say D Block is a very good example of that.

Ms. MATSUI. OK, thank you.

President Obama set out a plan to create a wireless innovation fund of \$3 billion funded through spectrum proceeds, which would go towards research and development of emerging wireless technologies and applications. This question is for Mr. Guttman-McCabe and Mr. Brenner. We all know that R&D is essential to keeping America competitive. In the context of spectrum, what does this mean for your industry and its ability to develop the next wireless technologies and applications?

Mr. GUTTMAN-MCCABE. Sure. Thank you, Congresswoman.

CTIA has a large number of members who invest billions, if not tens of billions of dollars each year, and Mr. Brenner will talk a little bit about his company who is a member. We tend to try to do our best to facilitate that in the private sector, and we believe there are probably two ways that Congress could significantly help that. One is the purpose of this hearing today, to talk about getting more spectrum to market and funding the network infrastructure, such that people want to feel comfortable putting R&D dollars to work. The second is—and it is something that has been proposed by you and Ranking Member Eshoo and Congressman Stearns, and that is taking the R&D tax credit and making it permanent. Providing the ability for companies like Qualcomm and others to say hey, we have got a future that we understand that makes sense, and we are not revisiting this every couple years. And for us, that sort of making that tax credit permanent will provide a heck of an incentive for our industry.

The last thing that I would add, which we have just discovered recently at CTIA, is we talk a lot about R&D within the United States, and I think we focus on U.S. companies, which is key and important, companies like Qualcomm. But what we have learned is because we have become the hub, the epicenter of wireless, whether it is the apps world or the network world or the device world, we are finding foreign companies are moving their R&D facilities here into the United States, and we are finding more and more foreign-based companies with R&D facilities in California, in Texas, and in other States. And we think that is because we have the right ecosystem to facilitate that.

Ms. MATSUI. Right. I am sorry, Mr. Brenner, I am out of time, but a quick comment from you?

Mr. BRENNER. Well, research and development is synonymous with Qualcomm. As I said in my testimony, we spend \$2 billion

every year on research and development, over 20 cents of every dollar that we make in revenue, so we are constantly researching new technologies. It is essential.

Ms. MATSUI. Thank you very much, and I know I have really run out of time. Thank you, Mr. Chairman.

Mr. WALDEN. It is all right, we want to get the answers. Thank you, Ms. Matsui.

We will go now to Ms. Blackburn. Thank you for being here, and we look forward to your questions.

Mrs. BLACKBURN. Thank you, Mr. Chairman, and thank you to our witnesses, and thank you for your patience.

I love hearing you all talk about innovation, and I am glad we just touched on the R&D tax credit, because the innovators that I am talking to in Tennessee, some of them I have been working with for years because I ran the Tennessee Film, Entertainment, Music and Interactive Technologies component of our State government at one point in my career, and innovators want that certainty, and regulatory uncertainty right now is just a bear, and they talk about it to us quite a bit.

Listening to you all, I would imagine each and every one of you knows somebody who is innovating some new application or attachment for the broadband, and they are waiting to see what is going to happen with spectrum. So let us just say Congress sits on their hands and that nothing is done. Mr. Brenner, let me just throw this to you. What do you think would happen if we see this spectrum crunch get worse, because we know that capacity demand is outpacing the capacity, and if Congress doesn't free up some of the spectrum for commercial broadband, what do you see that impact being on the economy and on jobs?

Mr. BRENNER. It would be extremely detrimental impact on the economy and jobs, Congresswoman Blackburn. I don't think that there is—the world is going to end tomorrow or the next day, but I think the FCC and the broadband plan did a very good job of laying out short-term, medium-term, and long-term steps and I think they have pretty much proven in a—their white paper that by 2014, we are going to have a serious problem.

What could happen? We could have basically the effect of brownouts. The devices won't work all the time. Your devices won't work wherever you go. That is obviously a problem today. The carriers are spending a fortune, billions of dollars every year. We almost take for granted to provide better service and better coverage. We are spending, as I say, billions of dollars inventing more technologies. That whole ecosystem will slow down and will ultimately stop, and then also, from an international point of view, I was in Canada yesterday. We are actually ahead of the Canadians, which we weren't 2 years ago. We are ahead of the Europeans with our mobile systems and the Asians, and we won't be if we don't have enough licensed spectrum coming online.

Mrs. BLACKBURN. You know, I find it so interesting when you equate it to the brownouts, because so many of our entertainment industry innovators in the spectrum have become financial service innovators and healthcare delivery system innovators, and we are seeing a tremendous amount of parallels, if you will, in those industries. And I know that is something that they bring forward to

us all the time is wanting the certainty of the availability of that spectrum.

Mr. Guttman?

Mr. GUTTMAN-MCCABE. Yes, Congresswoman, just—I would point you to an article, a kind of timely article in the Wall Street Journal this week that talked about India and the impact of not bringing enough spectrum has had on the Indian market. I think we all think of India as a really rapidly emerging market, and yet in the last 2 years, because of the failure to bring additional spectrum to market, their capital expenditures have gone down 42 percent, and they said that by 2015 they will not be able to serve 1/3 of their mobile broadband customers, which could have a 1 percent impact on Indian GDP.

So the article ties it directly to not bringing spectrum and not allowing these companies to really—to move forward. And that is a macro level, but I think it is illustrative.

Mrs. BLACKBURN. OK. Mr. Ellis?

Mr. ELLIS. I do not think it is a spectrum problem; I think it is an architecture problem. The one-to-one architecture of the wireless industry, you know, is always going to have a problem, no matter how much spectrum. If you—if eventually you do run out of spectrum, either because they don't get it now or they don't get the next load they are going to need later, what is going to—the solution to this is a partnership between broadcasters and wireless. We have a very efficient methodology for delivering, you know, high content video. They have a very inefficient methodology. The two of us could work some great things together.

Mrs. BLACKBURN. OK. Dr. Connolly, I have got just 30 seconds left. You have talked around the issue of the auctions, the incentive auctions, and I agree with your comment about the D Block. We put so many restrictions on that by the time the FCC finished, nobody wanted it. I mean, it is lying fallow.

So in your perfect world, what would those conditions for a spectrum auction be to see revenue to the Treasury, and then affordability to the private sector so that innovation is carried forward on this spectrum? So if you were designing it, what would you say it needed to be?

Ms. CONNOLLY. I would not put conditions.

Mrs. BLACKBURN. No conditions?

Ms. CONNOLLY. That is my personal.

Mrs. BLACKBURN. OK, and I appreciate that because that is what we need to hear, because that is what we want to do.

I think we all agree that in a 21st century economy, making certain that the creative economy has the space in which to work and expand, and knowing that what you all are sitting here talking about and representing today touches every economic sector in this country.

When you look at my district in Tennessee, the efficiencies that have been derived for small business manufacturing primarily have come through looking at the advances that have taken place around spectrum. The auto industry, the entertainment industry, the healthcare industry, the financial services industry, the defense technologies, the list goes on and on and on. So I appreciate that, and I am over my time and I yield back.

Mr. WALDEN. Thank the gentlelady.

Now go the gentleman from Illinois, Mr. Rush, for 5 minutes.

Mr. RUSH. Thank you, Mr. Chairman. I have only a few minutes to ask questions, so I am going to ask questions of all the panelists. If you could respond by a yes or a no, then I have a second question I would like to ask you also.

The FCC's record on auctions as it relates to minority, women, and small business success has left much to be desired. In fact, that record has led former FCC Commissioner Edelstein to conclude that auction results have been appalling in terms of gains that minority, women, and rural carrier-owned businesses have made as wireless licensees. During the AWS 3 auctions, for example, large incumbents with deep pockets walked away with almost 70 percent of the licenses. Can the FCC design incentive auctions in a way using bidding credits, tzx incentives, or other mechanisms to increase these appalling numbers and indemnify broadcasters who relocate? A simple yes or no, beginning with Mr. Schurz.

Mr. SCHURZ. That is a complicated question. I think you will see less diversity in terms of ownership, and I think you will also see—I think you will see as a part of the repacking the Hispanic community, one in three watches television over the air, so viewers will be hurt—

Mr. RUSH. You can't give me a yes or a no?

Mr. SCHURZ. I will go with yes.

Mr. RUSH. Yes. Mr. Ellis?

Mr. ELLIS. Was the question can they design it so—

Mr. RUSH. Yes.

Mr. ELLIS. Yes.

Mr. GUTTMAN-MCCABE. I think that is possible, and I—Congressman, I don't know if you saw this morning, but a letter came in from the NAACP and Rainbow Push and a number of Hispanic groups all supporting—10 organizations in total supporting incentive auctions.

Mr. RUSH. Dr. Connolly?

Ms. CONNOLLY. May I ask clarification? You are asking can it be done to help diversity among licensees or among those who are receiving the services?

Mr. RUSH. The licensees, expand the pool of licensees.

Ms. CONNOLLY. It can be done, but it can be done very poorly, and we have had evidence of that before.

Mr. RUSH. It can be done better?

Ms. CONNOLLY. I would argue that it is—

Mr. RUSH. My time—

Ms. CONNOLLY. Scale matters here. Scale matters here. I don't know that that should be the goal.

Mr. RUSH. Can you give a yes or a no? Mr. Brenner?

Mr. BRENNER. I think it is possible. I think Dr. Connolly's point, which I think is a fair one, is this is a very capital-intensive business for wireless business, so access to capital is a huge determinant in who can bid in an auction and who can win, but is it possible? Yes.

Mr. RUSH. It can be done?

Mr. BRENNER. It can be done.

Mr. RUSH. Yes.

Mr. FELD. One of the great advantages of the white spaces is that it allows women and minority-owned businesses to get access to spectrum, which is why so many civil rights organizations supported us and white spaces. With that said, I absolutely agree, the FCC can and should do a better job in making sure that women and minority-owned businesses have greater opportunity in licenses at auction.

Mr. RUSH. OK. Well, let me ask you this other question. Can the FCC design incentive auctions in a way that increases minority, women, rural ownership, entices enough broadcasters to relocate, and also generates sufficient funds to pay for a national public safety network? Yes or no?

Mr. SCHURZ. I think the answer to that is yes. I mean, you are talking about auction design.

Mr. ELLIS. Yes.

Mr. GUTTMAN-MCCABE. I think it is possible, and I think the question about funding a public safety network is going to be one that is hashed out with you and others in this committee, and I think that is a difficult question that is going to take a lot of thought.

Ms. CONNOLLY. It is a possibility to do.

Mr. RUSH. All right.

Mr. BRENNER. Yes, it is possible.

Mr. FELD. Yes, and they ought to.

Mr. RUSH. All right. Could incentive auctions create additional unintended consequences and problems?

Mr. SCHURZ. Yes, no question about it.

Mr. ELLIS. Yes. Solvable, but yes.

Mr. GUTTMAN-MCCABE. Not if done properly.

Ms. CONNOLLY. I think they would be minor, relative to potential—well, they would be inconsequential, relative to the gains.

Mr. BRENNER. I think that they will be a huge success.

Mr. FELD. I think that they are complicated. We don't know what the best model is, which is why we need to proceed cautiously and give the experts flexibility.

Mr. RUSH. All right. Mr. McCabe, give me some examples of unintended problems that might occur under incentive auctions?

Mr. GUTTMAN-MCCABE. Well, I think we have talked at length about making sure that we don't try to overly dictate what the FCC can and should do here. I think we have seen that it is not just the D Block. We have seen it with the C Block and other bands of spectrum that have been auctioned, so I think that is an unintended consequence for the auction as a whole.

I think with regard to broadcasters, I think we just have to be considerate and think through the process and make it something that incentivizes them. It is in our interest on the wireless side for the broadcasters to have an incentive to participate, and that is what we want. We want them to participate. We believe it can be wildly successful, and we believe we can't miss this opportunity. We have seen Germany and United Kingdom and France and Italy and Spain and South Korea and Japan have all identified spectrum for commercial mobile purposes and are bringing it to market. We can't fall behind.

Mr. RUSH. Mr. Chairman, I thank you. You have been very generous with the time you have allotted me.

Mr. WALDEN. Thank you, Mr. Rush, for your questions, and panelists for your answers.

We go now to Mr. Latta for 5 minutes.

Mr. LATTA. Thank you very much, Mr. Chairman. I appreciate it. To our panel, thanks very much for being here today. Some of the questions I would just like to follow up to some of the other members who were already asked today.

If I could, Mr. Guttman, if I could start. We were talking a little bit about the ramifications if there isn't a voluntary auction out there, and you were talking about what happened in India. In this country, how many jobs would be affected or how many jobs do you predict that wouldn't be created if we didn't have this auction?

Mr. GUTTMAN-MCCABE. Sure. So we have seen numbers between 100,000 and 200,000 new jobs if we can move forward with incentive auction legislation, and that is sort of direct employment that we looked at and viewed. But I think if you look at sort of what we call the verticals, healthcare and smart grid, intelligent transportation and education and areas like that, you are talking about a ripple effect that is almost immeasurable. We really do strongly believe, you know, no matter who you look at who is measuring this, that the change that is going to happen in this ecosystem is staggering. Two years ago, 3 years ago the hottest selling handset was the Motorola Razr. We didn't have application stores. We barely had third generation, certainly not fourth generation. We didn't have tablets. I think when we looked at—Kleiner Perkins study looked at the first three quarters after the launch of the iPod, and they went from zero to one million, the first three quarters after the launch of the iPhone went from zero to four million. The first three quarters of the iPad went from zero to 14 million. And so we are seeing a ramp up that is almost vertical, and I—it is almost impossible to put a number on the value and the jobs and the money that will flow to the economy—

Mr. LATTA. That is going to be my next question. Is there any way to predict what that value would be in dollars?

Mr. GUTTMAN-MCCABE. Well, we have seen numbers that have come out of the Administration from Mr. Summers that have said for every dollar that goes in in terms of investment, it results in \$7 to \$10 in increased GDP. And so that is a multiplier that we think is probably a legitimate number. Dr. Connolly might know—she just gave me that look. But you know, there clearly is a multiplier effect, and we have seen it measured at 7 to \$10 for every dollar in investment that—

Mr. LATTA. I see that Mr. Ellis would like to make a statement on this.

Mr. ELLIS. I am just wondering if anybody is going to hold him to these numbers.

Mr. LATTA. I beg your pardon?

Mr. ELLIS. Is anybody going to hold him to these numbers?

Mr. GUTTMAN-MCCABE. Every time we see them, they go up, and so I will say yes. I will be willing to suggest—I mean, Cisco put out its networking numbers today, and they went up again. We have got a company here that sells solutions to spectrum problems

saying we need to bring more spectrum to market. If that isn't the greatest illustration that we need some help, I am not sure what is.

Mr. LATTA. Well I know Dr. Connolly—Mr. Chairman had asked initially what that value might be, and you had thrown out a low end and a high end. Could you say what those are again?

Ms. CONNOLLY. Well, I had—the megahertz POP values that I was looking at were between \$.03 and \$3.86 per megahertz POP. That is purely based on the 700 auction, but if you aggregate that up, that means that based on a 700 megahertz auction, 1 megahertz at the lowest end would generate \$9 million and at the highest end could generate \$1 billion, approximately.

Mr. LATTA. Mr. Brenner? Please turn on your mic.

Mr. BRENNER. We need to multiply that by the number of megahertz that would be auctioned, so if we are auctioning 120 megahertz, Dr. Connolly's high number is tens of billions of dollars, 30, 40, \$50 billion in auction revenues. I don't know if that is going to happen, but you know, there is no question that there is huge demand for spectrum, and if there is an auction, there will be people with a lot of money bidding to get more spectrum.

Mr. LATTA. Mr. Schurz?

Mr. SCHURZ. The 120 megahertz number has been thrown around, and I just want to give a little perspective. That was in the National Broadband Plan, but that plan did not envision Canada or Mexico, and so the amount of spectrum that you will successfully get out of broadcast spectrum I would argue is significantly less. There are some issues with the plan, and so there are a lot of numbers going around. I just want to make certain that Canada and Mexico do impact spectrum in the United States.

Mr. LATTA. Mr. Feld?

Mr. FELD. I just want to emphasize, we can't know today how many broadcasters will want to participate in voluntary auction, but when we talk about both meeting our spectrum demand and the value that is being contributed to the economy, it is important to consider the value of the unlicensed and the white spaces as well. There are a lot of uses that individually don't take up a lot of bandwidth, are a poor fit with licensed, and when we are thinking about how we are going to meet the spectrum demand and the spectrum crunch, particularly when we are talking about machine to machine, smart grid, other uses where it is really not necessarily a good fit with a licensed service. The ability to offload all that traffic to the unlicensed and save the licensed space with the higher bandwidth uses that people are looking at is critical to meeting our spectrum needs.

Mr. LATTA. Thank you. Mr. Chairman, I see my time has expired and I yield back.

Mr. WALDEN. I thank the gentleman from Ohio.

I would now recognize the gentleman from Illinois, Mr. Kinzinger.

Mr. KINZINGER. Thank you, Mr. Chairman. It is good to be last, always, because you guys know you get to go home maybe, unless somebody else shows up.

I don't have a whole lot to ask because most of it has already been asked, but to me, in a way as I am kind of really getting to

figure this out, it seems like not having the voluntary auctions would kind of be a lose-lose. It really reduces flexibility for everybody, really, on all sides of this debate.

Let us say we don't move on anything like a voluntary auction, we just keep status quo. I know this has been asked in different ways, but just very briefly, I will give all six of you a chance just to say, you know, what do you see as a scenario? So you know, typical Congress, let us say we don't do anything and we find ourselves where we are now. What is kind of the long-term—and I know there was discussion about brownouts, you know, and—where do we see this? We can start over here at the—my left.

Mr. SCHURZ. I think there is no question that demand is growing. I will say that we are in smaller markets, and the capacity crunch really does not exist in our markets. So in the smaller and rural markets, you won't—it is not a pressing issue. I think what you will see is you will see great innovation by broadcasters. You are seeing it today. It is 2 years since the digital transition. You will see more.

Mr. ELLIS. About half my stations are in small markets. Same answer as Todd. Half of our stations are in major markets, Los Angeles, San Francisco, Boston, New York/Philly corridor. I think if there is no auction, you know, and we are allowed to do so, we will approach the wireless companies to create partnerships where they can offload some of their high bandwidth content, you know, their broadcasting type content—

Mr. KINZINGER. So you are saying—

Mr. ELLIS [continuing]. And make partnerships out of that. Yes, indeed.

Mr. GUTTMAN-MCCABE. You know, I think there will be partnerships. There are partnerships. But I don't think we should take away from this notion that the broadcast architecture is a perfect architecture. It is great if you want to watch the Super Bowl when the broadcasters want to deliver the Super Bowl, which I do, and that is one of the times I do. But all of you and all of our customers want their content when they want it, and so whether it is large or small, I disagree strongly with the notion that—I mean, some of our most active members on the spectrum issue are smaller carriers who want wider channels, who want to be able to deliver in rural areas what the large carriers want to deliver in urban areas. They want broad, wide channels to deliver the video content, to deliver the Powerpoints and things like that. So I strongly, strongly urge, with all due speed that Congress consider incentive auctions. I don't see—

Mr. KINZINGER. Well, and it seems like it would be creating kind of a—as I see it, it creates a market mechanism for broadcasters or anybody really to make a decision which best suits them at that moment, is just kind in general how it seems.

Dr. Connolly?

Ms. CONNOLLY. I agree. This—the incentive auction is, I think the most expedient way that I see in front of us to achieve something that almost everyone believes has huge value. So not doing it, then you are delaying any gains that your economy could have, and as a broadcaster, I would worry that other mechanisms might be used to get that spectrum that would not be as advantageous

to them, which is something that the broadcasters—I think is why the incentive auction is good for them, because they can win from it.

Mr. BRENNER. So to round out my prior answer where I referred to brownouts, I mean, what is going to happen if Congress doesn't pass the legislation is the folks who do have spectrum are going to continue to face this exploding demand, and they are going to have to ration capacity. They are going to have to assign the bandwidth in some way, and there are only two ways to do it. That is to raise prices, and so it just goes to the customers who are willing to pay more, and that is a bad thing for the economy, or there will be this diminution in service. I don't think there is a third alternative.

Mr. KINZINGER. OK, and just quickly?

Mr. FELD. There is a fine line between taking a problem seriously and panicking. I don't think we need to panic here. I do not believe we are going to have significant brownouts if we don't pass legislation, and I believe that—we have seen a lot of innovation. We have seen a lot of cleverness that has gone on as people have confronted technical challenges. That is one of the things that actually makes this country innovative and great is that when we hit things like what looks like a wall on spectrum capacity, we find ways around that.

Mr. KINZINGER. Yes, we are pretty good at that, aren't we? We are good at being innovative, that is what is amazing. I also, just to wrap up, I serve a fairly rural district, and you know, one of the things I am obviously concerned about is continuing to deploy broadband to those folks that are underserved, just simply by fact that they don't live around a lot of other people. With that, I yield back.

Mr. WALDEN. Thank the gentleman for his questions. I thank the panelists for their answers. Your testimony has been very helpful to our committee to hear from all of you.

I have asked unanimous consent to submit three letters to the record, a letter from 112 leading economists, including Dr. Connolly, to President Obama supporting incentive auctions, a letter from 10 groups representing minority interests supporting incentive auctions, and a letter from 33 IT equipment innovators supporting incentive auctions. Without objection, they will be entered into our record.

[The information appears at the conclusion of the hearing.]

Mr. WALDEN. Again, I thank all of our witnesses today and in the past panels. We intend to tackle this issue head-on and in a bipartisan and thoughtful way. I appreciate your input and that of others in the audience, and others watching. We intend to get this right, not only for our country to grow jobs and innovation, but also for public safety, to make sure that they have an interoperable network taxpayers can afford and that they can always rely upon.

So thank you all for your participation. We stand adjourned.

[Whereupon, at 2:35 p.m., the subcommittee was adjourned.]

[Material submitted for inclusion in the record follows:]

#### PREPARED STATEMENT OF HON. EDOLPHUS TOWNS

Thank you, Chairman Walden and Ranking Member Eshoo. I am very pleased that the Sub Committee is holding this hearing. It is very important to get the full

perspective on spectrum so we can move forward on bipartisan legislation to address this issue.

I am a strong supporter of President Obama's goal of improving the way this country uses its spectrum and freeing up more for mobile broadband and a national public safety network. Incentive auction authority is an efficient tool to put spectrum in the hands of those companies that most want it to roll out the latest most innovative devices our families will rely on in the future. It is critically important that the FCC, given its deep expertise in conducting high quality auction, be given wide discretion in how it is designed and implemented.

I am encouraged by the energy of the high tech community and the response from the broadcasting community to see this through. My constituents still rely on free over the air television, and mobile broadcasting has shown particular promise in disaster situations. I am concerned that opportunities for smaller and minority focused broadcasting may be hurt if the smaller broadcasters are first to take advantage of the incentive auctions. However, the need for spectrum for mobile broadband by ever more users is undeniable, as FCC data has shown. I would like to hear from our witnesses whether and how both of their preferred outcomes can be achieved.

Again, I thank the Subcommittee for tackling this subject in a broad and comprehensive manner. I look forward to working with my colleagues on these and other issues as we move forward in this Congress.

Thank you and I yield back the balance of my time.

***Radio Ink: Clear Channel Helping Joplin Residents***

May 27, 2011

<http://www.radioink.com/Article.asp?id=2197545&spid=24698>

**Clear Channel's** Springfield Missouri Operations Manager Paul Kelley reports that his stations are helping neighbors in nearby Joplin. Springfield is only about 60 miles from Joplin and the **Clear Channel** cluster in Springfield has already filled six semi-trucks with 35,000 pounds of food and supplies for the Ozarks Food Harvest to take to the Red Cross in Joplin. They have also raised \$5,000 in cash donations. Within a 24 hour period they raised \$20,000 to support Convoy of Hope, a disaster relief organization based in Springfield that is on the ground in Joplin. And, the stations learned of the need for Type O Negative blood donations and have been encouraging residents to participate in blood drives for the Community Blood Center for the Ozarks.

***Radio Ink: Clear Channel Helping Joplin Residents***

May 27, 2011

<http://www.radioink.com/Article.asp?id=2197545&spid=24698>

**Clear Channel** Communications in Springfield collected food items and supplies for Ozarks Food Harvest Joplin relief, last week in the Dillons parking lot at Kansas and Battlefield, collecting 49,590 pounds of nonperishable food, paper products and hygiene items, and \$5,000 in cash from drive-up donors.

Two truckloads of these donations have already reached Joplin and have been provided to Ozarks Food Harvest agency sites for those in need. Remaining donations are warehoused in Springfield, and nearby Joplin, to be accessed in the weeks and months to come. This includes more than 30 truckloads—secured by Ozarks Food Harvest from Feeding America®, national manufacturers and others—worth an estimated \$1.8 million.

Ozarks Food Harvest says it is vital that Joplin is not overwhelmed with unnecessary donations or too much of a particular product, and officials at The Food Bank say this is the case due to the massive number of groups sending unsolicited trucks of supplies. Ozarks Food Harvest has taken the lead role among disaster response agencies for food distribution at the request of the American Red Cross: Greater Ozarks Chapter, according to OFH President/CEO Bart Brown.

Ozarks Food Harvest has a 28-year history in southwest Missouri and has had member food pantries and feeding sites in Joplin and Jasper County for more than a decade.

Ozarks Food Harvest is the Feeding America® food bank for southwest Missouri, serving more than 300 hunger relief organizations across 28 Ozarks counties. The Food Bank reaches 20,000 individuals weekly and distributes nine million pounds of food annually. Ozarks Food Harvest was named the 2011 Small Business of the Year by the Springfield Area Chamber of Commerce. Learn more at [ozarksfoodharvest.org](http://ozarksfoodharvest.org) and at [facebook.com/ozarksfoodharvest](http://facebook.com/ozarksfoodharvest).

***All Access Media Group: Clear Channel/Springfield Organizes Help for Joplin***

May 27, 2011

<http://www.allaccess.com/net-news/archive/story/91964/clear-channel-springfield-organizes-help-for-joplin>

The **CLEAR CHANNEL/SPRINGFIELD**, MO cluster is the latest radio group to organize efforts to help the victims of the devastating JOPLIN tornado. OM PAUL KELLEY said the stations are serving as a hub to help organizations, businesses and residents collect and distribute resources to those who need them most.

"Although the tornadoes hit on SUNDAY night, it wasn't until MONDAY when we truly began to understand what happened, so it was something we put together on the fly.; KELLEY told ALL ACCESS. We had to figure out what we can we do, what needs to happen now and most importantly, not interfere with the search-and-rescue efforts going on. We weren't going to go down to JOPLIN and get in the way; we just wanted to make sure we went in prepared to distribute goods and supplies. So we reached out to two officially sanctioned local organizations.

"One was the OZARKS FOOD HARVEST. There were thousands of homes that were either destroyed or without electricity; plus there were hundreds of rescue workers who also needed to be fed. In conjunction with FOOD HARVEST, we immediately began to fill a truck with non-perishable, easy-open food items, bottled water and wet wipes -- things can immediately eat and clean themselves up . The initial goal was to fill one truck in the course of a day, but we ended up filling six trucks in two days. The response was so overwhelming, we weren't even soliciting cash still, but we still had \$6,000 dropped off in \$10 and \$20 increments."

The other group was CONVOY OF HOPE, to make it easier for people to give," he continued. "It's hard for some people to rearrange their day so they have to drive to one location to buy groceries, then go to a another location where the truck is. We made is easy for them to go online and text donations; within 24 hours raised \$20,000 in cash."

"We want to do be very sensitive to provide what's needed," KELLEY Noted. "We don't want to continue to fill up trucks and send things out when they're not needed, Just yesterday FEMA yesterday said, 'Please do not send unsolicited or unsanctioned donations; don't just fill up a truck and send it off."

Regarding how long their efforts will go on, KELLEY concluded, "As long as the need is there, our communities will continue to respond. We want to make sure our neighbors get hell because when we need help, we know our neighbors will be there to help us."

***Radio Ink: Homeless Zimmer Radio Families Can Use Our Help***

May 25, 2011

<http://www.radioink.com/Article.asp?id=2195643&spid=30800>

The latest report we have from Zimmer Radio CEO James Zimmer is that the 7 people he employs who lost homes to a tornado have been accommodated for the next two weeks. Several staff members will be living out of an RV that was donated, by the way, by **Clear Channel** in Springfield, Missouri. We asked Zimmer if there was anything the rest of the industry can do to help his team out, and there is. Our hats

are off to Zimmer's Joplin, Missouri team as they continue to serve their community. Some are doing it without a home to return to.

Here is the message from Zimmer: "If any of our fellow brethren want to donate specifically to our "homeless" staff members they can send donations to our stations in Joplin. Thank you, and I will keep you posted with any new developments."

Chad Elliot, OM,  
Zimmer Radio, Inc.  
2702 East 32nd Street  
Joplin, MO 64804

Radio Ink has also restarted our Tornado Relief Fund at PayPal so we can transfer any donated funds over to the station quickly if you would like to donate online today. Here is the link if you have a PayPal account:



Gregory L. Rosston  
Deputy Director

April 6, 2011

President Barack Obama  
The White House  
1600 Pennsylvania Avenue  
Washington, DC 20500

Dear President Obama,

We are 112 economists who specialize in telecommunications, auction theory and design, and/or competition policy. We understand that Congress is considering legislation that would give the FCC explicit authority to run “incentive auctions” in which it would have the ability to distribute some portion of the auction proceeds to licensees who voluntarily give up their license rights. We support such an effort and think it would increase spectrum efficiency in the United States.

Spectrum policy is very important for the United States economy. In 1993, Congress took the important, but politically controversial step of authorizing spectrum auctions. The decision led to substantial benefits including more efficient spectrum allocation and substantial revenues for the U.S. Treasury. The Federal Communications Commission (“FCC”) worked with auction experts to develop the simultaneous multiple-round auction that worked in the United States and has been replicated around the world.

Congress has another chance to give the FCC a valuable tool to increase the efficiency of spectrum use in the United States by granting the FCC the authority to auction spectrum it controls at the same time as it auctions spectrum licenses held by commercial entities. Auction design and practice is sufficiently advanced that the FCC can successfully implement this type of auction. Incentive auctions can facilitate the repurposing of spectrum from inefficient uses to more valuable uses while minimizing the transaction costs incurred. Giving the FCC the authority to implement incentive auctions with flexibility to design appropriate rules would increase social welfare.

Historically, the FCC allocated spectrum for specific uscs such as television, radio, or satellite services. Spectrum rules are meant to resolve conflicting uses, much as a city might engage in zoning to protect homeowners from noisy or dirty industrial developments. Because of changing technologies, demand, and relative costs, old spectrum allocations based on out-of-date assumptions have become inefficient, wasting valuable spectrum resources. Existing laws do not give the FCC the tools it needs to allow spectrum to be reallocated efficiently and quickly from

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old uses to newer, currently more valuable uses.

The United States has a long tradition of relying on private market transactions to guide resources to their highest value uses. Voluntary transactions in free markets ensure that trades happen only when the buyer and seller both benefit. Just as for most assets, when radio spectrum is used inefficiently and appropriate property rights are in place, the potential buyers and sellers will be encouraged to find terms that capture and share the benefits of transitioning spectrum to higher valued uses.

Transitioning spectrum to more valuable uses is relatively easy and almost spontaneous when simple, single transactions can provide most of the joint benefits. But repurposing radio spectrum can entail complex transactions involving several parties. For example, a buyer may be reluctant to acquire licenses piecemeal because of the risk that it might fail to aggregate a sufficient quantity of appropriate licenses. However, a centralized auction that incorporates package bidding helps assure the buyer that it would not be saddled with an inefficiently small aggregation of licenses, and also allows a buyer to compare alternative acquisition strategies more systematically. A centralized marketplace can also reduce the transaction costs and hold out problems that sometimes arise when the ability to set up a service requires negotiating rights from many different parties (sometime referred to as a "thicket of rights" or "anticommons" problem). For example, current broadcast licenses have many overlapping geographic areas; it might be difficult to come to satisfactory agreements in a timely manner with a sufficient number of incumbent licensees in any particular geographic area, or enough geographic areas across the country, to establish a viable wireless service.

Implementing an efficient "incentive auction" will require substantial thought and care – we look forward to working with the FCC to develop an efficient auction system and to address potential concerns about the auction and how it will work. The original simultaneous multiple-round auction system implemented in 1994 was novel, but the FCC was able to implement the path-breaking auctions that were the basis for successful auctions around the world. We expect that the same will be true of incentive auctions.

Sincerely,

Paul Milgrom  
Stanford University

Gregory Rosston  
Stanford University

Andrzej Skrzypacz  
Stanford University

Cc: Austan Goolsbee, Chairman, President's Council of Economic Advisors  
Eugene Sperling, Chairman, National Economic Council

List of Signatories

Atila Abdulkadiroglu Duke University	Eric Budish University of Chicago
Daniel Ackerberg University of Michigan	Meghan Busse Northwestern University
Victor Aguirregabiria University of Toronto	Kalyan Chatterjee Penn State University
Kenneth Arrow Stanford University	Judith Chevalier Yale University
Susan Athey Harvard University	Michelle Connolly Duke University
Lawrence Ausubel University of Maryland	Peter Cramton University of Maryland
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Steven Tadelis University of California, Berkeley	Pai-Ling Yin Massachusetts Institute of Technology



May 31, 2011

The Honorable Jay Rockefeller  
Chairman  
Committee on Commerce, Science and  
Transportation  
United States Senate  
Washington, D.C. 20510

The Honorable Kay Bailey Hutchison  
Ranking Member  
Committee on Commerce, Science and  
Transportation  
United States Senate  
Washington, D.C. 20510

The Honorable Fred Upton  
Chairman  
Energy and Commerce Committee  
U.S. House of Representatives  
Washington, D.C. 20510

The Honorable Henry Waxman  
Ranking Member  
Energy and Commerce Committee  
U.S. House of Representatives  
Washington, D.C. 20510

Dear Chairmen Rockefeller and Upton and Ranking Members Waxman and Hutchinson:

We write to encourage you to support legislation authorizing the Federal Communications Commission ("FCC") to commence voluntary incentive auctions of the broadcast television spectrum bands. Incentive auctions would free up a substantial amount of valuable spectrum for mobile broadband services and have a tremendous beneficial impact on the delivery of broadband services to minority and low-income consumers, while also strengthening free, over-the-air broadcast television.

A digital divide continues to exist in this country, and mobile broadband is key to eliminating that divide. Racial and ethnic minorities have adopted mobile broadband faster than the general population and are among the most avid mobile Internet users.<sup>1</sup> As FCC Chairman Julius

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<sup>1</sup> See Aaron Smith, Pew Internet & American Life Project, Mobile Access 2010, 18 (July 7, 2010), available at [http://www.pewinternet.org/-/media//Files/Reports/2010/PIP\\_Mobile\\_Access\\_2010.pdf](http://www.pewinternet.org/-/media//Files/Reports/2010/PIP_Mobile_Access_2010.pdf). The study also found that cell phone ownership among African Americans and Hispanic Americans is higher than among whites (87% vs. 80%). *Id.* at 3. Similarly, the Joint Center for Political and Economic Studies found that 50 percent of African Americans and 42 percent of Hispanic Americans access the Internet through cell phones, while only 30 percent of white Americans do the same. See Jon P. Gant, et al., Joint Center for Political and Economic Studies, National Minority Broadband Adoption: Comparative Trends in Adoption, Acceptance and Use 36 (Feb. 2010), available at

Genachowski stated recently, mobile devices "are now the primary pathway to the Internet for minority Americans,"<sup>2</sup> and minorities are more likely to rely on their mobile devices as their exclusive "on-ramp" to the Internet. A Pew Internet & American Life Project study found that 46 percent of African Americans and 51 percent of English-speaking Hispanic Americans use their cell phones and other mobile devices to access the Internet, compared to only 33 percent of white Americans. Unfortunately, there is a "looming spectrum crunch" that could these gains at risk.<sup>3</sup>

The mobile broadband ecosystem has experienced explosive growth in the last few years, to the benefit of all consumers and particularly minorities. Mobile broadband providers currently do not have enough spectrum to keep pace with the increasing demand for their services. Unless a substantial amount of additional spectrum is made available soon, this spectrum shortage could hinder sector investment and innovation, thereby reducing economic growth and threatening our fragile recovery. Moreover, without sufficient spectrum, mobile broadband providers may be forced to respond to the looming spectrum crisis by attempting to address demand by adopting usage caps, raising prices, or limiting the variety of service and pricing options available. With that in mind, if a shortage of spectrum results in the negative consequences discussed above, then minority and low-income Americans will be disproportionately affected.

To promote mobile broadband access and adoption and ensure that all Americans have the tools they need to achieve first class digital citizenship in the 21st century, we strongly urge you to promote legislation that would authorize voluntary incentive auctions of the broadcast television spectrum. Voluntary incentive auctions will generate substantial revenue for the Treasury, help jump-start further wireless innovation, create much-needed jobs, promote more efficient spectrum use and ensure that the U.S. continues its leadership in the global wireless sector. Incentive auctions would also advance the President's National Wireless Initiative to provide 98 percent of Americans with access to wireless broadband Internet services and "enable businesses to grow faster, students to learn more, and public safety officials to access state-of-the-art, secure, nationwide, and interoperable mobile communications."<sup>4</sup>

Finally, incentive auctions will strengthen free, over-the-air broadcast television by providing broadcasters – including minority broadcasters – with much needed access to capital that can support and expand broadcast operations, underwrite transmission costs, and thus continue providing vibrant and diverse broadcast service to the public.<sup>5</sup>

We thank you for your efforts to support voluntary incentive auctions. Our organizations look forward to working with Congress to help bring this much-needed initiative into being.

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<sup>2</sup> [http://www.jointcenter.org/index.php/content/download/2991/18931/file/MTI\\_BROADBAND\\_REPORT\\_WEB.pdf](http://www.jointcenter.org/index.php/content/download/2991/18931/file/MTI_BROADBAND_REPORT_WEB.pdf).

<sup>3</sup> *Id.* at 4.

<sup>4</sup> See Prepared Remarks of Chairman Julius Genachowski, Federal Communications Commission, at the Minority Media and Telecommunications Council Broadband and Social Justice Summit, Washington, D.C., 3 (Jan. 20, 2011) ("Genachowski Remarks").

<sup>5</sup> See Fact Sheet, The State of the Union: President Obama's Plan to Win the Future (Jan. 25, 2011), at <http://www.whitehouse.gov/the-press-office/2011/01/25/fact-sheet-state-union-president-obamas-plan-win-future>.

<sup>5</sup> See Genachowski Remarks at 5.

Sincerely,

Hilary Shelton, Washington Bureau Director and Senior Vice President for Advocacy  
National Association for the Advancement of Colored People (NAACP)

Rev. Jesse L. Jackson, Sr., Founder and President  
Rainbow PUSH Coalition

Justin Vélez-Hagan, National Executive Director  
National Puerto Rican Chamber of Commerce (NPRCC)

Mario H. Lopez, President  
Hispanic Leadership Fund

Representative Barbara Ballard, President  
National Black Caucus of State Legislators (NBCSL)

Senator Iris Y. Martinez, President  
National Hispanic Caucus of State Legislators (NHCSL)

Senator Sharon Weston Broome, President  
National Organization of Black Elected Legislative (NOBEL) Women

Vanessa Williams, Executive Director  
National Conference of Black Mayors (NCBM)

Councilman Michael Johnson, President  
National Black Caucus of Local Elected Officials (NBC-LEO)

Commissioner Arlanda Williams, President  
National Association of Black County Officials (NABCO)

May 31, 2011

The Honorable Jay Rockefeller  
United States Senate  
Senate Commerce Committee

The Honorable Kay Bailey Hutchison  
United States Senate  
Senate Commerce Committee

The Honorable Fred Upton  
U.S. House of Representatives  
House Energy & Commerce Committee

The Honorable Henry Waxman  
U.S. House of Representatives  
House Energy & Commerce Committee

Dear Chairmen Rockefeller and Upton and Ranking Members Hutchison and Waxman,

The commercial mobile, IT and manufacturing signatories to this letter directly employ hundreds of thousands of Americans, invest tens of billions of dollars in the United States each year, and have a market capitalization of almost \$1 trillion dollars. One thing that unites us is mobile broadband. Our companies are driving innovation in the fields of health care, energy, education, intelligent transportation, commerce, banking and more through the application of mobile broadband.

A key input in our efforts to continue to innovate, invest, create jobs, maintain technological leadership, and move America forward will be access to additional spectrum. Spectrum is necessary to fuel the virtuous cycle of innovation in this ever-expanding mobile ecosystem. Japan, South Korea, the United Kingdom, Germany, Italy, France and more already have recognized this need and have identified additional spectrum for mobile broadband. The United States needs to move forward.

We believe that adoption of voluntary incentive auction legislation is integral to the spectrum effort in the United States. Accordingly, we ask for your leadership in moving voluntary incentive auction legislation through Congress this year. The long-term benefits to the economy as a whole and to the American people of making more spectrum available for mobile broadband cannot be overstated.

Thank you in advance for your consideration.

Sincerely,

**Apple Inc.**

**Jim Balsillie**  
Co-Chief Executive Officer  
Research In Motion

**Marty Beard**  
President, Sybase 365  
Sybase, Inc.

**Matt Gross**  
Group Chief Technology Officer and Vice  
Chairman USA  
Huawei Technologies

**John T. Chambers**  
Chairman and CEO  
Cisco Systems, Inc.

**Peter Cleveland**  
Vice President, Legal & Corporate Affairs  
Global Public Policy  
Intel Corporation

**Bret Comolli**  
Chairman  
Asurion

**Rick Corker**  
Head of North America  
Nokia Siemens Networks

**Robert Dawson**  
President and Chief Executive Officer  
SouthernLINC Wireless

**Ralph de la Vega**  
President and Chief Executive Officer  
AT&T Mobility & Consumer Markets  
AT&T

**Ken Denman**  
Chief Executive Officer  
Openwave Systems

**Mary Dillon**  
President and Chief Executive Officer  
U.S. Cellular

**Mitchell Gaynor**  
Executive Vice President & General Counsel  
Juniper Networks

**Dan Hesse**  
Chief Executive Officer  
Sprint Nextel Corporation

**Tony Holcombe**  
President and Chief Executive Officer  
Syniverse Technologies

**Philipp Humm**  
President and Chief Executive Officer  
T-Mobile USA

**Conrad J. Hunter**  
Executive V.P. and President - Wireless  
NTELOS

**S. Douglas Hutcheson**  
Chief Executive Officer  
President and Director  
Leap Wireless

**Johnie Johnson**  
Chief Executive Officer  
Nex-Tech Wireless

**Dan Mead**  
President and Chief Executive Officer  
Verizon Wireless

**Frank O'Mara**  
Chief Executive Officer  
Allied Wireless Communications Corporation

**F.J. Pollak**  
President and Chief Executive Officer  
TracFone Wireless, Inc.

**Patrick Riordan**  
President and Chief Executive Officer  
Cellcom

**Angel Ruiz**  
President and Chief Executive Officer  
Ericsson, Inc.

**Mark Shockley**  
Senior Vice President,  
Global Go-to-Market & Sales Operations  
Motorola Mobility, Inc.

**Ronald Smith**  
President  
Bluegrass Cellular, Inc.

**E.Y. Snowden**  
President and Chief Executive Officer  
Tatara Systems, Inc.

**Dale Sohn**  
President  
Samsung Telecommunications America, L.P.

**Maurice B. Tosé**  
President and Chief Executive Officer  
TeleCommunication Systems, Inc.

**Charles Townsend**  
General Partner  
Aloha Partners II, L.P.

**Robert Vrij**  
President, Americas Region  
Alcatel-Lucent

**Chris Weber**  
President, Nokia Inc. and SVP Sales, NA  
Nokia, Inc.

**Wirt Yerger, III**  
Manager  
Cavalier Wireless, LLC

**ANSWERS FROM TODD SCHURZ TO ADDITONAL QUESTIONS FOR THE RECORD**

"Promoting Broadband, Jobs and Economic Growth Through Commercial Spectrum Auctions"

House Committee on Energy & Commerce  
Subcommittee on Communications and Technology  
Hearing Date: June 1, 2011

**The Honorable Greg Walden****1. What do you consider critical elements of an incentive auction for broadcast spectrum?**

From a broadcaster's perspective, I can tell you that the most critical element of any potential incentive auction of broadcast spectrum are that those broadcasters choosing not to participate are held harmless by the process.

What does held-harmless mean?

First, it means that the viewers should not be disenfranchised. Viewers that receive signals today should receive signals from the same broadcast stations with the same level of service after the FCC repacks the spectrum. This means that the service area of repacked stations should be at least as great as those stations had before, and that viewers should not experience any additional interference to their reception of TV signals.

Second, Congress should consider the economic impact of any potential reallocation on stations that do not participate. The Federal Communications Commission (FCC) has indicated it will "repack" broadcast stations after an incentive auction. While an incentive auction may be a voluntary process, re-packing is not. This means that some stations will be forced to move to new channel locations. That move would be very expensive for some stations, requiring the purchase of new transmitters and other equipment, and could result in the temporary loss of service. Auction revenues should be used, in part, to cover those costs. Compensating licensees disrupted by relocation is consistent with past FCC practice.

Third, no station should be forced to share a channel with another station or be required to move to a channel in a different band. In other words, stations operating currently in UHF should continue to do so. Likewise, no station operating as a high VHF station (channels 7-13) should be forced onto a low VHF channel (channels 2-6).

Congress should also consider how the FCC's plans will affect the rules governing ownership of broadcast stations. At a minimum, if two stations agree to share a channel, the FCC should allow those stations to be commonly owned and that combination should be transferrable to a new owner without having to obtain an FCC waiver. In addition, the application of many of the FCC's current ownership rules varies depending on how many stations are in a market. If some stations combine or go off the air, the ability of the remaining stations to be sold or to make economically sensible business arrangements could be affected. After an incentive auction, the ownership opportunities for TV stations in a market should be at least as great as they are now.

Congress also needs to make sure that translators and other low-power stations that provide needed service are protected. We provide the CW Network on a low-power station in Springfield, Missouri. We are building a UHF translator in Wichita to address continuing coverage issues for our station there broadcasting on channel 12, and all of the Anchorage, Alaska stations rely on a network of translators to reach key parts of that state. Some have suggested that the FCC will simply shut those stations down. Many low-power stations are in places where spectrum is plentiful, and in other areas, the service they provide is crucial. A one-size-fits-all approach to low-power stations should be avoided.

Moreover, stations that do not participate should not suffer; they should not have to bear the brunt of fees, increased regulations, or delays in FCC action on their renewal or other applications. Voluntary should mean just that.

Finally, to minimize disruptions to viewers and to provide some economic certainty to the broadcast industry, the Commission should be permitted to hold only one incentive auction of broadcast spectrum. Multiple auctions could severely undermine broadcasters' ability to attract capital for long-term investment, and would result in continuing disruption for viewers as stations are moved multiple times.

With respect to stations that do choose to participate in the incentive auction program, as I mentioned above, stations that agree to share channels should also be allowed to share ownership. Further, stations that agree to participate must be allowed to set their own price for going off the air or sharing a channel, and if the FCC or auction participants decide not to meet that price, those stations should maintain their existing status and be protected in any repacking plan, the same as stations that choose not to participate.

## **2. What lessons have we learned about station moves from the DTV transition and how can we improve that process?**

The transition to digital television was a tremendous success. Thanks to the combined efforts of Congress, the FCC and broadcasters, American consumers now have free over-the-air access to high definition TV, more than twice as many channels (and growing), and emerging innovations like Mobile DTV. Consumers will also benefit in the future from other potential innovations, including the delivery of non-realtime (NRT) content and high capacity datacasting.

Making this transition a success, however, was a long and costly process. Broadcasters invested billions of dollars in a decade-long effort that fundamentally altered every station in the country. It required new equipment from under the ground to the top of towers. Many consumers were required to purchase new receivers, set-top boxes and/or antennas. And while for the majority of stations and viewers the transition was relatively smooth, a number of stations experienced difficulties replicating their analog coverage and reaching all of their viewers. This was especially true for stations in the VHF band.

Specifically, stations on VHF frequencies found that due to a variety of factors, reception of their digital signal was not adequate in many cases. The planning factors used by the FCC to predict VHF service did not always prove accurate. We know this firsthand in our company from problems that our Wichita station, KWCH, faced on channel 12. The majority of viewers in the city limits of Wichita could not receive the signal from our transmitter and antenna in Hutchinson; this was never an issue with analog signals.

The FCC acknowledges the serious challenges facing VHF broadcasters and has proposed raising the allowed transmission power as a possible solution. However, broadcast experts, such as those that participated in the FCC's Broadcast Engineering Forum on June 25, 2010, concluded that it is not realistic to assume that VHF reception can be improved significantly by power increases in all cases, especially in the low VHF band. For low VHF, power increases needed to overcome reception problems often will not be practical to implement or will not be sufficient to resolve coverage inadequacies. While power increases may in some cases yield meaningful improvements in high VHF reception, in other cases these power increases will result in substantially increased interference to other stations. Overall, power increases are not a panacea. Our company received permission to increase power in Wichita, and it helped solve some of the problem. In addition, we filed for and received a permit to build a translator in Wichita to fully resolve this issue. Moving stations without their consent from the UHF band into the VHF band in a re-packing process following an incentive auction will result in a net loss of broadcast service and should not be permitted.

Overall, the DTV transition demonstrated the complexities of moving broadcast operations from one channel to another. Major technical challenges will be encountered with further repacking of broadcast channels following an auction. This is particularly true because television stations were already repacked into a smaller television band as part of the DTV transition, which shrunk the band allocated to television broadcasting by 18 channels (or 108 MHz of spectrum). Yet another repacking will clearly raise signal interference and challenges to reception, as well as require affected stations to purchase and install new equipment (and incur substantial new capital expenditures). Consumers, too, will be affected, as some will need to purchase new antennas and will experience renewed disruption and confusion as local stations relocate another time.

#### **The Honorable Brian P. Bilbray**

##### **1. Role of Broadcasters in Times of Emergency:**

The massive wildfires of 2007 put San Diego County's communications technology to the test. For the first time ever, the county and city used Reverse 911 systems on a large scale to notify residents of evacuations. But many residents said their phone never rang. The county's Reverse 911 system called residents in Ramona but some residents said they never received that call. One Scripps Ranch resident -- Lori Lorenz -- told a San Diego

News reporter it "was encouraging knowing we'd get an advance warning to finish the packing and leave." But it never happened. She checked with others on her street and no one received a call. "So, when we saw it on TV, we decided to leave" Lorenz said.

This is just one example of how American viewers continue to rely on over-the-air television in times of crisis. In my district, natural disasters like fires and earthquakes don't allow residents time to prepare.

As the panel knows, we recently examined the public safety aspect of this debate. However, one missing element in that debate was the life-saving role that broadcasters play during a natural disaster like the California wildfires. Can the panel help elaborate on this?

I agree. Nothing can match broadcasters' ability to warn a community that is in immediate danger. Part of that is due to the high levels of investment broadcasters make in their newsrooms and advanced weather tracking systems. It is also due to broadcasting's "one-to-many" architecture, which ensures that no matter how many people access the broadcast stream at the same time, the system will continue to function normally and provide every single person in the community with life-saving information. The same cannot be said for mobile networks that operate using a "one-to-one" architecture, which often fail during emergencies due to network congestion and/or local cell tower failure. Our company has two stations in the heart of Tornado Alley - Springfield, Missouri and Wichita, Kansas – and another just to its north in South Bend, Indiana. On many occasions each year, we interrupt regularly scheduled programming to provide breaking news and critical weather coverage for our viewers. We have received thousands of letters, e-mails, and calls thanking us for this life-saving information over the years.

For this reason, it is critical that Congress consider the impact of spectrum reallocations on public safety – particularly as it relates to local television stations' ability to warn the public via our traditional broadcasts or newer services such as Mobile DTV. Following the recent earthquake and tsunami in Japan, residents reported that the country's mobile television service was a lifeline source of information, particularly given cellular network outages.

Broadcasters take our role as "first informers" very seriously. Any reallocation or repacking that causes viewers to lose access to over-the-air stations could imperil their ability to receive emergency information when needed. Congress can prevent this by crafting spectrum auction legislation that preserves existing station service areas and that permits broadcasters to implement new services such as Mobile DTV.

## **2. Viewer Impact:**

I'm very concerned that in an effort to secure more spectrum for wireless broadband we're going to undermine people who rely on, or at least use, free over-the-air television. In my District, this is important for the growing number of elderly residents and the Hispanic

population, which comprise nearly 19 percent of my constituent, many of whom rely exclusively on over-the-air television. There are approximately 43 million Americans like them. And many more use over-the-air television in their homes because they do not wish to pay an extra monthly fee for an additional cable or satellite set top box.

What would you say to the people who may lose access to the free news and information local broadcasters provide because the spectrum the broadcaster needed to provide those services has been auctioned off to a wireless company? Where can people who lose their over-the-air services due to reduced coverage areas expect to receive free news and information?

Should wireless companies be forced to offer free services to the public the same way broadcasters have offered free television? What would you say to broadcasters who suffer disruptions and service losses from spectrum reallocation and repacking?

I share your concern. As you note, minority and lower income populations make up a disproportionate number of over-the-air viewers. Any reduction of over-the-air broadcasting would negatively affect those viewers. Some of the most vulnerable populations could lose access to the services that broadcasters provide, like local news and emergency information, as the result of ill-considered spectrum policies.

I am not sure how we would explain to viewers a policy decision that causes them to lose access to free broadcast services. I do know, however, that if any incentive auction is not handled properly, viewers will be calling both your office and mine with complaints. We learned during the DTV transition that citizens take changes to their television service very seriously. It is their lifeline to the world, and any actions that may diminish that service will be met with displeasure and protest.

I do not believe there exists currently a true replacement to free, over-the-air television, especially for those viewers that currently rely exclusively on that service. Given today's budget constraints, I cannot imagine that the government contemplates paying for these viewers to access subscription television services. And, in any event, even consumers subscribing to expensive pay television services rely on the local broadcast stations carried on those services for their local news and information, including emergency information. There is simply no option for free news, information and entertainment that can match local broadcasting in all communities across the nation.

While it is an interesting idea, I do not believe that wireless companies should be required to offer free services to the public the way that broadcasters have offered free television. Wireless companies are not in a position to offer local news, emergency information and high-demand entertainment on the same scale as broadcasters. In short, free wireless is not a substitute for free broadcasting. They are now, and will be going forward, fundamentally different services.

For all these reasons, I hope that any incentive auction legislation passed by Congress includes appropriate provisions so that broadcasters choosing not to participate can continue to serve their existing viewers without disruption.

**3. Cord Cutting:**

The Washington Post reported on February 4th that cable and satellite services lost almost 250,000 subscribers, or “cord cutters,” in the last two quarters of 2010. It seems more and more Americans are fed up with the fees charged by cable and satellite companies. They see the increasing importance of over-the-air television signals provided by local broadcasters for entertainment, emergency information, news and weather. What do you think about this cord cutting phenomenon?

Thank you for raising this issue. Cord cutting is an undeniable phenomenon. Many consumers, especially young consumers, are recognizing the value of over-the-air television in the digital age as a complement to video delivered online. According to a recent Knowledge Networks survey, the number of Americans who rely on free over-the-air broadcasts is up by 4 million from just a year ago – the clearest measure of cord cutting I can think of. About 46 million Americans (representing around 14% of U.S. households) now rely exclusively on over-the-air broadcasts, while millions more rely on over-the-air TV for the second and third TVs in their homes.

Cord cutters are able to receive essential programming, like local news and emergency information, without a subscription and, most importantly, for free. These tech-savvy consumers recognize that services like Netflix alone cannot support all of their video needs. They want live, local television. They want major sporting events including the Olympics and the Super Bowl. And they want high-quality network programming. Many are surprised to find that they can get it all with just an antenna. Together, over-the-air TV and online services represent a strong competitor to increasingly expensive cable and satellite providers. This trend should continue for some time, especially with the advent and growth of mobile television. In fact, the Knowledge Networks survey found that younger adults are more likely to access TV programming exclusively through broadcast signals.

**The Honorable Henry A. Waxman**

**1. Please briefly discuss some of the investments you and the rest of the broadcast industry has made in over-the-air broadcasting in the past few years?**

As you are aware, broadcasters spent billions of dollars making the transition to digital television. These investments were not limited to transmission equipment and new or replacement towers. Stations have also purchased new high-definition cameras, news sets that account for the change in video format, upgraded graphics, weather systems and other

production, test and monitoring and other infrastructure to support expanded digital and high definition programming. Our small company has television stations in six markets, and over the past few years, has invested over \$100 million in over-the-air broadcasting. We currently produce and broadcast local news in high definition in four markets and will in a fifth before the end of year. We also built a brand new facility in Indiana and expanded two others to accommodate the changes associated with digital television.

Many stations are also programming multiple TV streams – called multicasting – and investing or developing new content to fill those streams. These new programming streams include many foreign-language (especially Spanish) services and other content aimed at serving minority audiences, including Bounce TV, a new multicast network targeted for African American audiences. Additionally, we are on the cusp of a major deployment of Mobile DTV services. By next year, more than 100 broadcast stations should be broadcasting at least one Mobile DTV stream, with many more coming in the years following. Upgrading a station for Mobile DTV is a relatively modest investment, and stations are able to provide this new service within their existing 6 MHz stream.

**2. Is your company planning to offer mobile broadcasting?**

Yes. We have not launched any markets to date, but I expect that we will do so within the next year or two. We have already met with key vendors to determine the technology requirements and financial commitment to launch this exciting service. Our company was a founding member (and current board member) of the Open Mobile Video Coalition, the industry group that worked on establishing technical standards. We are also a founding member (and current board member) of the Mobile500 Alliance, a group that is working on business and joint venture planning.

**3. What is your assessment of the potential market demand for this type of service?**

The potential market demand for these services is tremendous based on what has been seen in other countries, such as Japan, and what has been learned in multiple tests and launches in the United States. More and more, consumers are looking for opportunities to watch their favorite programming wherever they are – on their phones, in their cars, on their tablets. Mobile DTV will fill that demand without taxing existing or future wireless broadband networks. As more wireless companies end unlimited data packages, it is likely that consumers will shy away from data-heavy uses like video delivered through wireless networks. Mobile DTV services will be there to fill that void with news, high-quality entertainment programming, on-the-go weather and sports, and more – all without the threat of an unwelcome surprise on a consumer's wireless bill.

Mobile DTV also offers tremendous potential for emergency communications. Imagine how many lives could be saved if every smartphone user in the country could access emergency information wherever they were. I know Congress and the FCC have been working hard to implement a wireless industry warning system. And those are important efforts. But the

amount of information provided by those systems pales in comparison to what live and local broadcasters offer when disaster strikes. Nothing can compete with the sound of a human voice telling you to take cover when a tornado is near, or to seek higher ground in the event of a flood. That's what broadcasters provide now, and would like to provide to every wireless device in the future.

**4. Please discuss what sort of regulatory barriers broadcasters currently face to compete in a mobile environment against wireless carriers?**

The regulatory and marketplace barriers broadcasters face when trying to compete in a mobile environment against large wireless carriers take several different forms.

I would characterize one such barrier as policies that de facto favor those offering national rather than local wireless services. Spectrum has been sold at auction on a nationwide basis. While our firm would be most interested in leasing additional spectrum in the markets where we have broadcast, publishing and cable interests, we cannot effectively bid against an entity making an offer based on a nationwide footprint. Our company invested in a fourth-generation wireless (Wimax) service provider in 2009 with the goal of launching services in our incumbent markets, but the lack of spectrum rights have effectively put those plans on hold.

Similarly, the different ways that broadcasters and wireless companies are regulated can create barriers. For example, there is a disparity between a broadcaster's ability to add needed repeaters in such places as malls, tunnels and underpasses. It can take a year for a broadcaster to obtain needed approvals. Wireless carriers operating under blanket licenses can move much more quickly. Another example is that the public interest standard is applied differently to broadcasters than it is to wireless companies -- even when wireless carriers provide video services over public airwaves.

Yet another regulatory barrier is uncertainty with regard to our spectrum assets. While mobile DTV is being implemented on both high VHF and UHF channels, the most desirable spectrum for such operations from a technical viewpoint is the UHF band. The UHF band allows the use of smaller antennas and allows mobile DTV operations to be incorporated in smaller hand-held portable devices. Despite the recent reallocation of 108 MHz of spectrum from broadcast to broadband and public safety, the FCC and Congress are looking towards further reducing the amount of spectrum available for broadcasting. Under this approach, broadcasters are faced with the possibility of being re-packed and operating on channels where mobile DTV operations are not practical, such as the low VHF band (TV ch. 2-6), or where service to hand-held devices would be more difficult or inferior, such as the high VHF band (ch. 7-13). Having less spectrum will also inhibit broadcasters' ability to implement additional transmitters to "fill-in" service and improve mobile DTV coverage to better compete with wireless carriers.

Finally, the wireless carriers' sanctioned control of mobile devices creates a very real competitive barrier. Wireless carriers today control the technologies and features that are

included in the devices used on their networks. They can effectively dictate to a manufacturer that a feature or service competitive with their wireless services, such as a mobile DTV receiver, be removed from a network device. This barrier prevents consumers from receiving new and "free" services such as mobile DTV. And, it prevents broadcasters from innovating and competing with wireless carriers by expanding their offerings that can take advantage of certain network features. For instance, a broadcaster might use a wireless operator's network as a return channel for ordering services for devices that provide both wireless network and mobile DTV applications. It may also be possible to download popular books or video games over the mobile DTV system more efficiently and cheaply than over the wireless carrier's network.

**5. What investments have your stations, or the broadcast industry generally, been making over the past several years to meet the consumers' mobile demand and expectations?**

In addition to the previously-mentioned wireless service provider, our company has made significant investments to meet consumers' mobile demand and expectations. We have hired or named mobile specialists in many of our companies, and we just hired our first corporate mobile director. Our companies have launched over 20 applications (with more in development) for Apple, Android and Blackberry platforms. We have made investments with vendors and hired staff to support expanded efforts in database technology and e-mail and text messaging marketing. We have over 200,000 customers who have opted in for a wide range of services, ranging from breaking news, weather alerts to marketing local offers and deals. As a result, we have seen our page views from mobile devices grow over 300% in the past year across our company.

Let me finish with a quick story about the demand for mobile services. For our company, the single event that impacts demand more than any other is severe weather. In May, there was a major tornado that hit Joplin, Missouri, and killed and injured many people and caused tremendous damage to the community. Our company's station KYTV is based in Springfield, Missouri, the next-door market to Joplin, and the station provided extensive on-air and on-line coverage. That station had record digital audiences the day, week, and month of the Joplin tragedy, and over 10% of the audience were on mobile devices. The lesson for our organization is straightforward: consumers expect not only our journalists to create, gather and edit the great information they have for decades, but to provide that content on traditional media and on every digital device and format possible.

June 27, 2011

Mr. Burt Ellis  
President  
Titan Broadcast Management  
888 3rd Street, Suite A  
Atlanta, GA 30318

Dear Mr. Ellis,

Thank you for appearing before the Subcommittee on Communications and Technology on June 1, 2011, to testify at the hearing entitled "Promoting Broadband, Jobs and Economic Growth Through Commercial Spectrum Auctions."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for 10 business days to permit Members to submit additional questions to witnesses, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and then (3) your answer to that question in plain text.

To facilitate the printing of the hearing record, please email your responses, in Word or PDF format, to the legislative clerk ([Alex.Yergin@mail.house.gov](mailto:Alex.Yergin@mail.house.gov)) by the close of business on Thursday, July 7, 2011.

Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,

Greg Walden  
Chairman  
Subcommittee on Communications and Technology

cc: The Honorable Anna G. Eshoo, Ranking Member,  
Subcommittee on Communications and Technology

Attachment

Subcommittee on Communications and Technology  
“Promoting Broadband, Jobs and Economic Growth Through Commercial Spectrum Auctions.”

June 1, 2011  
Additional Questions for the Record  
Page 1

**The Honorable Greg Walden**

**1. What do you consider critical elements of an incentive auction for broadcast spectrum?**

Participation on behalf of stations to sell some or all of their spectrum must be completely voluntary....this means that station owners will sell only if they get an acceptable price. Do not put limits or caps on the price that stations might get or you will limit participation. Likewise, there should be no restrictions on the bidders in order to get the maximum price to the Treasury. The process should be timely and the identification of the stations that might sell spectrum must be kept confidential. No station wants to be smeared with a “going out of business” reputation while negotiating to potentially sell their spectrum.

**2. What factors will impact your decision whether to participate in the auction?**

The rules of the auction. Will it be confidential. Will it be voluntary. Will it be timely. Will we be able to get our price.

**3. What lessons have we learned about station moves from the DTV transition and how can we improve that process?**

The process needs to be done on a date certain and stick with the time frame. During the last transition, the changeover date was postponed by 6 months at the very last minute for no apparent reason which just put a huge wrench in the transition schedule and cost broadcasters a huge amount of wasted time and expense carrying the load of both the analog and digital transmitters.

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**The Honorable Brian P. Bilbray**

**1. Role of Broadcasters in Times of Emergency:**

The massive wildfires of 2007 put San Diego County's communications technology to the test. For the first time ever, the county and city used Reverse 911 systems on a large scale to notify residents of evacuations. But many residents said their phone never rang. The county's Reverse 911 system called residents in Ramona but some residents said they never received that call. One Scripps Ranch resident -- Lori Lorenz -- told a San Diego News reporter it "was encouraging knowing we'd get an advance warning to finish the packing and leave." But it never happened. She checked with others on her street and no one received a call. "So, when we saw it on TV, we decided to leave" Lorenz said.

This is just one example of how American viewers continue to rely on over-the-air television in times of crisis. In my district, natural disasters like fires and earthquakes don't allow residents time to prepare.

As the panel knows, we recently examined the public safety aspect of this debate. However, one missing element in that debate was the life-saving role that broadcasters play during a natural disaster like the California wildfires. Can the panel help elaborate on this?

Broadcasters are essential to communication in times of emergencies. The broadcast model is the most efficient way to disseminate info to a lot of people at once. Broadcast infrastructure is designed for emergencies with back-up generators, etc. The Japanese emergency proved that mDTV (Broadcast to mobile) was the only technology that could deliver lifesaving information to the general public. The cell system crashed with demand and/or was down due to lack of power to various cell towers.

**2. Viewer Impact:**

I'm very concerned that in an effort to secure more spectrum for wireless broadband we're going to undermine people who rely on, or at least use, free over-the-air television. In my District, this is important for the growing number of elderly residents and the Hispanic population, which comprise nearly 19 percent of my constituent, many of whom rely exclusively on over-the-air television. There are approximately 43 million Americans like them. And many more use over-the-air television in their homes because they do not wish to pay an extra monthly fee for an additional cable or satellite set top box.

What would you say to the people who may lose access to the free news and information local broadcasters provide because the spectrum the broadcaster needed to provide those services has been auctioned off to a wireless company?

The stations that might sell their spectrum will not be the news stations. No one is going to lose any meaningful source of news with the repacking and spectrum buyback. They will lose some entertainment programming but not much more.

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**Where can people who lose their over-the-air services due to reduced coverage areas expect to receive free news and information?**

No one will lose any free news and information in this plan. Everyone that has access to free OTA broadcasting will still have access to free OTA broadcasting after the repacking.

**Should wireless companies be forced to offer free services to the public the same way broadcasters have offered free television?**

They should not be forced to offer free services. Let the broadcasters provide such as we have for 60+ years. Wireless companies should be forced to put tuners in handsets to allow the mDTV services and the broadcast-based emergency alert system to be widely available.

**What would you say to broadcasters who suffer disruptions and service losses from spectrum reallocation and repacking?**

No station should suffer such if the repacking is done properly. This is only an issue for about 10 major markets and it can be handled with no such disruptions.

**3. Cord Cutting:**

**The Washington Post reported on February 4th that cable and satellite services lost almost 250,000 subscribers, or "cord cutters," in the last two quarters of 2010. It seems more and more Americans are fed up with the fees charged by cable and satellite companies. They see the increasing importance of over-the-air television signals provided by local broadcasters for entertainment, emergency information, news and weather. What do you think about this cord cutting phenomenon?**

Cable and satellite TV is way too expensive. People still watch only a dozen or so channels and about 50% of this viewing is to the OTA stations carried on cable or satellite, but we have to pay for the other 100+ channels we do not watch. It was one thing to pay for the other infrequently viewed channels when the total bill was \$20 per month but now that it is approaching \$100 per month, people are saying enough is enough. Consumers should be able to buy the expensive cable channels ala carte vs in these big expensive packages.

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**The Honorable Henry A. Waxman**

- 1. Could you briefly discuss some of the investments you and the rest of the broadcast industry has made in over-the-air broadcasting in the past few years?**

Since 1995 we have all completely switched out our transmission and antenna equipment to convert from analog to digital and have converted most of our studio operations from analog to digital and now to HD. Now we are adding mDTV capabilities.

- 2. Is your company planning to offer mobile broadcasting?**

Yes, starting with our Fresno operations.

- 3. What is your assessment of the potential market demand for this type of service?**

Great, if we can get the tuners into handsets and tablets.

- 4. You stated in your testimony that broadcasters should be allowed to compete against wireless carriers through their own mobile video offering. Please discuss what sort of regulatory barriers broadcasters currently face to compete in this mobile environment?**

We do not have any regulatory barriers except that the wireless industry has been allowed to consolidate to just 3 players (ATT, Verizon, and Sprint) and they control what features are incorporated into handsets, most notably whether mDTV tuners will be built into future handsets. We would like more competition amongst the carriers.

- 5. What investments have your stations, or the broadcast industry generally, been making over the past several years to meet the consumers' mobile demand and expectations?**

Titan Broadcasting has invested over \$35M in new capital since 1995 in the 10 stations we have managed over this period. Much of these expenditures were to make the full conversion to digital and HD and to set the groundwork to permit mDTV as well.

**Responses to Questions from Rep. Walden****1Q. What do you consider critical elements of an incentive auction for broadcast spectrum?**

**1A.** An incentive auction regime should not be overly complicated and must be designed in such a way that it provides sufficient incentives for broadcasters or other licensees to participate. We believe this includes allowing participants to share, in a fiscally responsible way, in the proceeds generated from any such auction. The regime must include a "date-certain" for the clearing of licenses made available in an incentive auction.

**2Q. In your experience, what license factors will decrease auction revenues?**

**2A.** We believe that the auction record dating back to the 1990s demonstrates that flexible use combined with minimal regulation results in an optimal auction environment. Certainly any effort to encumber spectrum with regulatory conditions should be considered likely to reduce the revenue generated at auction, as economically rational bidders will be likely to factor into their bids the cost of compliance with such regulation. The 2008 700 MHz auction illustrates this point, as the unencumbered licenses in the B block sold for a substantially higher price per MHz/POP than the encumbered licenses in the C block.

**3Q. How much broadcast TV spectrum can we make available through an incentive auction?**

**3A.** Assuming that the Commission is permitted to engage in a reasonable repacking of the broadcast bands, which we believe is a necessity, and that broadcasters are permitted to share in the proceeds of an incentive auction, the 120 MHz objective identified by the FCC in the National Broadband Plan is a reasonable and achievable goal.

**4Q. Are there licensees other than broadcasters that might want to participate in an incentive auction?**

**4A.** We believe there are others, such as mobile satellite service providers, that may be interested in participating in an incentive auction, and thus we urge Congress to design the incentive auction mechanism in such a way as to accommodate participation by any spectrum licensee that may be willing to participate.

**Responses to Questions for Rep. Bilbray**

**1Q. Role of Broadcasters in Times of Emergency:** The massive wildfires of 2007 put San Diego County's communications technology to the test. For the first time ever, the county and city used Reverse 911 systems on a large scale to notify residents of evacuations. But many residents said their phone never rang. The county's Reverse 911 system called residents in Ramona but some residents said they never received that call. One Scripps Ranch resident -- Lori Lorenz -- told a San Diego News reporter it "was encouraging knowing we'd get an advance warning to finish the packing and leave." But it never happened. She checked with others on her street and no one received a call. "So, when we saw it on TV, we decided to leave" Lorenz said.

## Responses of Chris Guttman-McCabe

**This is just one example of how American viewers continue to rely on over-the-air television in times of crisis. In my district, natural disasters like fires and earthquakes don't allow residents time to prepare.**

**As the panel knows, we recently examined the public safety aspect of this debate. However, one missing element in that debate was the life-saving role that broadcasters play during a natural disaster like the California wildfires. Can the panel help elaborate on this?**

**1A.** The repacking of the broadcast bands and authorizing the FCC to conduct voluntary incentive auctions should have no impact on the ability of broadcasters that choose to retain their licenses to remain an important part of the emergency alert system. Moreover, the proposal to reallocate 120 MHz of spectrum for mobile broadband use would leave close to 180 MHz of spectrum for broadcast television use. The proposal would make more efficient use of a highly-valuable and vastly-underutilized resource by both freeing up spectrum for more robust mobile broadband services and maintaining consumers' access to free over-the-air television.

**2Q. Viewer Impact:** I'm very concerned that in an effort to secure more spectrum for wireless broadband we're going to undermine people who rely on, or at least use, free over-the-air television. In my District, this is important for the growing number of elderly residents and the Hispanic population, which comprise nearly 19 percent of my constituent, many of whom rely exclusively on over-the-air television. There are approximately 43 million Americans like them. And many more use over-the-air television in their homes because they do not wish to pay an extra monthly fee for an additional cable or satellite set top box.

**What would you say to the people who may lose access to the free news and information local broadcasters provide because the spectrum the broadcaster needed to provide those services has been auctioned off to a wireless company? Where can people who lose their over-the-air services due to reduced coverage areas expect to receive free news and information?**

**Should wireless companies be forced to offer free services to the public the same way broadcasters have offered free television? What would you say to broadcasters who suffer disruptions and service losses from spectrum reallocation and repacking?**

**2A.** The allocation of additional spectrum for wireless broadband services through voluntary incentive auctions will not result in the elimination of over-the-air television, as it is expected that only a few stations in each market will choose to exit through participation in the incentive auction process. To the extent that those which remain comply with the public interest obligations imposed on them in return for their free use of the spectrum – something wireless providers pay for through auctions – the public should expect to continue to benefit from news and informational programming. Additionally, there are a substantial number of other outlets for news and information, including newspapers, radio, and the Internet. Finally, with respect to the substantial Hispanic population in your district, it should be noted that Hispanics and African-Americans are more likely than Whites to access the Internet over a mobile device, often because they lack either a home computer or an in-home broadband connection. For this reason, ensuring the adequate supply of mobile broadband service is key to reducing the digital divide between minority populations and non-minority users.

**3Q. Cord Cutting:** The Washington Post reported on February 4th that cable and satellite services lost almost 250,000 subscribers, or "cord cutters," in the last two quarters of 2010. It seems more and more Americans are fed up with the fees charged by cable and satellite companies. They see the

## Responses of Chris Guttman-McCabe

**increasing importance of over-the-air television signals provided by local broadcasters for entertainment, emergency information, news and weather. What do you think about this cord cutting phenomenon?**

3A. Cutting the cord is a phenomenon well known to the wireless industry, which has seen approximately 85 percent of U.S. households adopt mobile wireless devices, while the number of households that rely on over-the-air broadcast as their exclusive content has continued to shrink to approximately less than 10 percent of all TV households. As for video consumption, we note that the Washington Post article referenced in your question dealt only with the 2<sup>nd</sup> and 3<sup>rd</sup> quarters of 2010, and does not appear to reflect other significant consumer trends. For example, shortly after the Post article ran, SNL Kagan reported that at the end of 2010, homes with TV subscriptions had risen by 211,000 over the year before, and more recent reports have suggested additional growth in the first part of 2011. That does not suggest, however, that viewer preferences aren't evolving. There are dynamic shifts going on, especially as viewers consume media delivered over the Internet, including over their mobile devices, wherever and whenever they want. Meeting this increased demand for video over the mobile platform will require additional spectrum and is an additional example of why Congress should act expeditiously to authorize incentive auctions and the reallocation of government spectrum for commercial use.

**Responses to Questions from Rep. Waxman**

**1Q. If 120 MHz of broadcast spectrum becomes available via incentive auctions, how quickly do you think the wireless industry will deploy services in that spectrum? Will industry be able to stay ahead of the coming spectrum crunch?**

1A. Given the value of spectrum in the broadcast bands and the potential for that spectrum to be critical to helping companies deploy wireless broadband services, I believe it is very likely that every effort would be made to deploy services quickly. It should be recognized, however, that many factors can influence the speed of deployment, including how much spectrum is actually made available for auction, the length of time it takes to fully clear those bands, and the speed with which the manufacturers proceed through the standards and product development processes. If 120 MHz can be cleared and made available for auction, I would expect the development of standards and products for use in those bands to be a high priority. Conversely, if only 20 MHz is cleared, those bands may be less likely to be a high priority for the vendor community. Assuming that the incentive auction process produces, or comes close to producing, the 120 MHz objective set forth by the National Broadband Plan, I would expect that spectrum to be critical to industry efforts to stay ahead of rapidly-growing consumer demand for wireless bandwidth.

**2Q. Mr. Schurz stated in his testimony that "wireless carriers have been slow to deploy much of their current spectrum holdings." How would you respond to that? Are wireless carriers sitting on valuable spectrum?**

2A. Mr. Schurz is mistaken. Given the need to earn a return on the more than \$30 billion that wireless carriers spent to acquire licenses in the AWS-1 and 700 MHz auctions and the exploding consumer

## Responses of Chris Guttman-McCabe

demand for wireless broadband services, wireless carriers have no incentive to warehouse spectrum. Despite a soft economy over the last several years, America's wireless carriers have continued to make massive investments to complete the buildup of 3G networks and begin the transition to 4G networks. During the period between 2008 and 2010, these investments totaled \$71 billion. Delays in putting recently auctioned bands to full use have little to do with the warehousing Mr. Schurz and the broadcast lobby allege is occurring and instead are generally related either to delays in clearing those bands or the need to develop and deploy equipment for use in those bands. Clearing of AWS-1 spectrum is not yet complete, and the 700 MHz A block cannot yet be put to efficient use because of interference problems related to broadcast activities in the adjacent channel 51. CTIA and the Rural Cellular Association have petitioned the Federal Communications Commission to address this issue and we believe that expeditious action on the petition is necessary to advance the deployment of next-generation mobile broadband services and ensure the efficient use of mobile broadband spectrum. The wireless industry has an unparalleled history of innovation and investment and, spurred by competitive pressures, will continue to deploy spectrum as quickly as possible to meet consumer demand.

July 7, 2011

The Honorable Chairman Greg Walden  
Subcommittee on Communications and Technology  
Committee on Energy and Commerce  
United States House of Representatives

Dear Chairman Walden,

Thank you for allowing me to testify before the Subcommittee on Communications and Technology on June 1, 2011 at the hearing "Promoting Broadband, Jobs and Economic Growth Through Commercial Spectrum Auctions."

I attach my responses to the questions from Members of the Subcommittee on Communications and Technology.

Sincerely,

Michelle Connolly, Ph.D.  
Department of Economics  
Duke University

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**The Honorable Greg Walden**

**1. What do you consider critical elements of an incentive auction for broadcast spectrum?**

There are two critical elements of an incentive auction for broadcast spectrum. They are

1. Allowing for reverse-auctions.

A reverse-auction is an auction where bids reflect the price required by bidders to undertake a certain action. In the incentive auctions proposed by the FCC, it will be the price required by a broadcaster to be willing to vacate their current channel. Hence, broadcasters will be bidding based on the impact of this action on their profits. Broadcasters who lose fewer profits from vacating their current bands, will be willing to move for less compensation, and hence will bid a lower price. Those who would lose greater profits and are less willing to vacate their channel will require a higher price to commit to relinquishing their channel(s).

It is important to allow the Federal Communications Commission (FCC) to use reverse auctions to compensate television (TV) broadcasters for voluntarily vacating spectrum whether through relocation, channel-sharing, or cessation of over the air (OTA) broadcasts. The spectrum that can potentially be gained is of tremendous economic value and the more quickly it can be repurposed, the greater the value to the US economy. Having the compensation value determined by reverse auctions will guarantee that broadcasters will only agree to one of these three actions if the compensation is high enough to compensate for any and all lost profits. This compensation to TV broadcasters is expedient and will allow for a quicker repurposing of this spectrum.

2. Insuring full competition in the reverse auction for television broadcasters by allowing the FCC to involuntarily relocate broadcasters to different channels.

In order for the spectrum to be of value to other uses such as mobile broadband, the FCC needs to vacate a contiguous band of spectrum within each market. This means that the auction will be useless if only some channels within a key band are vacated by TV broadcasters. If some broadcasters are allowed to remain in key bands, there will be no value to gaining random bits of spectrum. In order to achieve a contiguous band of spectrum, the FCC must be allowed to relocate TV broadcasters involuntarily to a different channel. This is crucial for two reasons, both of which impact competition.

The first reason involuntary relocation and repackaging of spectrum by the FCC is necessary is the problem of hold outs. Consider the following purely illustrative example. Suppose the FCC is hoping to clear channels 40 to 50. A broadcaster who is currently using channel 45 and knows they can not be involuntarily relocated, can act as a hold out in the auction. That broadcaster would be able to demand compensation that greatly exceeds the true valuation of that particular channel to the broadcaster. Similarly other broadcasters in that same band would have incentives

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to exaggerate the prices they require to relocate, channel-share, or cease OTA transmissions. The holdout problem would lead to higher payouts by the government to all broadcasters on channels 40 to 50. It would lower government revenues from the auction and would lead to decreased economic efficiency since broadcasters in the key channels would be paid more than the true value of their over the air broadcasting on those channels. With higher overall prices necessary to clear spectrum, it would also be likely that less spectrum could in the end be cleared for other uses.

The second reason involuntary relocation is necessary is that it will increase competition across broadcasters in the same market. Continuing with the previous example, if involuntary relocation is possible, then a broadcaster on channel 20 will be relevant competition for broadcasters in channels 40 to 50. Suppose the channel 20 broadcaster bids a lower price to vacate their channel than say the broadcaster on channel 45. Suppose also that the bid from the broadcaster on channel 20 is low enough to be a winning bid, but that the bid from the broadcaster from channel 45 is above the winning price. Then the broadcaster originally on channel 45 can continue broadcasting over the air, but can be moved to the now vacated channel 20. If involuntary relocation were not possible, the bids of broadcasters outside of channels 40 to 50 would not be relevant to the bids of broadcasters within that key band. Competition from broadcasters outside the key band thus increases the incentives of broadcasters in the key band to bid their true valuations. This competition will increase total government revenues by keeping the reverse auction bids lower and closer to true valuations.

It is also worth noting that the FCC is proposing to compensate any broadcasters that are forced to relocate to new channels for the actual costs of relocation.

**The Honorable Greg Walden**

**2. Briefly explain how an incentive auction drives economic decisions about spectrum use.  
How can we best structure the auction to maximize the benefit to the Treasury?**

The proposed incentive auctions are a combination of a reverse auction and a forward auction. In the reverse auction, TV broadcasters will bid for the lowest compensation they require to compensate them for lost profits due to vacating their current channels. In the forward auction qualified entities can bid for the right to use the vacated spectrum.

If there is sufficient competition within a market, *and* the FCC is allowed to repackage spectrum by relocating broadcasters who have not submitted winning bids, then spectrum will be vacated by the broadcasters who value the spectrum the least.

In turn, the forward auction will allocate spectrum to the entities that value it the most.

The beauty of using auctions both on the sell and the buy side of the market is that the government does not need to know which entities value the spectrum the least and which value it

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the most. There is no way that the government could ever have enough information about the private market to determine all these valuations through inquiry or research. With auctions however, this information is revealed by the bidders so long as the auction is properly designed. Assuming a desire to compensate TV broadcasters for voluntarily vacating specific bands of spectrum, a properly designed auction this is not only economically efficient, but also maximizes the benefit to the U.S. Treasury.

**The Honorable Brian P. Bilbray**

**1. Role of Broadcasters in Times of Emergency:**

The massive wildfires of 2007 put San Diego County's communications technology to the test. For the first time ever, the county and city used Reverse 911 systems on a large scale to notify residents of evacuations. But many residents said their phone never rang. The county's Reverse 911 system called residents in Ramona but some residents said they never received that call. One Scripps Ranch resident -- Lori Lorenz -- told a San Diego News reporter it "was encouraging knowing we'd get an advance warning to finish the packing and leave." But it never happened. She checked with others on her street and no one received a call. "So, when we saw it on TV, we decided to leave" Lorenz said.

This is just one example of how American viewers continue to rely on over-the-air television in times of crisis. In my district, natural disasters like fires and earthquakes don't allow residents time to prepare.

As the panel knows, we recently examined the public safety aspect of this debate. However, one missing element in that debate was the life-saving role that broadcasters play during a natural disaster like the California wildfires. Can the panel help elaborate on this?

The most important thing to point out is the misconception that the FCC plan will eliminate over the air broadcasting. Among the options for television broadcasters to bid on in the reverse auction is the price which they would require to do one of three possible things: 1) channel-share in the same market, 2) move to an upper VHF or lower VHF band, or 3) discontinue OTA broadcasting. Combining this with FCC repacking of the spectrum, it will be possible to use less spectrum to undertake OTA broadcasts (per broadcaster) than currently.

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If broadcasters are moved to other channels or choose to channel-share, the main impact on consumers will be potential changes in service area. Any changes in service area may cause some customers to lose that particular channel, but conversely, other customers may gain that channel. Customers will definitely lose some channels if the broadcasters have winning bids to cease OTA broadcasts. However, the FCC has control in the auction over the winning bid level. With the bids in hand from the broadcasters, the FCC will know exactly how many broadcasters will stop OTA broadcasts for each possible winning bid level in each market. Hence, the FCC can choose a winning bid level within each market that will *not* lead to a complete cessation of OTA broadcasting. The goal of the plan under consideration is to create a contiguous band of spectrum that will be of use for other purposes such as mobile broadband. The goal is not to stop all over the air broadcasts. Households that rely on over the air transmissions may lose some channels, but will in all likelihood still have free over the air TV broadcast service.

Given the fact that over the air TV broadcast service is not going to disappear because of incentive auctions, my remaining points are of less importance, but are nonetheless relevant to any discussion of possible gains and losses from the incentive auctions.

In terms of losses to social welfare, they are not likely to be large. The number of households in the United States that rely primarily on over the air broadcasts is small and decreasing every year. In the newspaper article that you cite, Lori Lorenz mentioned finding out about the wildfires on TV. She did not say that she relied on over the air broadcasts for TV service. Statistics suggest that it is likely that she and a majority of her neighbors on her street did not rely on over the air broadcasts. In 2007 only 14% of all American TV households used primarily over the air TV broadcasts. In 2010 that number was 10%.<sup>1</sup> This percent of households using OTA TV service is likely even less now in 2011 and will be even smaller in 2013 or 2014 when the FCC will likely undertake the incentive auctions.

In terms of emergencies, it is worth noting that the FCC plan under consideration does not impact radio broadcasts. Radio also plays an important role in cases of natural disasters and emergencies.

Finally, to the extent that this spectrum is freed up for other uses, these will also contribute to communication in cases of natural disasters. Every year, a larger percentage of our population uses mobile devices such as cell phones, smart phones and tablets. A January 2011 survey by Pew Research found that 47% of all American adults use their cell phone or tablet to get at least some local news and information.<sup>2</sup> Increased coverage by mobile broadband might help reach

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<sup>1</sup> Nielsen Co., National Media Universe Estimates, Nov. 1998–Feb. 2010 (2010).

<sup>2</sup> Kristen Purcell, Lee Rainie, Tom Rosenstiel and Amy Mitchell, Pew Research Center, "Closing the Local News 'App Gap,'" March 14, 2011.

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citizens who are not near a TV at the time of the disaster. The fact that an ever increasing percentage of our population have their mobile devices near or on them at all times can be particularly valueable in cases of natural disasters.

I am not arguing that over the air broadcasts are not of value in cases of natural disasters. However, OTA broadcasts will continue to exist even after the incentive auctions. For a household to be at risk in an emergency because of not having access to OTA TV broadcasts, they would first have to be among the less than 10% of the total US population that rely primarily on OTA, *and* have lost all of the OTA channels in their service area because of the incentive auctions. Given that the FCC cares a great deal about not allowing the second event to occur and the first is decreasing steadily, the likelihood of harm to households because of a lack of OTA notification in cases of natural disasters is extremely small. On the other hand, the likelihood that improved use of spectrum will lead to improved mobile communications in cases of natural disasters is quite high. I would argue that the gains of this plan (even only considering natural disasters and ignoring other economic valuations) heavily outweigh the costs.

**The Honorable Brian P. Bilbray**

**2. Viewer Impact:**

I'm very concerned that in an effort to secure more spectrum for wireless broadband we're going to undermine people who rely on, or at least use, free over-the-air television. In my District, this is important for the growing number of elderly residents and the Hispanic population, which comprise nearly 19 percent of my constituent, many of whom rely exclusively on over-the-air television. There are approximately 43 million Americans like them. And many more use over-the-air television in their homes because they do not wish to pay an extra monthly fee for an additional cable or satellite set top box.

- a. What would you say to the people who may lose access to the free news and information local broadcasters provide because the spectrum the broadcaster needed to provide those services has been auctioned off to a wireless company? Where can people who lose their over-the-air services due to reduced coverage areas expect to receive free news and information?
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It is highly unlikely that any of the households who currently rely primarily on OTA TV broadcasts would lose all OTA service. They may lose (or in some cases gain) some channels, but the FCC is designing the incentive auctions to make sure that markets retain over the air TV broadcasts.<sup>3</sup>

With respect to minority households, it is worth noting that minority households use mobile devices for internet access at a higher rate than nonminorities. This may be due to lower rates of computer ownership. As such, mobile broadband through handheld devices provides internet access to households that might not otherwise have access at home. As Pew Research reported on July 7, 2010:

Continuing a trend we first identified in 2009, minority Americans lead the way when it comes to mobile access -- especially mobile access using handheld devices. Nearly two-thirds of African-Americans (64%) and Latinos (63%) are wireless internet users, and minority Americans are significantly more likely to own a cell phone than are their white counterparts (87% of blacks and Hispanics own a cell phone, compared with 80% of whites).... It is important to note that our data for Hispanics represents English-speaking Hispanics only, as our survey did not provide a Spanish-language option.<sup>4</sup>

Such households would gain more from improved wireless services, either in terms of lower costs, greater coverage, or higher quality connections, than they would lose from diminished over the air TV broadcasts.

**The Honorable Brian P. Bilbray**

**2. b. Should wireless companies be forced to offer free services to the public the same way broadcasters have offered free television?**

The government required these public services from broadcasters in exchange for free use of spectrum.

Wireless companies, on the other hand, would be paying for the right to use this spectrum. Moreover, wireless companies are already required to provide 911 service to all cell phone users regardless of whether or not the users subscribe to that company's services. If any additional free services or particular requirements are decided by the government, it is important that these be announced before the auction so that bidders know exactly what

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<sup>3</sup> Please see my answer to your previous question for a more complete explanation.

<sup>4</sup> Pew Research Center, "More Cell Phone Owners Use an App for That: 59% of All Adult Americans Go Online Wirelessly," July 7, 2010.

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they are bidding. Any requirements that affect profits will in turn affect the bids companies will make in the incentive auctions.

**The Honorable Brian P. Bilbray**

**2.c. What would you say to broadcasters who suffer disruptions and service losses from spectrum reallocation and repacking?**

The FCC has suggested compensating broadcasters that are involuntarily relocated for the physical costs of relocation. For broadcasters who are submitting bids to move, their bids will incorporate anticipated costs of relocation, including disruptions and potential service losses.

Such disruptions would only affect a relatively small percent of broadcaster's viewing population since it is likely that less than 10% of their viewers use OTA services, and these disruptions would be temporary not permanent. Hence they would not have permanent effects on their profits. Potential interference issues could be permanent, but again would only impact a small percent of the broadcaster's viewership.

**The Honorable Brian P. Bilbray**

**3. Cord Cutting:**

The Washington Post reported on February 4th that cable and satellite services lost almost 250,000 subscribers, or "cord cutters," in the last two quarters of 2010. It seems more and more Americans are fed up with the fees charged by cable and satellite companies. They see the increasing importance of over-the-air television signals provided by local broadcasters for entertainment, emergency information, news and weather. What do you think about this cord cutting phenomenon?

I have not seen evidence of an increased primary use of over the air television signals. Antecdotally, I have observed from my university students that more and more of the younger generation now use the internet as a substitute for television. They say they get their news, can download movies and watch TV content (including that of broadcasters) on their computers. They see less use for the TV than previous generations. This likely contributes to declines in cable and satellite TV subscriptions more than increases in over the air TV households.

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More concretely, a 2010 survey by Pew Research found that only 42% of Americans considered television a necessity. In 2006, 64% thought it was a necessity. Conversely, cell phones are being considered a necessity by increasing numbers of Americans. In the same survey, Pew found that 47% of Americans consider the cell phone to be a necessity.<sup>5</sup> Hence, my interpretation of this "cord-cutting" phenomenon is that, to the extent that it is actually occurring, it likely reflects a move away from television in general. Content is now available through other means, many of which use wireless technologies.

**The Honorable Henry A. Waxman**

- 1. During the hearing, Committee Members explored the question of whether the goal of any incentive auction should be to maximize the revenue to the Treasury. However, Section 309(j) of the Communications Act prohibits the FCC from basing a finding of public interest, convenience, and necessity on the "expectation of Federal revenues" when designing a system of competitive bidding.**

In light of this, please clarify your views about the desired post-auction wireless market by answering the following questions.

- a. Do you think it is important to ensure that the market for wireless broadband remains competitive after an auction?**

Issues of competition are always relevant. However, that is an issue to be considered if there ends up being a problem in the market. It is not an issue that should interfere with the auction design itself. Imposing regulations or constraints on the auction, prior to knowing if there is a problem, simply because they might eventually be a problem, is not economically efficient since these could force spectrum into far less efficient uses. At the extreme, constraints on who can bid or win in the incentive auctions, can put spectrum into the hands of entities/companies that are unable to raise the capital necessary to be able to start using the spectrum that they have won because of special considerations. The spectrum then either lies fallow- the worst of all possible outcomes, or is resold at a profit to the favored companies and to the detriment of the U.S. Treasury.

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<sup>5</sup> Paul Taylor and Wendy Wang, "The Fading Glory of the Television and Telephone," Pew Research Center, August 19, 2010.

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**The Honorable Henry A. Waxman**

**1.b. What type of benchmark should Congress or the FCC utilize to determine whether a market remains competitive after an auction? Should we be concerned if our nation's largest and second largest carriers end up controlling over a certain amount of spectrum in a given market? Is there a way to create an objective benchmark?**

The wireless market is one with large fixed costs and where network effects are important. It is therefore an industry that naturally will and should have a smaller number of firms relative to other industries with lower fixed costs.

Because of the characteristics (such as fixed costs) that define a particular industry, there is therefore a difference between market concentration and competition. There are some markets that have many firms but are still not very competitive, or there are some markets with few firms that are very competitive.

Hence, even with few firms in a market, that market can be extremely competitive. Notice how the introduction of the iPhone on the Verizon network impacted the price of the iPhone on the AT&T network. AT&T is now offering the iPhone 3 for \$49 with a service contract. Only two wireless carriers currently offer the iPhone, yet the entry of the second carrier to the iPhone market significantly impacted AT&T.

We should not be concerned if the two largest carriers end up controlling more than some arbitrarily chosen amount of spectrum. We should be concerned if we observe actions that are anti-competitive. Both the Department of Justice and the FCC have authority to intervene in such cases. Again, imposing constraints of this type on the incentive auctions can, and will, likely lead to very costly misallocations of an extremely valuable resource.

**The Honorable Henry A. Waxman**

**1.c. Do you think Congress or the FCC should incorporate safeguards into the design and implementation of an incentive auction so that our nation's wireless market remains competitive post-auction? If so, what do you recommend?**

I do not believe that Congress or the FCC should incorporate such constraints in the incentive auction. They would only lead to a loss of economic efficiency and would not necessarily guarantee a more competitive wireless market. If post-auction there are problems with actions that are anti-competitive under the Sherman Act of 1890 or the Clayton Antitrust Act of 1914, there are already mechanisms in for the U.S. government to address them.

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**The Honorable Henry A. Waxman**

2. You co-signed a letter with 111 other economists to President Obama expressing support for the Administration’s incentive auction proposal. The letter stated that “[g]iving the FCC the authority to implement incentive auctions with flexibility to design appropriate rules would increase social welfare.” In your written testimony, you also stated “given that the FCC itself does not yet know exactly how to optimally execute the auction, it will need flexibility in designing the auction.” You went even further during the hearing by stressing that there is nothing Congress can do to help shape the auctions that would bring more participants to the table. Please describe potential problems created if Congress places restrictions on the auctions.

Almost all restrictions Congress could place on the auction would adversely impact the social gains from better use of spectrum. For example, suppose Congress establishes a limit on the amount of spectrum any one wireless carrier can have in a given market. Further suppose that this limit means that the carrier that would have been able to make the best use of a particular band of spectrum, and hence would have been the highest bidder, is not allowed to bid in that market. Suppose the next highest bidder in that market is a much smaller, less established carrier. They might have only bid half the value of the larger carrier because the spectrum is less valuable to them for whatever reason. Perhaps they are too small to take advantage of economies of scale, or their technology is less efficient than the larger carrier. This would not only mean that auction revenues would be lower, but more importantly, that certain economies of scale would be lost (causing higher prices) and/or the quality of the service might be lower. In this example, the use of this particular spectrum would provide less economic and social value to those living in that market. It harms the efficiency of the market and it harms the consumer.

An even worse scenario could occur if restrictions cause a startup company to win the auction only to discover later that the company can not raise the capital for the infrastructure it will need. The startup would/could then sell the rights to use the spectrum to someone else and make a profit. It is not clear that the American public would want that profit to go to the startup for just turning over the spectrum to someone who would have been able to win the auction had there not been regulations interfering with their participation.

An example of something possibly fraudulent, but still illustrative of the risks of trying to influence the outcomes of auctions, occurred in spectrum auctions in the late 1990s. In 2001, Russel Taylor III (later joined by the Department of Justice) filed a lawsuit against Mario Gabelli “...accusing Mr. Gabelli and other Gabelli affiliates of creating a series of sham companies that bid for F.C.C. licenses at a discount under a program that favored minorities

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and small businesses.<sup>6</sup> According to the New York Times, the lawsuit claimed that most of these companies were headed by individuals with little to no experience in the telecommunications industry. Using minority and small business status, these companies qualified for \$160 million in federal discounts and financing on loans. The companies won licenses to use spectrum, but, according to the suit, most never attempted to sell cell phone or other communications-related services to customers.<sup>7</sup> The companies instead resold most of the licenses. The New York Times reported that Mr. Gabelli was estimated to have made \$205 million in profit from reselling these licenses. Mr. Gabelli claimed no wrong doing but reportedly settled the suit with the Justice Department in 2006 for \$130 million.<sup>8</sup> While this is an example of possibly fraudulent actions, a similar outcome of no use of licensed spectrum by winning companies, followed by reselling of licenses for a profit, could happen with companies legitimately applying for preferred status.

I am not against the rights to resell the rights to use spectrum. That is a very important part of the market which allows repurposing of spectrum when a company realizes that the value of the spectrum they are using is greater than the value they are getting from its use.<sup>9</sup> I am however against rules that interfere with the auction mechanism in an attempt to determine who should or should not win the rights to use the spectrum.

Similarly, any attempt to impose limits on payments to winning TV broadcaster bidders or set minimums for government revenue from the auction would break the auction mechanism.

The auction mechanism works to make the TV broadcasters bid based on their willingness to undertake certain actions, and in turn, to make those wishing to purchase the right to use the released spectrum bid based on the economic value of the spectrum to them. If the government imposes financial limits, or ownership limits on the auction, they break this mechanism. If the mechanism is interfered with sufficiently, the auction will not only yield smaller revenues, but will guarantee that spectrum will be allocated in an inferior manner.

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<sup>6</sup> Julie Creswell, New York Times, June 6, 2006.

<sup>7</sup> Julie Creswell, New York Times, June 6, 2006.

<sup>8</sup> Julie Creswell, New York Times, July 14, 2006.

<sup>9</sup>Note that this reselling mechanism would not be useful in terms of repurposing spectrum currently used by TV broadcasters since there are many broadcasters, each using relatively small bands of spectrum. It would not be possible for a single company to successfully negotiate individually with each broadcaster. Hold out problems would likely arise in every market since the company would have to get all the broadcasters aligned side by side within a given band of spectrum to sell their rights. This makes it effectively impossible for a single company on its own to get a sufficient amount of contiguous spectrum from TV broadcasters.

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**The Honorable Henry A. Waxman**

**3. You stated in your written testimony that our goals for making more spectrum available for broadband should also include making it available "as soon as possible."**

- a. Do you agree with the Administration's proposed timeline of making 300 MHz of spectrum available over the next five years and 500 MHz available over the next ten in order to meet our nation's wireless broadband demands?**

This is a difficult question to answer because the value of this timeline and the quantities proposed depends on the marginal value of the additional spectrum for wireless broadband (or other potential uses) relative to the marginal loss from taking the spectrum away from its current uses. Current demand for spectrum for wireless broadband is certainly high and increasing. However, I do not know enough about the future of technology or which spectrum the FCC is hoping to repurpose over the next ten years to either support or oppose this exact timeline and quantities.

I do know, however, that the social gain from repurposing the spectrum under consideration in the incentive auctions greatly outweighs the social loss from the decrease of some over the air broadcasting.

**The Honorable Henry A. Waxman**

**3.b. What should be the target time frame for Congress to pass incentive auction legislation?**

The ideal time frame would be immediately. I realize things do not move generally move that quickly, but I reiterate that the sooner Congress can pass this legislation to allow the FCC to design and undertake these incentive auctions, the better.

**The Honorable Henry A. Waxman**

**3.c. Do you have any idea how long it will take the FCC to structure and hold an incentive auction following Congressional passage of legislation?**

It will certainly take more than a year as the auction design will be complex. Hopefully it will be possible for the FCC to do this within two years following the passage of legislation. Still it is more important that the auction be designed properly, rather than quickly, since it will determine the allocation of such an important and scarce resource.

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**The Honorable Henry A. Waxman**

**4. I am concerned that repacking of broadcast channels might jeopardize the development of unlicensed devices in the broadcast television band.**

**a. Do you agree with the FCC that there are genuine economic benefits associated with unlicensed use of spectrum in the broadcast television band?**

Yes, I agree that there are genuine economic benefits associated with unlicensed use of spectrum.

**b. Do you believe the FCC should use incentive auction proceeds to set aside a certain amount of spectrum for unlicensed use in the television band?**

Yes, but the FCC should determine the amount of spectrum it thinks appropriate.

Before the  
U.S. House of Representatives  
Subcommittee on Communications & Technology

Hearing on "Promoting Broadband, Jobs, and Economic Growth Through  
Commercial Spectrum Auctions"

Answers to Written Questions  
Dean R. Brenner  
Vice President, Government Affairs  
QUALCOMM Incorporated

June 30, 2011

**The Honorable Greg Walden**

**Question 1:** Are there licensees other than broadcasters that might want to participate in an incentive auction?

**Response:** Yes. There are licensees other than broadcasters who are also currently precluded by FCC rules from selling their spectrum to mobile broadband operators so that the spectrum can be used exclusively for mobile broadband. They are in a similar position to broadcasters in this regard, as I explained in my oral testimony. Some licensees that may be interested in participating in a voluntary incentive auction include mobile satellite operators, as the FCC noted at Page 88 of the National Broadband Plan.

**The Honorable Brian P. Bilbray**

**Question 1:** Role of Broadcasters in Times of Emergency: The massive wildfires of 2007 put San Diego County's communications technology to the test. For the first time ever, the county and city used Reverse 911 systems on a large scale to notify residents of evacuations. But many residents said their phone never rang. The county's Reverse 911 system called residents in Ramona but some residents said they never received that call. One Scripps Ranch resident -- Lori Lorenz -- told a San Diego News reporter it "was encouraging knowing we'd get an advance warning to finish the packing and leave." But it never happened. She checked with others on her street and no one received a call. "So, when we saw it on TV, we decided to leave" Lorenz said.

This is just one example of how American viewers continue to rely on over-the-air television in times of crisis. In my district, natural disasters like fires and earthquakes don't allow residents time to prepare.

As the panel knows, we recently examined the public safety aspect of this debate. However, one missing element in that debate was the life-saving role that broadcasters play during a natural disaster like the California wildfires. Can the panel help elaborate on this?

**Response:** Passage of legislation authorizing the FCC to conduct voluntary incentive auctions should not have anything to do with the life-saving role that television, which is watched predominantly via cable and satellite rather than over-the-air, can play during a natural disaster. Such legislation would authorize only voluntary incentive auctions. As I explained in my testimony, no TV station licensee would be required to participate in a voluntary incentive auction.

Indeed, all forms of communications technology, including both broadcasting (received for the most part via cable and satellite) and mobile broadband, can play important roles in enabling communications during natural disasters such as the San Diego wildfires in 2007. As a San Diego-based company, Qualcomm was very involved in supporting relief efforts during that particular disaster, and our wireless technologies play a crucial role during natural disasters.

**Question 2:** Viewer Impact: I'm very concerned that in an effort to secure more spectrum for wireless broadband we're going to undermine people who rely on, or at least use, free over-the-air television. In my District, this is important for the growing number of elderly residents and the Hispanic population, which comprise nearly 19 percent of my constituent, many of whom rely exclusively on over-the-air television. There are approximately 43 million Americans like

them. And many more use over-the-air television in their homes because they do not wish to pay an extra monthly fee for an additional cable or satellite set top box.

What would you say to the people who may lose access to the free news and information local broadcasters provide because the spectrum the broadcaster needed to provide those services has been auctioned off to a wireless company? Where can people who lose their over-the-air services due to reduced coverage areas expect to receive free news and information?

Should wireless companies be forced to offer free services to the public the same way broadcasters have offered free television? What would you say to broadcasters who suffer disruptions and service losses from spectrum reallocation and repacking?

**Response:** As I explained in my testimony, no broadcaster would be forced or required to participate in a voluntary incentive auction. The DTV transition, which occurred in 2009, was a tremendous success for the nation. Before the DTV transition was completed, some policymakers expressed the very same concerns you set forth in your question. The success of the DTV transition proves without a doubt that additional spectrum can be freed up for mobile broadband without causing any of these problems. It is true that some broadcasters who choose not to participate in a voluntary incentive auction will need to be repacked to other channels.

**Question 3:** Cord Cutting: The Washington Post reported on February 4th that cable and satellite services lost almost 250,000 subscribers, or “cord cutters,” in the last two quarters of 2010. It seems more and more Americans are fed up with the fees charged by cable and satellite companies. They see the increasing importance of over-the-air television signals provided by local broadcasters for entertainment, emergency information, news and weather. What do you think about this cord cutting phenomenon?

**Response:** By far, the most prevalent form of cord cutting consists of households that no longer subscribe to any wireline telephone service and, instead, rely exclusively on wireless telephones. According to a June 2011 report of the Center for Disease Control and Prevention (CDC), 29.7% of American households had only wireless telephones, as of the end of 2010. In addition, nearly one out of every six Americans who has a wireline phone received all or almost all calls on a wireless phone. See Blumberg SJ, Luke JV. Wireless substitution: Early release of estimates based on data from the National Health Interview Survey, January–June 2010. National Center for Health Statistics. December 2010. Available from: <http://www.cdc.gov/nchs/nhis.htm>. This phenomenon is one of the factors causing the spectrum crunch I referred to in my testimony and the need for additional licensed spectrum for mobile broadband.

With respect to the cord cutting of cable and satellite, research has shown that it is at least in part driven by the increased availability and use of online video, some of which is occurring on mobile devices, which is further aggravating the aforementioned spectrum crunch and highlights the need for Congress to enact voluntary incentive auction legislation to make more licensed spectrum available for mobile broadband.

**The Honorable Henry A. Waxman**

**Question 1:** You stated in your testimony that in order to provide ubiquitous, wide area wireless coverage all over the nation on a cost-effective and interference-free basis, licensed spectrum is required. However, if we are looking to make 500 MHz of additional spectrum available for mobile broadband services, should we set aside a small chunk of spectrum for the creation of “Super Wi-Fi” unlicensed use?

**Response:** I do not believe that Congress should set aside a small chunk of spectrum for the creation of “Super Wi-Fi” unlicensed use. As I explained in my testimony, Qualcomm sells chips for the most advanced forms of Wi-Fi using the 2.4 GHz, 5 GHz, and 60 GHz bands. These chips support extremely fast data rates within local areas (inside a home, for example), thereby creating a real Super Wi-Fi, by using wide channel bandwidths and advanced antenna techniques that are only feasible at higher frequencies that are already available for unlicensed use.

By authorizing voluntary incentive auctions to allocate additional licensed spectrum for mobile broadband, Congress will achieve the win-win-win-win for the nation that I explained in my testimony—including benefits for those who sell their spectrum; those who buy spectrum; the revenues garnered for the US Treasury; and, the benefits to the public, who will continue to enjoy an even wider array of mobile broadband devices, applications, and services.

**Question 2:** Many wireless providers today rely on unlicensed spectrum, through Wi-Fi hotspots and femtocells, to offload network traffic. Should unlicensed spectrum be part of any effort to expand access to spectrum?

**Response:** Many wireless operators do use both Wi-Fi hotspots to offload network traffic and femtocells to increase network capacity. However, femtocells use licensed spectrum. Femtocells rely on a wireline backhaul, such as cable or fiber, and operate on licensed spectrum to provide seamless wireless service in a relatively small coverage area. Femtocells are small cellular base stations.

There is no doubt that both licensed and unlicensed technologies are important, but the spectrum crunch that the nation is facing is a licensed spectrum crunch. Even with the use of Wi-Fi for offloading, the nation needs far more licensed spectrum to keep pace with the constantly growing demand for mobile broadband.

FRED UPTON, MICHIGAN  
CHAIRMAN

HENRY A. WAXMAN, CALIFORNIA  
RANKING MEMBER

ONE HUNDRED TWELFTH CONGRESS  
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June 21, 2011

Mr. Harold Feld  
 Legal Director  
 Public Knowledge  
 1818 N Street, N.W., Suite 410  
 Washington, D.C. 20036

Dear Mr. Feld,

Thank you for appearing before the Subcommittee on Communications and Technology on June 1, 2011, to testify at the hearing entitled "Promoting Broadband, Jobs and Economic Growth Through Commercial Spectrum Auctions."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for 10 business days to permit Members to submit additional questions to witnesses, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and then (3) your answer to that question in plain text.

To facilitate the printing of the hearing record, please email your responses, in Word or PDF format, to the legislative clerk ([Alex.Yergin@mail.house.gov](mailto:Alex.Yergin@mail.house.gov)) by the close of business on Thursday, July 7, 2011.

Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,

Greg Walden  
 Chairman  
 Subcommittee on Communications and Technology

cc: The Honorable Anna G. Eshoo, Ranking Member,  
 Subcommittee on Communications and Technology

Attachment

**The Honorable Brian P. Bilbray**

Role of Broadcasters in Times of Emergency:

1. The massive wildfires of 2007 put San Diego County's communications technology to the test. For the first time ever, the county and city used Reverse 911 systems on a large scale to notify residents of evacuations. But many residents said their phone never rang. The county's Reverse 911 system called residents in Ramona but some residents said they never received that call. One Scripps Ranch resident -- Lori Lorenz -- told a San Diego News reporter it "was encouraging knowing we'd get an advance warning to finish the packing and leave." But it never happened. She checked with others on her street and no one received a call. "So, when we saw it on TV, we decided to leave" Lorenz said.

This is just one example of how American viewers continue to rely on over-the-air television in times of crisis. In my district, natural disasters like fires and earthquakes don't allow residents time to prepare.

As the panel knows, we recently examined the public safety aspect of this debate. However, one missing element in that debate was the life-saving role that broadcasters play during a natural disaster like the California wildfires. Can the panel help elaborate on this?

In exchange for acquiring public assets (spectrum) for free, broadcasters are required to fulfill the public interest through their service. The emergency alert system and newer digital emergency alert system are important public benefits that broadcasters provide. However, if the Committee crafts legislation that has an exclusive focus on raising revenue through spectrum auctions, the proper counter balancing of public interest benefits such as the one you illustrated would not occur. This is why I firmly believe the Federal Communications Commission be given proper flexibility in the incentive auctions process where public interest benefits are taken into account.

**2. Viewer Impact:**

I'm very concerned that in an effort to secure more spectrum for wireless broadband we're going to undermine people who rely on, or at least use, free over-the-air television. In my District, this is important for the growing number of elderly residents and the Hispanic population, which comprise nearly 19 percent of my constituent, many of whom rely exclusively on over-the-air television. There are approximately 43 million Americans like them. And many more use over-the-air television in their homes because they do not wish to pay an extra monthly fee for an additional cable or satellite set top box.

What would you say to the people who may lose access to the free news and information local broadcasters provide because the spectrum the broadcaster needed to provide those services has been auctioned off to a wireless company? Where can people

**who lose their over-the-air services due to reduced coverage areas expect to receive free news and information?**

I believe that your constituents do not have to lose access to free news and information from over the air broadcasters due to spectrum auctions. If the Federal Communications Commission is given sufficient flexibility to pursue all options and deference is given towards its public interest mandate, rather than an exclusive focus on raising revenue, Americans can enjoy new innovative wireless services and the public interest can be served by retaining free broadcasting. As mentioned in our testimony, the spectrum itself is not necessarily scarce, but instead it is the licenses of spectrum that is scarce. There are multiple ways to address growing mobile data demand such as sharing spectrum – particularly in the 3500-3650 bands – and promoting additional unlicensed use rather than a pure clearing and auction approach.

**Should wireless companies be forced to offer free services to the public the same way broadcasters have offered free television?**

The process of acquiring spectrum from the public is very different when comparing the wireless communications industry and the broadcast industry. Most notably, broadcasters have received their spectrum for free while most of the wireless industry initially compensated the public with auction revenue in exchange for a license since the passage of the Omnibus Budget Reconciliation Act of 1993. Ultimately, the public interest obligations will be different given that the way they acquired spectrum licenses from the public were different.

**What would you say to broadcasters who suffer disruptions and service losses from spectrum reallocation and repacking?**

This scenario need not be the case if the Federal Communications Commission is given flexibility to manage spectrum. With decades of experience, the agency is the most equipped to handle the complicated engineering process of reallocation and repacking to ensure that the public does not suffer needlessly from incentive auctions.

**3. Cord Cutting:**

**The Washington Post reported on February 4th that cable and satellite services lost almost 250,000 subscribers, or “cord cutters,” in the last two quarters of 2010. It seems more and more Americans are fed up with the fees charged by cable and satellite companies. They see the increasing importance of over-the-air television signals provided by local broadcasters for entertainment, emergency information, news and weather. What do you think about this cord cutting phenomenon?**

We think the cord cutting phenomenon is the result of a combination of factors. Most consumers continue to struggle with the aftermaths of the Great Recession and are looking for ways to reduce spending. This cord cutting phenomenon can be viewed as a cost-cutting measure for consumers looking to save on household expenses. Additionally, the growth of

online video as a viable alternative to cable from websites like Hulu, subscription services like Netflix, and web offerings by ABC, NBC, Fox and CBS for select programming have incentivize cord cutting. As more online video content becomes available, consumers will continue to adopt new choices in their content other than paying cable or satellite fees for programming.

**The Honorable Henry A. Waxman**

1. During the hearing, Committee Members explored the question of whether the goal of any incentive auction should be to maximize the revenue to the Treasury. However, Section 309(j) of the Communications Act prohibits the FCC from basing a finding of public interest, convenience, and necessity on the “expectation of Federal revenues” When designing a system of competitive bidding.

In light of this, please clarify your views about the desired post-auction wireless market by answering the following questions.

- a. Do you think it is important to ensure that the market for wireless broadband remains competitive after an auction?

It is critical that the FCC use spectrum auctions to promote competition in the wireless industry. In 2009, the Department of Justice (DoJ) and the National Telecommunications Information Administration (NTIA) submitted filings in the FCC's National Broadband Plan proceeding noting the increasing concentration in wireless industry and the need to use auctions to facilitate the development of greater competition in the wireless broadband industry.<sup>1</sup> Because spectrum auctions represent the only time new spectrum becomes available, auctions represent a unique opportunity to enhance competition by ensuring that existing competitors have access to sufficient spectrum and to encourage new entrants.

Unfortunately, without policies to encourage competition, the largest incumbents are most likely to win key licenses – as demonstrated in the last several auctions.<sup>2</sup> Established large incumbents such as Verizon and AT&T have a greater ability to extract value from spectrum licenses than competitors due to their existing advantages in the market. They already have a larger number of customers over which to amortize the cost, a larger number of cell sites, and a larger pre-existing network that permits greater extraction of value. By contrast, a competitor will spend more money to extract the same value from the same license, reducing the amount the competitor can bid for the same license.

For example: Sprint might hope to develop a billion dollars in revenue from a particular license over time. But AT&T might hope to develop \$1.5 billion for the same spectrum. AT&T begins with a larger customer base in the geographic area, which Sprint must spend money to attract from AT&T or other competitors. AT&T is also more likely to be able to integrate the spectrum into its system at lower cost, for the reason given above. For this reason, AT&T can pay \$500 million more than Sprint for the same license. Because of the advantages of size and market share, AT&T and Verizon often have better access to capital for spectrum auctions, giving them further advantages over competitors.

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<sup>1</sup> *Ex Parte* Comments of the Department of Justice, Docket No. 09-51 (filed January 4, 2010) available at: <http://fjallfoss.fcc.gov/ecfs/document/view?id=702035122>; Letter of National Telecommunications and Information Administration, Docket No. 09-51 (filed January 4, 2010) available at: <http://fjallfoss.fcc.gov/ecfs/document/view?id=7020356726>.

<sup>2</sup> See Gregory Rose, “Spectrum Auction Breakdown: How Incumbents Manipulate Rules For FCC Auctions To Block Competition,” New America Foundation Working Paper (2007). Available at: [http://www.newamerica.net/publications/policy/spectrum\\_auction\\_breakdown](http://www.newamerica.net/publications/policy/spectrum_auction_breakdown)

- b. What type of benchmark should Congress or the FCC utilize to determine whether a market remains competitive after an auction? Should we be concerned if our nation's largest and second largest carriers end up controlling over a certain amount of spectrum in a given market? Is there a way to create an objective benchmark?**

As a general matter the use of spectrum caps as part of the auction process would ensure that competitors to the two largest providers have the opportunity to gain sufficient spectrum to compete. The Commission should ideally revert to the pre-2008 spectrum caps, as set forth in the Petition for Reconsideration filed by the Public Interest Spectrum Coalition.<sup>3</sup>

- c. Do you think Congress or the FCC should incorporate safeguards into the design and implementation of an incentive auction so that our nation's wireless market remains competitive post-auction? If so, what do you recommend?**

Incentive auctions will distribute spectrum uniquely suited for wireless broadband. Accordingly, if we desire to promote a competitive wireless environment, Congress or the FCC should incorporate safeguards to enhance competition. In addition to the use of pre-2008 spectrum caps recommended above, Public Knowledge recommends the following additional mechanisms that have proven successful in the past or in other countries. 1) Set aside spectrum for new entrants; 2) a bidding credit for new entrants; 3) a "no blocking/no locking" rule on equipment to encourage interoperability; and, 4) an "open access" rule requiring wholesale access to the spectrum. The last would promote competition generally by leveraging the auction to create a new source of spectrum for multiple providers rather than for a single provider.

- 2. Some of the developers of white spaces devices include large companies such as Google and Microsoft. Some suggest that if we want to ensure that a certain amount of unlicensed spectrum will be set aside during an incentive auction of the TV broadcast band, these big companies should be required to participate in the auction and "bid" on an unlicensed band. In such a case, the winning bidder presumably would act like a guard-band manager in ensuring that unlicensed devices will be able to flourish. What is your view on the prospect of auctioning access to unlicensed spectrum?**

The question proceeds from a mistaken premise. It suggests that individual large companies such as Google or Microsoft are the primary beneficiaries of the TV White Spaces. This confuses the nature of an exclusive license with the nature of unlicensed. Unlicensed spectrum acts as a resource available for all to develop. This encourages a particular type of development – notably for mass produced goods or low margin/high volume services. By contrast, licensing encourages the licensee to maximize the profitability of the spectrum, incenting the development of large scale networks that create sufficient return for the licensee. This is why there are only a handful

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<sup>3</sup> See Petition for Reconsideration of the Public Interest Spectrum Coalition (PISC), Docket No. 08-95 (filed December 10, 2008) available at: <http://fajlfoss.fcc.gov/ecfs/document/view?id=6520190749> The Petition remains pending before the FCC.

of large licensed network operators and several dozen smaller providers. By contrast, there are several thousand wireless ISPs using unlicensed spectrum to provide broadband in rural areas unprofitable for wireless providers. In addition, there are tens of thousands of coffee shops, hotels, and other establishments offering wifi. Hundreds of manufacturers put wifi – or other protocols using the unlicensed bands -- into everything from printers to refrigerators.

This is not because licensed is “better” than unlicensed or unlicensed is “better” than licensed. Rather, each is a different type of economic good. Licensing encourages the development of large, centrally controlled networks that permit the licensee to recoup the investment in the license. To further encourage licensees, they receive interference protection and the use of higher power. Because these licensees hold a scarce resource, they can invest huge sums in networks and expect return on development.

While this has been enormously successful in encouraging the deployment of our national cellular system, it comes at a social cost. The huge sums required to win licenses drive winners to develop networks where they can be certain of extracting the maximum return. This discourages experimentation, or development of less profitable services that might prove attractive to entrepreneurs. It also makes it more difficult for users to customize their network deployments, because they must abide by the equipment and network design choices of the licensee.

A good example of the different kinds of investment encouraged by unlicensed v. licensed can be illustrated by the difference in the market between femtocells and wifi for data hand off. Femtocells are designed to receive data from handsets on subscriber’s licensed spectrum and move the data to the subscriber’s broadband. Despite the obvious advantage of this for subscribers and network operators both, femtocells have not proven popular. In part, this is because network operators – driven by the need to recoup license costs – insist on charging subscribers a fairly high price for femtocells and treat them as a subscription service. By contrast, the ubiquity of free unlicensed spectrum has encouraged subscribers and network operators to use unlicensed spectrum to offload data to available broadband networks. Using unlicensed for offload has become a key part of the strategy of every significant licensed wireless operator.<sup>4</sup> The fact that unlicensed access is available to all without charge makes it ubiquitous, encourages economies of scale, and allowed licensed network operators to make the decision to shift data to this proven technology when it became necessary to do so.

This underscores an important lesson in spectrum management. Match the access need with the type of spectrum (licensed or unlicensed) rather than assume one type of spectrum access is “better” than the other. It is unfortunate that, in the days when advocates sought to persuade regulators to adopt auctions for distributing licenses, they characterized auctions as moving *spectrum* to the “highest, best use.” In fact, auctions (and other market mechanisms) encourage licensees to move to the most profitable use for *licensed* spectrum. But, as demonstrated every day by the billions of users of unlicensed spectrum, the availability of unlicensed access as a general resource to everyone – not just the licensee – has many powerful advantages. This is particularly true for traffic which does not require higher power or interference protection. We

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<sup>4</sup> See Stacey Higginbotham, “Wi-Fi’s Coming Identity Crisis,” GigaOm (July 5, 2011) available at <http://gigaom.com/2011/07/05/wi-fis-coming-identity-crisis/>

do not want needed licensed spectrum tied up in warehouse inventory, machine-to-machine communications, closed circuit security systems, or wireless hotspots shared by dozens or hundreds of users. It is much better to place this traffic on cheap, shared-spectrum networks that users can tweak to their individual needs. While it is certainly true that licensees could sell these services, it would add a needless layer of transaction cost, discouraging numerous beneficial spectrum uses and divert licensed spectrum and network capacity away from more efficient uses of these resources.

By contrast, the auction approach described would end the usefulness of the TV white spaces by eliminating its value as a general resource available to an unlimited number of users and developers of goods and services. Further, it would yield little by way of additional auction revenue. As was debated at considerable length in the TV white spaces proceeding, the “Swiss cheese” nature of the white spaces (holes in markets rather than national blocks) makes it particularly ill-suited for traditional auction and management. Even under traditional licensing rules, it would yield little revenue in an auction.<sup>5</sup>

More critically, the usefulness of the white spaces depends on the lack of barriers to entry and the ability of all users to benefit from the availability of spectrum. This gives innovators the chance to develop new products and services without the need to seek permission. For example, many equipment manufacturers develop a wide variety of products using unlicensed spectrum for the benefit of users. These are mass produced products that any consumer may use, regardless of what wireless provider the consumer uses. The low cost encourages adoption, and greater innovation. In 2000, when wifi dongles cost a hundred dollars a piece, few users considered wifi worth trying. As wifi chips became common in computers and other devices, consumers quickly became addicted to the ability to use their laptops untethered. Today, wifi has essentially replaced the wires and cables that used to run from desktop to printer and to every other connected device in the home or office. Had it been necessary to pay for access, it is doubtful that this highly beneficial market would have developed.

Furthermore, the concept of a “band manager” is both unnecessary for interference purposes and inconsistent with the theory of licensing. A band manager operates to prevent interference with fellow users by active management among a limited class of users. Here, the FCC has already established that the devices themselves can, and should, operate in a manner that avoids interference with licensed services. Unlicensed devices are not entitled to interference protection, making the band manager concept unsuitable.

Because the rules are already settled, an auction of the white spaces along the lines proposed would add no value. Unlike an auction for flexible licenses, where the auction places the spectrum in the hands of a licensee motivated to build a network, the TV white spaces “band manager” would simply collect money so that parties could access spectrum in a manner the FCC has already determined is consistent with the sound spectrum management. Rather than embracing the deregulatory freedom of unlicensed, such an approach would be a step backward to a regulated monopoly where the “band manager” would levy new fees and impose new restrictions above and beyond those needed to avoid harmful interference.

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<sup>5</sup> See Michael Calabrese and Gregory Rose, “There Is No Windfall In The White Spaces,” New America Foundation (2008) available at: [http://newamerica.net/publications/policy/there\\_no\\_windfall\\_white\\_space](http://newamerica.net/publications/policy/there_no_windfall_white_space)

Finally, auctioning the white spaces to a “band manager” solely to maximize revenue raises significant First Amendment questions. The power of Congress and the FCC to regulate spectrum access derives from the need to avoid harmful interference. No one here suggests that a band manager would do anything to minimize the risk of harmful interference. This is simply a tax on wireless speech, no more constitutional than would be a special tax on newspapers. Even were the other considerations less compelling, Congress would hopefully forgo imposing a “Super WiFi Tax” simply as a means of raising revenue.

In short, unlicensed spectrum is, economically, a very different type of good from the kind of good from licensed spectrum. Licensed spectrum provides the opportunity to use spectrum at higher power with interference protection. Unlicensed spectrum provides much broader, lower cost access in exchange for lower power and no interference protection. Both types of spectrum are needed to maintain a robust spectrum environment that promotes job creation, innovation and competition among providers of all wireless services. The only justification for the proposal is that mistaken idea that a large company such as Google or Microsoft has a duty to pay for spectrum that will equally benefit Verizon, AT&T, or any other company or user that accesses the spectrum. But this assumption stands the true value of the TV white spaces on its head. By making the resource available to everyone, the FCC creates new value enjoyed by every company, innovator, retailer and user.

