The Free State Foundation's
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Panel III:

The Right Regulatory Approaches for Successful Spectrum Policy and Auctions

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* This transcript has been edited for purposes of correcting obvious syntax, grammar, and punctuation errors, and eliminating redundancy. None of the meaning was changed in doing so.

Proceedings

MR. WILEY: Thank you, Randy, and good afternoon, ladies and gentlemen. Our topic today for this final panel, appropriately so after Senator Rubio's really outstanding remarks, is spectrum policy and auctions. There could be no more timely and important subject in the communications field. It is obviously at the heart of the agenda of the FCC, NTIA, Congress, and indeed much of the industry.

Senator Rubio put it well that spectrum is a finite asset, but it's also true that there are infinite demands upon that asset. Today, we can and doubtless will debate as to whether or not we are facing a spectrum shortage or even a crisis. But clearly there are more and more wireless and mobile devices and services being introduced into the marketplace every day, and therefore more and more demands for spectrum.

Now, how these demands could be met, what users, either in government or in the private sector, will be impacted, and how they'll be impacted is something that we want to talk about today. And it's at the top of the communications policy agenda.

Appropriately, we've gathered some of the best and the brightest to give their vision of spectrum and their own views on this in, say, three to five minutes, with some brief comments. And then I'm going to ask a number of appropriately provocative and equally unfair questions of them.

So let's just meet our distinguished guests. I'm going to put questions directly to a single panelist, but I ask others to comment as they might.

Jeff Campbell is Vice President for the Americas, Government Affairs for Cisco Systems. He's been with the company since 2001. Before that he practiced communications law here in DC. Jeff, of course, is to my immediate left. And I'm introducing these folks alphabetically.

Next we have Michelle Connolly, who's Associate Professor of the Practice, Economics Department at Duke University. She was, of course, formerly Chief Economist at the Federal Communications Commission.

Unfortunately, Gary Epstein has had a hip replacement. Therefore, he cannot be with us today.

We've got two illnesses, actually, on this panel. Steve Largent hasn't been feeling well, just in the last couple of days.

So Chris Guttman-McCabe is going to pinch-hit for his boss. Chris, of course, is the Vice President, Regulatory Affairs of CTIA, the Wireless Association. He formerly practiced communications law at a firm that I know and love well. Okay. Good to see you, Chris.

Then Rick Kaplan is Executive Vice President of Strategic Planning for the National Association of Broadcasters, and is the Association's chief voice on spectrum and innovation policy. He formerly was Chief of the FCC's Wireless Telecommunications Bureau, and also a key advisor to Chairman Genachowski and Commissioner Clyburn.

Finally, Tom Tauke is the long-time Executive Vice President of ViaCom, overseeing the company's public policy and advocacy.

MR. TAUKE: Verizon.

MR. WILEY: Excuse me? Verizon. Excuse me. Verizon. Those Vees can really get you. He's also a former member of Congress and, of course, of the Telecommunications Subcommittee. So let's start with Jeff Campbell.

MR. CAMPBELL: Thanks, Dick. I'm tempted to just say nothing and refer you all to Senator Rubio's speech, which I think covered a lot of the highlights here. In

particular, I like the fact that he was quoting the Cisco Virtual Networking Index statistics in our projections on traffic growth. Without going into detail, this demonstrates to us what the fundamental conundrum of spectrum policy is right now, which is that we are in a moment where the use of mobile devices for IP-related technologies is exploding like nothing we've ever seen before.

As the Senator mentioned, we're projecting that the amount of mobile traffic growth over the next five years is going to be 13 times today's usage, which is already up enormously over the usage patterns of just a few years before. As he mentioned, last year's growth was over 70%. So how we have been dealing with this in the past and how we deal with this in the future tells us a lot about where we should set spectrum policy.

The reason we are able to deal with mobile traffic today as well as we have is that we have had a pipeline of spectrum available for both licensed and unlicensed purposes that have been able to address the technological demands. In the past we have conducted spectrum auctions over and over again. The Commission has made more spectrum available to licensed users. That spectrum is being put to the test right now. It is being put into use and more is

going to be needed just to meet the current demands that are coming forward.

Likewise, in the past we have created additional bands of unlicensed spectrum, going from the 900 MHz spectrum that was originally available; 2.4 GHz as well as two bands that were made available in the 5 GHz range in the early 2000s. But just like licensed spectrum, that spectrum is also becoming more heavily used and is seeing a lot more demand.

As we look at spectrum policy in all of these areas, we need to use what I like to think of as a reality-based approach, rather than a faith-based approach.

I don't think we should pick an ideology or a thought process and declare that that is the method that is going to produce the ultimate values. Instead, we have to look at the facts, the science of the spectrum involved, the current uses, the potential new uses, and what the marketplace is demanding. And what that's telling us is that we need a significant amount of additional spectrum for licensed usages because of the huge demand that's going on. That calls for things like incentive auctions, and we need an incentive auction process where we maximize the availability of spectrum for licensed uses to give it the most intense use possible.

We look at government spectrum that is being underutilized and find what can be converted and auctioned off for licensed use. But at the same time, we have recognized that we can never produce enough licensed spectrum to carry all of the traffic demands that are going forward. We have to be able to offload more and more of this as consumers are using Wi-Fi technologies.

Those technologies, fortunately, operate best at spectrum bands different from those at which licensed services operate best. In fact, we already have two bands in the 5 GHz range that are currently authorized for Wi-Fi. We were looking at adding two significant bands to that as well, so that we could bring Wi-Fi speeds up to gigabyte potential to handle huge offloading capacity. And if we keep our spectrum policy based upon the realities of where the market is and where the physics of the technology is, we'll be able to handle this huge flood of data that is coming onto the market in the future.

MR. WILEY: Thanks, Jeff. Professor Connolly?

PROF. CONNOLLY: Thank you. In terms of spectrum there are two dimensions. One is availability of spectrum for current use. And once we've eventually maxed that out, the other is how we most efficiently use what we have as our limited resource.

In terms of things that are possible in the short run and moving on to the longer run, one of the key things is the move the FCC has made towards expediting the handling of secondary market transactions. It would be good if they continued to work on that, because that makes things immediately available. We don't have to wait for a new option.

Secondly, we need the FCC to continue working on the auction design; do it as quickly as possible, but as well as possible. I was reading through the specific design proposals and it is very complicated. So I don't want them to mess it up, but I'd like them to go as quickly as possible.

Two things in particular concern me in proposals in the incentive auction NPRM put out by the FCC. One is related to the spectrum screen and the uncertainty that that's bringing forward, not only for this auction but for future events. Another is the suggestion that we might want to have specific credits for certain groups of people to have privileged status in the auctions. That has been shown to be a very bad thing.

Thirdly, we need to be freeing up federal government spectrum resources. That's been mentioned several times. I'm stealing from Leslie Marks on this

number, but she said that the federal agencies are using up to about 60% of beachfront property frequencies. That's huge and it is not being used very efficiently. We want their efficiency to be improved, for the NTIA to work on that, and for the spectrum they release to be auctioned off.

We can have auctions that will be designed to guarantee that this only goes through if the revenues generated through the auction are sufficient to cover the cost for the government to move off of its spectrum. Those things can be embedded into the auction process.

Looking forward, we're going to have to increase the efficiency of the use of any given amount of spectrum.

Usage-based pricing is a way of creating that efficiency. Avoiding net neutrality impositions can help with the efficiency of the use of spectrum. New technologies are coming online and ways of re-aggregating spectrum will hopefully help reduce congestion issues in the future. Lastly, by reducing regulatory uncertainty we will have all the incentives to invest in the right types of infrastructure.

Thanks.

MR. WILEY: Thank you very much, Professor.

Now we have Chris Guttman-McCabe of CTIA. Chris,

thanks again for being with us on late notice.

MR. GUTTMAN-MCCABE: Sure. When I was younger I used to think if I get to sub in for Steve Largent, I'd have to actually put on a jersey and play football. This is not what I envisioned.

I've actually had the pleasure of following Senator Rubio a couple of times in the last 12 months. In both instances I listened to what he said and saw a great opportunity to use some of what he said as an intro into what I was going to say. Of the many things that he said that I found of interest, the one thing that really struck me is the quote: "We have no idea what the world is going to look like in this space in five years."

The reason that's important to what I was going to say is because this discussion is driven a lot by the notion of a looming spectrum crisis. That phrase wasn't a throwaway phrase, but it was a phrase that CTIA introduced in September of 2009. We sat down with Blair Levin's National Broadband Plan team and we wanted to get some issues in front of him. Specifically, we wanted to get the spectrum issues in front of his team.

So we came up with a filing, and we said: "Alarmingly, there is a looming spectrum crisis for U.S. consumers and businesses, which are rapidly embracing and

increasingly dependent on this 'whenever, wherever' access." It went on to call for bold access by the federal government.

I don't think we could have thought at that time where we would be in three years, both in terms of government focus on this issue, and perhaps more importantly, the idea of consumers embracing mobile services.

And I want to give you an illustration of how we have no idea what the world is going to look like in five years. When we wrote that statement in September of 2009, there were zero LTE subscribers. We now have 32 million. If you wait one more year, it will probably be closer to 150 million. It's rapidly taking off.

There were 123 million advanced 3G and 4G subscribers. There are now 254 million. There were 41 million smartphones. There are now 150 million, and by now I mean the end of 2012. In terms of tablets, there were zero. The iPad was six months away from being launched when we wrote that statement. In terms of apps, there were 150,000, although if you asked someone to try to find 150,000, most of them would have been music and ring tone-based apps. There are now 3.6 million apps available to U.S. consumers.

We were at 89% penetration. Most would say that's a pretty mature industry, 277 million subscribers when we wrote that letter. We're now at 103% penetration and will probably go closer to 110% by the middle of this year. That's 330 million subscribers.

In terms of data usage, over the last six months of 2009 we had 108 billion megabytes of use. The last six months of 2012 we had 633 billion megabytes of use. Text messages have doubled; MMS messages have doubled.

But the thing that shocks me the most and the thing that has probably had the most significant impact on my life is what we call the verticals. These vertical industries – the intersection of different sectors of our economy and mobile broadband – just didn't exist. There wasn't mHealth, because we didn't really have any robust 3G networks at the time.

All of a sudden, we have mHealth. We have mobile education. We have intelligent transportation and smart grids. Every aspect of our life is now being impacted, personally. My house in Arlington has been converted to a smart meter. They didn't ask me. They just came and converted it. I've now visited a cardiologist a number of times and worn a wireless heart monitor for several weeks at a time; whereas, in the past, you had to wear a halter

and go in two days. Take it in. Get it read. Bring it back. Wear it again. I've worn it for two weeks at a time, and had the readings happen in real time.

So when Mr. Wiley's asking us what smart spectrum policy is, at the core smart spectrum policy is recognizing how fundamentally our mobile communications world and broadband world has changed. The notion that broadband is just a fixed service has been overtaken by events. You just need to look around this room and how many people here have at least two mobile devices with them.

Smart policy begins and ends with the recognition that we really do need to work on this quickly. We need to get it right. And we need to move a great deal of spectrum to the market, both licensed and unlicensed. But there needs to be an emphatic focus on getting licensed spectrum to market to fuel – not the future, but the present. To make sure we provide the foundation – not for what's going to happen, but for what actually is happening.

As Senator Rubio said, I don't think any of us can predict what the next five years are going to look like. But I certainly know what today looks like, and I don't see a pipeline to ensuring today's experiences five years from now, let alone what the intelligent people in the United States will come up with in the next five years.

Thank you.

MR. WILEY: Okay. Thank you, Chris.

Rick Kaplan is next, of the NAB.

MR. KAPLAN: Thanks, Dick. It's interesting. Unsurprisingly, Chris, I had a totally different read on the Senator's speech. When he said we have no idea what the next five years would look like, that actually gave me quite a bit of pause, and to realize that the tablets and smartphones are things that we didn't know about five years ago. I don't know what's next.

When I think about spectrum policy, I don't think about rushing to give every last megahertz to the commercial wireless industry. I think about efficient use, and that means government spectrum. That means freeing up government spectrum. It means looking across the board at the various uses, commercial, noncommercial, licensed, unlicensed.

That's what spectrum policy should be about, not whatever the flavor of the month is, not whether we can move one service to another. And I know people call it "flexible use," but it's really for commercial wireless use. We have to take the long view. That's how we have to look at spectrum policy.

When I think about all of the incredible

innovations the wireless industry has given us, it's really been remarkable. But that's all happened with the spectrum we have today. And it wasn't on the promise of more spectrum in the future.

It's on spectrum we have today and more spectrum that's coming online. According to the FCC, it's more than almost any other country in the world. So we're in great shape. That's very important. And the most notable thing that's happened and the most exciting thing in the wireless industry is as Chris said, it's not yet a fully mature industry. It's still pretty new in the incredible innovations it's brought in that short time. It's pretty amazing.

But in just the last year alone the market has made a major difference in terms of spectrum policy. This is one reason I often urge caution when thinking about spectrum.

In 2007 when the iPhone came online, it was revolutionary and really led to a lot of incredible things. The key thing about the iPhone was not just the rise in data, but the surprise of the wireless companies who were giving us these new applications and new services. And wow, suddenly this demand for data skyrocketed. It wasn't in anybody's plans. It's not a fault of the wireless

industry. It was an incredible innovation.

The industry then had to account for that. They had to figure it out. And in that time, it wasn't about new spectrum coming online that allowed them to figure it out. But for those of you out there, this fits in well with the Free State Foundation and its mission. This should be item number one when anyone talks about where the market can work, because here it really worked to solve a hard problem where the government didn't actually need to step in.

For smart spectrum policy, it's not that we don't need to be as efficient as possible. We certainly do. But this market, with a number of very specific deals that have happened, even in just the last six months, has accounted for the very real spectrum needs that the wireless industry had. You had Verizon. And Tom could talk about their great deal they made with Comcast and the other cable companies to take spectrum that was sitting on the sidelines and, hopefully, over the next five or so years, get that fully used and to added to its already considerable spectrum resources.

AT&T has done a great job working with the FCC to free up the WCS band, which had really been sitting on the sidelines for a long time due to rule changes. And smart

acquisitions by AT&T also include their deal with Verizon to get more spectrum in 700 MHz. These are great deals they've had that will allow them to bring the services they need to bring.

I see T-Mobile sitting out there too, behind Bob, and they're happy because they just got their deal with MetroPCS done, which allows them to be more spectrally efficient. And I don't think we can count how high the amount of spectrum Sprint is going to have if they get Clearwire on top of what they already have as part of their fully-owned stockpile.

It's not to say that all the problems are gone, but it's to say that if you give the market a chance to work, it actually can work, whether it's through greater efficiencies or just through a rationalization of the industry. As an industry structure matter, it wasn't addressed in the National Broadband Plan. But it is a major feature of how you think about efficient use of spectrum. So that's just something to keep in mind. I wanted to introduce that in the conversation. It's an important piece.

Again, none of that's in lieu of really looking long term at all of our spectrum and freeing up some more federal spectrum. But there's still a lot of privately

held spectrum like the 40 MHz of great spectrum that Dish has sitting on the sidelines. So it's really about taking a holistic look at spectrum, and I think that will be helpful for all of us.

Thanks.

MR. WILEY: Thank you, Rick. And, finally, we have Tom Tauke of, yes, Verizon.

MR. TAUKE: Thank you, Mr. Chairman.

This is the second time in five days that I've heard Senators Rubio speak on a substantive matter, and I have to say he's really raising the bar for other senators. You'd almost think he was a member of the House.

(Laughter.)

MR. TAUKE: Now, Randy has been peppering us with Yogi Berra quotes today. My favorite Yogi Berra quote has absolutely nothing to do with the topic at hand. When asked why he didn't stay in a more expensive hotel, he said "The towels are so thick it's hard to close the suitcase."

(Laughter.)

MR. TAUKE: That's my favorite, but the more relevant one today is probably: "You have to be very careful if you don't know where you're going, because you might not get there." Of course, if we don't know where we're going, it is sometimes a challenge to get there. And

that is one of the challenges that we face in communications policy.

I think that Senator Rubio and Michael Powell were both very articulate on a topic that is the theme today; that we have policies that are outmoded. In fact, we could say that a summary of the three panels that we will have today on broadband, video, and spectrum, could be this: The statute that governs the broadband, video, and spectrum areas is outmoded, outdated, and obsolete.

The FCC and the other agencies of government are trying hard to work within that statute. But they are working at a real handicap because the fundamental policy of the nation is obsolete. It's not relevant or up-to-date with what's going on in the modern world.

Senator Rubio said the world is going wireless. I thought when I saw these driverless cars actually working that I had seen it all, and this might be the ultimate use of wireless. Then, this week in Congress we hear testimony about the mini-drone the size of an insect that will be able to follow you around all over, record all this information about where you are, what you're doing, and compile it with what you do online and get this amazing profile. Very scary, by the way.

The bottom line is that we know there is going to

be an amazing, continued explosion in the amount of data that is communicated over networks, that is stored, that is computed over the next 5, 10, 15, 20 years. And in order to do that you need, at least three things: you need amazing technological advancement, you need investment in infrastructure, but you also need spectrum. You need spectrum, and that's really our topic today.

Now the developments in secondary markets, such as what Verizon did with Comcast, and the other things you mentioned, Rick, are all very encouraging, and they are happening. It's very encouraging to see even what the Chairman of the FCC has done with the recommendation to the FCC and the 755 and 2155 bands of spectrum, trying to get that auction going before the end of next year. But it is fair to say that, even with all these advancements, we know that we are going to face something of a crunch over the next several years.

The problem is that you have to plan way ahead. A track record for accessing available spectrum, from the time you think about it to the time it's actually available, is 10 to 15 years. The earliest we have is about 7 or 8, but generally it's 10 to 15 years from the time you think you're going to start until the time you get it done. So we have to be thinking now about 2025 and what

the needs are going to be then.

The needs are going to be for licensed spectrum, but they're also going to be for unlicensed spectrum. So as Al Capone said when it came to banks, when it comes to spectrum, you have to go where the spectrum is. And the spectrum is with the government.

The only modifications I'd make to Senator Rubio's comments are these. First, we haven't had any clear direction from the President or clear direction from Congress in this area for a very long time. No one is saying to the agencies of government: "You need to more efficiently use spectrum." They have no incentive to use spectrum more efficiently. If they do something to use spectrum more efficiently, they'd probably have to make expenditures out of their budgets, and they aren't getting any money for that. So it's a negative for them, not a positive for them, in the world they sit in, to free up spectrum or to use it more efficiently.

We have to change that dynamic. That's where the spectrum is. There are lots of ideas. We've had proposals for commissions with spectrum like the base-closing commission. We've had the proposal from Tom Lenard and the TPI folks about having the government spectrum ownership commission that would serve as something like a GSA, as I

understand it, for spectrum. That's a reasonable idea.

But the bottom line is, no matter what approach is taken, we need to change the economic fundamentals for those in government who control spectrum. My own view would be that it might be wise for Congress to have a rental fee for all spectrum used by federal agencies, that when they use the spectrum, as long as they keep using it, they have to pay money out of their budget every year to pay it, so they'd have an incentive to use it more efficiently. But regardless of the idea, in my judgment, changing the economic fundamentals for those in government controlling spectrum is the issue that has to be tackled.

MR. WILEY: All right. Thank you very much. Let's move to the questions. Tom, I'm going to stay with you for a moment, if I can. How do you assess the progress made today on meeting the spectrum goals of the National Broadband Plan? Beyond the TV incentive auctions, what are other real prospects of meeting the goal of 500 MHz over the next 10 years?

MR. TAUKE: First, I think that the National Broadband Plan was solid in the area of spectrum. It made good recommendations. I'm optimistic that the 500 MHz will become available. But if we think to 2025, that probably isn't going to be enough. So we need to be thinking ahead

and we need to find more, and that's why I think the focus has to be on the government's spectrum. But we're seeing the things that are in the Broadband Plan come to fruition, and I'm reasonably optimistic that by the time 2020 rolls around or 2022 rolls around, that 500 MHz will be identified and freed.

MR. WILEY: Okay. Rick, as I listen to your comments, I wonder. Do you think there is now or soon will be a spectrum crunch, much less a looming spectrum crisis? How do you feel about that?

MR. KAPLAN: I think we don't know. There's no doubt about the data demand. You can't question it. It's absolutely there. What the National Broadband Plan did is jump immediately from the demand to needing more spectrum. And that doesn't really address the entire problem.

That may be the answer or that may be partially the answer. The FCC has actually no way of evaluating how efficiently the wireless companies are actually using their spectrum. They don't collect that data. The only time you see it is in transactions where the companies fight over who is using it more or less efficiently. And you see the different models the economists produce to suggest, for instance, that AT&T and T-Mobile aren't using it as efficiently as Verizon.

That's the only time you see it. But the FCC collects zero data on how the companies use it. So we actually don't know the answer to the degree of the spectrum crunch or if there even is one. The jury is out. I do know there was a spectrum crunch of sorts, from the wireless industry perspective, when the iPhone came about and the networks were overloaded. They had to figure out how to re-plan. Do you retire 2G?

Now, one more thing as it relates to broadcasters. It's funny. If there is a spectrum crunch, it's not in Des Moines, Iowa. If there is a spectrum crunch, it is in New York. What's interesting is that same spectrum crunch applies to the broadcasters as well. It's not like you can go get a new station in New York, where it may be very valuable, worth hundreds of millions of dollars.

They don't have room, either, in the white spaces. Just two years ago the Commission said, "Oh, white spaces, here we go, unlicensed spectrum in 600 MHz." The spectrum crunch is equally applied in the markets where you think it might actually exist.

MR. WILEY: Chris Guttman-McCabe, any rejoinder?

MR. GUTTMAN-MCCABE: First of all, I'm going to download the confession app for Rick that the Senator spoke about. The reality is that if this is a conspiracy in the

United States with regard to the disconnect between demand and the need for more spectrum, then it's a global conspiracy. Because the reality is that every country that you would think about comparing ourselves to from a technology perspective has hundreds and hundreds of megahertz, either in the pipeline or has already brought it to market, unlike ours.

As Rick said, we're doing really well. But when you compare our population or our usage to the countries that have brought spectrum to market, it all of a sudden makes that equation look unbelievably disproportionate. There is an absolutely direct connection between usage, demand, and the need for more. To take Rick's point but turn it around, that is illustrated in all the transactions you've seen.

All of these secondary market transactions are designed, specifically, to address this issue of the need for more spectrum. You're seeing multiples paid on some of the spectrum resources because of that need. So I look at it and say it's strange that here we are, multiple years removed from when we first brought up this issue, and we're still debating whether there's a spectrum crunch.

Yet, what has happened in the last three years is beyond anything we could have predicted when we were

suggesting there was a spectrum crunch. There wasn't a tablet at the time. There weren't verticals at the time. Smartphone penetration was only at the richest levels of the population. And the mobile data traffic projections that Cisco does all the time just keep going through the roof. It's almost like a hockey stick. The fact that we're still debating whether there's a spectrum demand is almost insulting to the intelligence of policymakers.

There is an unbelievable crisis in terms of what is happening in the mobile marketplace and what is planned for from policymakers right now. We have to make those two connect if we want to continue to lead the mobile marketplace.

MR. WILEY: All right, Rick. A final quick remark and then we'll go on to another question.

MR. KAPLAN: I didn't mean to insult any policymakers out there. I'm sorry.

(Laughter.)

MR. KAPLAN: You're all very, very smart, very intelligent. Just quickly, there's a lot of spectrum sitting on the sidelines owned by the wireless or licensed by the wireless industry today. So I felt like I needed to run out quickly and do something, like the world was ending, listening to the crisis that's out there.

There's 40 MHz of Dish spectrum, right now, and nobody's using it. Verizon has amazing spectrum resources that someday they'll probably use. They're a leader in the marketplace, but it's not all being used. AT&T is still trying to make use of its spectrum resources. T-Mobile now has new stuff online. Again, Sprint, unbelievable, with the Clearwire spectrum, which is just sitting there, basically lying fallow.

And I want to be clear. I get planning ahead. We should be thinking forward for the country. That's how we have to think about spectrum, and it's very important. But the crisis in Washington line is that's what you have to say to get people to act.

I agree with Tom's point. We should be thinking about spectrum in 2025. But I actually have no idea what's going to happen in 2025. I don't know if these same companies will be around in 2025, or what it will look like. And that's part of the point too.

The bottom line is there's spectrum out there now, so don't freak out after hearing critics. You're fine, Verizon, your phones, your service are still going to work tomorrow and for a long time to come, even if you live in New York City and you've traveled down for this fine conference. You will be fine.

That's the important thing. It doesn't mean we shouldn't think about it. My main point was, we can skip from demand to more spectrum, but we still have no idea who's efficiently using it or not. And we just haven't accounted for that, because if you can get massive gains in efficiency, that's one way to do it.

And the final point is you can't have the leisure of more spectrum forever. This is something that's a moment in time, because it is a finite resource. This is so whether this 500 MHz, or the 800 MHz CTIA asked for during the Broadband Plan. Blair Levin cut them down by 300. The bottom line is this won't work for too much longer. We can keep doing more, more and more, but it literally is finite. So I don't know where it ends.

MR. WILEY: All right. Prof. Connolly, you wanted to comment on this?

PROF. CONNOLLY: I'm always trying to make people happy with one another. So I wanted to say that in many ways I don't think that anyone is disagreeing. They were just focusing on different aspects of the problem.

One of the points I was trying to make was that supply is two different things. One is the physical spectrum and one is our technological ability to use each unit of that spectrum. So these are two different

dimensions in which you increase what I call the effective amount of spectrum. And I completely agree, demand is skyrocketing. The demand by traffic is increasing exponentially. So we know the demand side is going up a lot.

However, we don't whether the technology that is using this is going to increase its greediness at that same rate. That's a technological question that we don't know the answer to ahead of time. Certainly, economic pressures may influence how those devices change over time. In terms of quantity, that's what the government has some option in providing because the government controls so much of it right now. And because we regulate it and we auction it, that's why we're all focusing on that.

But there is also the other dimension. We may increase effective spectrum by improving our technologies. That's going to come from the private sector. So in a sense I'm very happy us to not to be talking too much about it, because I don't want us to try and control it. But the reality is that technologies will also help us in that dimension.

MR. WILEY: All right. Jeff Campbell. We know that U.S. spectrum policy and allocations are bifurcated between NTIA, managing the government frequencies, and the

FCC with the commercial frequencies. Yet, we know that the vast majority of users are sharing this spectrum between government and non-government uses. What could be done to better coordinate and consolidate our spectrum policy?

MR. CAMPBELL: I can't remember the exact Winston Churchill quote. It's something like, "Eventually, Americans will do the right thing, after they've exhausted all the other options." It does seem that we frequently run our government this way.

I just spent time in other countries and discussed these issues. And it's astounding both how few people you need to talk to in other countries who are in positions to make decisions about these issues, and also how they tend to be concentrated in one location with one set of powers, which allows for decisions to move forward when they do. Predicting how the U.S. government will change, how it will operate, is sort of a fool's errand.

In this country it's like water seeking the lowest level. We just find a way to get it done, even while we leave the structures in place. The bigger issue with spectrum is getting as much federal agency coordination as possible and as much consensus on what the goals are at the end of the day. Tom was saying earlier that frequently what really matters is if we have the highest levels of

government declaring something to be a priority.

We manage to make things happen, and that's what we need to do with spectrum policy. We need to have clear policy direction from the highest levels and then the implementation can move forward on that basis.

MR. WILEY: Tom?

MR. TAUKE: Dick, trying to tie together the earlier discussion with this question, it does seem to me there is a fundamental policy choice about how you allocate spectrum. You either rely primarily on the market to set a value and then the user who thinks that they have the best value can purchase that spectrum and use it for that purpose. Or, you have a bureaucratic government entity that determines what is the best use of spectrum, and allocates spectrum that way. And I don't say this in a disparaging way.

Those are fundamentally the two choices. Because there are always going to be some government interests, you're going to have some government role in allocating spectrum. But what we're trying to see is movement more to a marketplace so that that marketplace can be more responsive. As there are changes in the technology, consumer usage, and demand, those will be reflected in the marketplace in the price that is paid. And if you do have

a robust, secondary market, that's going to mean you're going to have shifting uses of spectrum over time to adjust to the changing preferences, demands, and technologies of the marketplace.

Part of the problem now is we've been in a government-controlled mechanism for allocating virtually all the spectrum. We're trying to move to a place where we have more of it allocated by the marketplace and less of it controlled by government.

MR. WILEY: All right, Professor. NTIA has become a proponent of spectrum sharing. But is that kind of sharing likely to meet the commercial market's needs for spectrum both on a license and an unlicensed basis?

PROF. CONNOLLY: Spectrum sharing has a lot of limitations. Certainly, it is possible to do that. But it's going to limit the types of applications that will be feasible. Rather than keeping a lot of it and trying to share a portion, it would be more efficient if NTIA would have government move its services into a certain spectrum group and then simply free what's been vacated to full flexible usage by the market.

MR. WILEY: Okay. Jeff, is there a tension between licensed and unlicensed needs? And if so, how is that going to be resolved? Could unlicensed end up being

the poor stepchild in this whole process?

MR. CAMPBELL: By its very nature unlicensed spectrum always ends up being the poor stepchild, but that's the point of it. It's not necessarily a bad thing that it's the stepchild because it is about using spectrum as efficiently and intensively as we possibly can. This is where you have to come back to fact-based and reality-based spectrum allocation of the spectrum policy, which is that the characteristics of the spectrum matter a lot.

So when you're looking at, say, 600 MHz spectrum, and you're talking about unlicensed usage, it's probably not as interesting as some other bands are. You get great propagation in 600, and that may not allow for the best usage, at least as unlicensed is used today; whereas, other bands are better on that front.

We have to treat them as two children that we love, equally, but recognize that they may have different talents and that they belong in different places at times. So this is where you can't just use an ideology to decide what's going on. You can't just say the marketplace will solve everything, or that unlicensed is best or licensed is best. We need a mix of the two, but at the right places and the right times.

MR. WILEY: Chris, do you want to comment?

MR. GUTTMAN-MCCABE: Yeah. I agree with everything Jeff said. This issue has come to light, most recently, in the discussions about the incentive auction and how to get the right mix. Oftentimes what gets lost in that debate is there really are two constraining elements as to how the Commission makes that determination. In essence, both are set by Congress; the first being it can be unlicensed. It can be in the guard bands, but the guard bands have to be technically reasonable.

So that's one constraining limitation. The second is we need a financially successful auction for there to be any ability to have licensed or unlicensed spectrum. We need enough money to clear the broadcasters. I'm of the view that we should do whatever we need to do to get those broadcasters that want to participate and give them a desire to participate. Financially, let's not constrain what they might take away. Let's let the market determine that.

We also need sufficient money to repack the remaining broadcasters, so that is another financially significant constraints.

There's also a desire, as the Senator said, to reduce our deficit, pay down our debt, and to fund a public safety network. So there's a lot of real intense

discussions about the right mix of licensed and unlicensed in the incentive auction proceeding.

I say that will work itself out. There doesn't need to be a holy war at this point in time because there are constraining elements to it. Congress set them, and the reality is if we don't have a financially successful auction, nobody gets any spectrum. So I don't think this needs to be a big fight at this moment. I think we're going to work through that.

MR. WILEY: Rick Kaplan, I heard you give a speech this week. What you suggested – shock city – is that the FCC's incentive auction is too complicated. Briefly, what are the complexities that you see and how would we solve that?

MR. KAPLAN: First of all, the whole spectrum auction process is complicated, whether we like it or not. Sometimes, when things are incredibly complicated, you have so many different policy issues and so many different technical issues. The desire is, from an academic perspective, to find them very interesting and to tackle them and try to figure out the solutions. But in the pragmatic world, what I have found to be a successful recipe is to try to pick the things that are the simplest to get you to your goal.

So figure out what your goal is. Figure out how to get there. It would be great to find terrific homes for both licensed and unlicensed right in the new auction spectrum. But it's probably not really possible. You probably have to maximize for licensed to bring in the greatest amount of money to pay for all the congressional priorities. That's very important. At the same time, one reason I do agree with Chris is you actually have 600 MHz unlicensed and white spaces. As long as you've preserved them to some degree, you've actually got a solution in front of you.

I was mostly referring to the auction design. It is a really neat problem. And the economists are very important, Michelle. I totally agree. But if you get too far ahead of the actual engineering, then you're in trouble, because the engineering of this entire process is very hard.

So we have to get that right and then build the auction around the shared understanding of what the engineering principles are. But it's been done backwards here. They've thrown everything into the auction design, which is very creative and innovative. But then you end up with a band plan that doesn't work, or then you end up with a series of interference problems that you didn't

anticipate. They've created a great, perfect auction from an economist's perspective, but the engineering didn't work.

MR. WILEY: Tom, the FCC currently has a proceeding before it concerning spectrum aggregation and possible limits on the company's mobile spectrum holdings. If the Commission does impose those kinds of restrictions, what effect could this have, potentially, on auction revenues, the ability to fund compensation to broadcasters, and to fund Spectrum Act initiatives, such as FirstNet? In other words, if you're out of it, what's going to happen?

MR. TAUKE: If the FCC imposes restrictions on the incentive auction so that we are out of it, consumers would suffer and not as much money would be raised. Those are the two short answers.

Let me just start this way. We have no difficulty with the FCC having a spectrum screen with roughly 30%, a third of the available spectrum, being if you exceed that, then the FCC takes a close look.

We understand that policy. We understand that it is an adjunct, if you will, of a good antitrust policy. And we have no difficulty with that. We think that screen should be one where if you pierce the screen, that's when the FCC takes a look. We also think the screen should be

adjusted to reflect all the spectrum that is in the marketplace, which it does not now reflect.

So we need some adjustments there. But when they have the auction, the auction should permit all players to come and participate. First of all, a player should be given an option to buy spectrum and trade other spectrum or sell other spectrum if they want to. But all players should be able to participate, because that's how you get the best read of what's going on in the marketplace. That's how you get the most efficient allocation.

One other observation is the way these policies tend to work is they treat all companies equally. This is like the United Nations. Every country gets one vote. You have a million people, you get a vote. You have a billion people, you get a vote. They don't pay any attention to how many customers you have.

The fact of life is that, in the case of our company, I'll just say that people are choosing Verizon. They are every month. More people move to Verizon than move away from Verizon. We think we know why. We think it's because of better service. In any event, that's happening. But when you have these notions that everybody should get an equal amount of spectrum or something like that, it suggests that consumers are going to be thwarted

in their ability to make choices, and that isn't right either.

There is a line between, on the one hand, not allowing anybody to get too much spectrum, and on the other hand, ensuring everybody has a chance. We understand that the FCC is trying to walk that line, and we can walk that with them. But they have to be very careful, not just say some carriers don't have the ability to participate because of the spectrum they already hold.

MR. WILEY: Professor Connolly, if you look at the record in the incentive auction, you'll see that there's a number of technical disputes on important issues such as interference potential, interoperability, size of guard bands. And you see dueling technical studies and claims. How do you think the FCC going to deal with those?

PROF. CONNOLLY: Ah-hah.

MR. WILEY: I was going to ask Gary Epstein that question, but he's not here. So you get it.

PROF. CONNOLLY: Hmm. I have a thought, but I don't think I should share it. I'll just say that I thought that Commissioner Pai and Commissioner McDowell's comments on the size of the guard bands were very interesting. I thought Commissioner McDowell's comment on doing the 5 MHz bands, selling in 5 MHz bands as opposed to

6 MHz, I think, was also a very interesting comment.

Certainly, technology is evolving. I am therefore probably leaning more towards the concern that this 6 MHz guard bands might be a little large. But I'm not an engineer, so I won't make a specific claim on that situation. I would assume they're erring on the side of extreme caution.

MR. WILEY: Chris, we've got those technical disputes, we've got changes in the membership of the FCC, and we've got disagreements in the industry, with the idea of having an order this year and an auction in 2014. Could those dates slip; and if so, likely by how much?

MR. GUTTMAN-MCCABE: No, and none at all.

(Laughter.)

MR. GUTTMAN-MCCABE: I think everyone up here would agree it's an extraordinary, complicated undertaking. So, full stop. I believe strongly that we should set deadlines and goals, and try to set a timeframe for when the Commission should complete the rulemaking; then, accordingly, move the spectrum to auction.

I've seen recently that Commissioner Pai said that. Commissioner Rosenworcel said that. That makes sense to your point about changeover. We know, pretty much for certain, that those two will be around in the next year

or so. The goal absolutely should be to finish the rulemaking this year, in 2013. And the goal should certainly be to try to auction this spectrum by 2014. We'll work through the difficult issues now.

I've been at CTIA for 11 years and been doing this for 17. At every auction at this stage there are a number of extraordinarily difficult issues that still remain, and a lot of complicated things that have to be addressed. The reality is that's where we are now, and it's too early to say is it too complicated. Is it not complicated enough? Is the auction mechanism the right mechanism? Should it be different?

You have to give the Commission the ability to actually work its way through these issues. We had reply comments last week. I've set for myself that there's absolutely no chance that I'm going to look at a single reply comment until at least next week, just to let everything sit. I think that's fair for the Commission, too, is let the issues come in.

Let everyone look at where there are agreements, where there are disagreements. Then, as the Commission always does, it should start to knock off those issues where they're as close to unanimity or consensus as they can be. The ones that remain are the ones you're going to

have to buckle down on.

MR. WILEY: Rick, one very complicated matter that could be a problem is repacking, and coordinating repacking with Canada and Mexico. And how do you think that should be implemented? How should we get revised cross-border agreements?

MR. KAPLAN: Well, this is one of those very complicated issues that a lot of people didn't appreciate at the beginning of the process. It's one that both the broadcast industry and the wireless industry and their vendors are largely in agreement on, at least in principle.

You can't move broadcasters in the northern part of the country, in pretty big markets, whereabouts just under 800 stations live within this coordination zone. So any time the FCC wants to change power, move a station within 250 miles of the Canadian border, for example, it has to coordinate with Canada and go through a process.

That won't work with this auction, not the way they have it designed. They need to make those decisions kind of instantaneously. Putting the statute aside for one second, you have a decision to make. You could either say: "Well, just do something different with that area of the country"; or, you could say, "let's figure it out and try to cut a deal with Canada to allow us to move the stations,

so we can free up that spectrum for nationwide bands from mobile broadband."

We definitely think the latter is better, because whenever the Commission postpones decisions to later, it never works. It's always a headache, and it lasts twice as long as you think it's going to. The FCC is totally silent on this issue publicly. And we still have no idea why, when everybody said we can do a working group. This whole industry is coming together on this issue, because it benefits all of us.

The key thing here is we have to get working. We don't have to have a perfect answer. And we don't want an answer that delays the auction by five years. But we proposed something we think that gets us 60-70% of the way there and that could take a lot less time. It's an incredibly important issue that everyone now is starting to grasp.

MR. WILEY: Okay. Jeff Campbell, do you think our country should consider aligning its spectrum bands and allocations with an eye to global spectrum use?

MR. CAMPBELL: Absolutely, as much as we reasonably can. It is an interesting experience that the world has improved on this. I'm not sure exactly why in some areas. We've gotten to a point where I can turn my

phone on and it gives me at least decent service wherever I go.

Part of that is because of harmonization efforts and issues. And we need to think about this when we're looking at a world of mobile devices. The devices cross the border all the time, and the more we can harmonize, the better off we'll be. We will never get to perfection in this space; but when we have the opportunity to do so we've got to grab it, because the devices are not being manufactured for the United States. They're being manufactured for the world economy.

Fortunately, we're one of the largest markets, so you can manufacture for the U.S. market when necessary. But how long that will be true? I hope it's forever, but there are enormous efficiencies that come from globalization here. That is good for consumers and good for our country. To the extent we can lean on that, we should be.

MR. WILEY: Okay. Here's the final question from me, then I'd like to go to the audience. I'm going to ask each one of you to put on your crystal ball and make a prediction on the amount of television broadcast spectrum that would be cleared from the incentive auction process. Will it be 120? 90? 60? What do you think, Jeff? You're

first.

MR. CAMPBELL: I'm going to be the optimist and say 120.

MR. WILEY: 120. Okay. Professor?

PROF. CONNOLLY: I'm going to say it's whatever they want to do as long as they're willing to offer the right price.

(Laughter.)

MR. WILEY: You're wimping out there.

PROF. CONNOLLY: Well.

MR. WILEY: Okay. We'll take that.

MR. GUTTMAN-MCCABE: 120.

MR. WILEY: 120. Okay. All right, Mr. Kaplan?

MR. KAPLAN: I have no idea. It depends. First of all, everyone's assuming it's a nationwide band, which is important and which I agree with. So I'll take that as an agreement. If they continue the way they are, it threatens to not have any. But they need at least 60 to make it worthwhile.

MR. WILEY: 60 to make it work. All right. Tom, the last word on that?

MR. TAUKE: I think it will be closer to 120.

MR. WILEY: All right. Very good. Let's go to the audience at this point and see what questions we have

for our excellent panel. All right. Mr. Quinn?

MR. QUINN: Bob Quinn with AT&T. So, Rick, I agreed with a lot of what you were saying about efficiency. So you weren't standing alone up there. But I've got a challenge for you and a question which is that your broadcasters are using a technology that was created 70 years ago – big stick, high power – which requires us to use spectrum for broadcasting in a very inefficient manner.

What could we do to incentivize the broadcasters to explore different types of technologies than the one that's been in place for decades to maybe alleviate some of these interference issues.

MR. KAPLAN: It's a very, very fair question. When I talked about long-term spectrum policy that involves everyone, including broadcasters. First of all, one way to make broadcasters use our spectrum as efficiently as possible is have conversations like this about the incentive auction. Trust me. When now you're talking about losing spectrum, yet again, for broadcasters, that's certainly a big one. And that's one reason I have concerns with the wireless industry saying, "More, more, more," because, to Michelle's point, there is a forcing function that the scarcity does have for efficiency. It's a balance. But, for us, we have a number of challenges.

One, on the positive side, we have a one-to-many technology, which has certain advantages over the one-to-one technology broadcasting the Super Bowl. We'll see what happens with the LTE broadcast. But we do that very efficiently. And someday I think we'll be working with the wireless industry, because we have a great way of delivering data that you guys don't; and you have ways of delivering data we don't. So there's actually a future that sees us both together.

When I worked at the Commission, the big thing in the wireless industry was: "Wow, we are just the most unregulated industry and that's why we've been successful." The broadcast industry is the most regulated industry. And thinking of ways in which we could be efficient also has to do with certain regulations that we have that have been there a long time, that have allowed us to be stuck in time and frozen in time. Those are things we're well aware of now. It's a fair conversation. I know we're having it, and we will continue to have it to be as efficient as we can. But I think the ultimate answer is marrying some of the two technologies together.

MR. WILEY: All right. Please join me in thanking this outstanding panel.

(Applause.)