THE BROOKINGS INSTITUTION

A FRAMEWORK FOR INNOVATIVE FEDERAL SPECTRUM POLICY

Washington, D.C.
Wednesday, March 30, 2010

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P R O C E E D I N G S

MR. WEST: Good afternoon. I think we will get going. I'm Darrell West, Vice President of Governance Studies and Director of the Center for Technology Innovation at the Brookings Institution, and I would like to welcome you to this forum on Innovation and Federal Spectrum Policy.

In its National Broadband Plan the Federal Communications Commission called the identification of 500 megahertz of new wireless spectrum over the next decade, and the FCC did this because wireless broadband is growing at a rapid rate. There has been tremendous growth in the use of smart phones and people using mobile devices for communications, health care, education and energy. There is no doubt that mobile communications is a key driver of economic growth, innovation and job creation.

Despite the new applications requiring wireless spectrum, it has been challenging to free up unused spectrum. There are competing claims between radio and television broadcasters, telecommunications companies, new wireless applications, public-safety officials and the Defense Department among others, and it has been difficult to resolve the competing claims on spectrum and determine what various options will mean for consumers. On top of all these issues, AT&T has announced plans to acquire T Mobile for $39 billion. You might have heard about that. This will give the company access to T Mobile's spectrum.

Today we are hosting a conversation to discuss ways to move forward on spectrum policy. How can we ensure that we will have the wireless

capacity to meet current and future innovations? What should the process be for allocating spectrum? How do we balance the various stakeholder interests in pursuit of additional bandwidth? How will the proposed merger affect spectrum utilization? And what actions will bring the greatest benefit to consumers?

To help us understand these issues we are pleased to welcome a number of distinguished speakers. Jim Cicconi is Senior Executive Vice President for External and Legislative Affairs at AT&T Services. He is responsible for the company's public-policy activities, and with the recent announcement of AT&T's proposed merger with T Mobile, he has been in the news a lot. "The Washington Post" and "The New York Times" and hundreds of other outlets have described him as the company's key guy in explaining this merger to federal officials. Blair Levin is a Fellow at the Aspen Institute who specializes in telecommunications and broadband issues. Previously he was the Executive Director of the Omnibus Broadband Initiative at the Federal Communications Commission. In that role he served as the key architect of the FCC's National Broad Plan. Adele is a Fellow at the Brookings Institution in the Economic Studies Program. She specializes in spectrum policy among other issues and is co-author with Robert Matheson of a new paper on "The Technical Basis for Spectrum Rights: Policies to Enhance Market Efficiencies." It's a really good paper. I highly recommend it to you. It's in the Brookings website at brookings.edu. Rick Whitt is Senior Policy Director at Google. He worked for a long time on innovation and competition issues. He's responsible for his company's wireline, wireless and media advocacy before the FCC and with

Congress. Our last speaker will be Roger Entner who is founder of Recon Analytics, a company that specializes in telecommunications, and prior to that venture he was Senior Vice President and Head of Research and Insight for the telecom practice of the Nielson Company.

I'm going to start with Jim and ask what the federal government should be doing to free up spectrum and how the proposed merger will affect what AT&T does in the wireless area. Jim?

MR. CICCONI: Thank you, Darrell, and thanks to you and Brookings for putting this panel together today. I think it's a timely topic with or without our merger.

Let me start by setting the stage and perhaps stating the obvious. I think we all know we're in the early stages of explosive demand for mobile broadband networks, devices and apps. They're mobilizing everything and they're revolutionizing how people live and work, and as a result of this, mobile data traffic growth is exploding. By 2015 mobile data traffic is forecast to reach an annual run rate of 75 exabytes. That's the equivalent of 19 billion DVDs or about 75 times the amount of global IP traffic, that's mobile and fixed together, that was generated in 2000. At AT&T our own mobile data traffic grew 8,000 percent over the past 4 years. Eight-thousand percent. These networks simply were not built to handle that type of traffic and the spectrum availability of course is stressed by this, and by 2015 it's expected that we'll be dealing with 8 to 10 times what we're dealing with now. Put another way, all the mobile traffic volume that AT&T carried last year is estimated to be carried in just the first 6 or 7 weeks

of 2015 so that we're looking at a hockey stick sort of graph here in terms of the capacity challenges and we're trying desperately to meet and it and spectrum is the key way that you do that.

Chairman Genachowski I think summed it up best last week at CTIA. He said, "This explosion in demand for mobile services places unsustainable demands on our invisible infrastructure, spectrum. Spectrum is the oxygen that allows all of these mobile innovations to breathe." I don't think it could be stated better than that or more succinctly. Today spectrum shortages and in some U.S. markets impending spectrum exhaustion are significant challenges for providers. For AT&T the need is particularly acute as we carry more wireless data and support more smart phone and tablet users than any other provider. We're really at the cutting edge of this problem right now simply because things like our smart phone penetration are just higher than our competitors at this point in time.

Our planned acquisition from Deutsche Telekom of their U.S. operations, T Mobile, provides a past, efficient and certain solution to this impeding wireless spectrum exhaustion my company faces. This merger will more quickly create the spectrum efficiencies that we need to sustain demand and it will free up more spectrum well in advance of the reallocation of spectrum that is government is working and is still vitally needed by this industry for the longer term.

The availability of more spectrum we feel is essential to providing the outstanding wireless broadband experience that consumers and businesses

need and that they've come to expect both today and in the years ahead. This is enabling the development and adoption of more innovative products and services and they're helping achieve the President's goals and the National Broadband Plan's goals of connecting every part of America to the Digital Age. In fact, this summer President Obama as you know committed to making more spectrum available and he said at that time that the number of African Americas for example using the mobile internet on an average day increased from 12 percent from just 3 years ago to 29 percent in 2009, a 140-percent increase in just 2 years. And I think many studies are showing today that especially in low-income communities that there is a disproportionate dependence on mobile broadband for basic internet services, and if you think about it frankly makes a lot of sense as people view these devices as essential parts of their lives today.

Moreover, broadband connectivity is going to enable applications in health care and energy. You've all heard about smart grid applications, but education, public safety, government performance, all of these things are going to benefit as we're able to expand these services assuming we can keep up with this demand. We have seen overnight a mobile applications industry form and begin growing. Our expectation is that this is going to be a $30 billion industry in very short order. It may be close to that today in fact. And as we move more to machine-to-machine communications which seems to be one of the current buzzwords in the industry, again we're going to find more and more opportunities but more and more challenges to the constrained spectrum that's needed for all of these services.

I think when you step back and look at the larger economy, this industry has been a rare bright spot in a troubled economy and we feel pretty strongly that making more spectrum available to wireless broadband is absolutely going to produce more investment and more jobs just as that has been our experience in the past couple of years. There has been a lot of success and as you know in recent years as we freed up spectrum over the last decade it has actually spawned more innovation and more competition and, frankly, lower prices. I think there is a direct correlation as most people would tell you between the availability of spectrum and price in this market simply because if spectrum becomes constrained, you have to be able to somehow control its use if it is congested. So right now in the country I think there is broad consensus on a bipartisan basis among the President, the Congress, the FCC and the wireless industry that we need to make additional spectrum available and at AT&T I think we're supporting virtually every one of the efforts underway currently to do that. I think our challenge as a company is that they're not coming along fast enough and these needs to have to be met in the near term and not just the longer term, and that's one of the keys I think to understanding the T Mobile transaction from our standpoint. Let me stop there and turn it back to Darrell.

MR. WEST: Thank you, Jim. Blair, you coordinated the FCC's Broadband Plan and helped write the section identifying the need for 500 megahertz of unused spectrum. What do you think is the best way to move forward?

MR. LEVIN: Let me summarize a 45-minute speech in about 45 seconds about what the Broadband Plan was about and then talk about four things that I think are true today that also by the way were true 2 weeks ago but I think because of various news flow in the last couple of weeks it may have been a little forgotten but I think that are at the heart of what we did in the plan and that are important.

The 45-second summary of the Broadband Plan goes like this. It's all about knowledge exchange. Knowledge is core to our economy. It's what most of us do. It is the key to the knowledge economy of the 21st century internationally. Knowledge exchange has been transformed by three revolutions, the Data Revolution, the Computing Revolution and the Communications Revolution and it affects every sector. It is not a high-tech phenomenon. That's why Walmart, a company from Bentonville, Arkansas is the biggest retailer in the world. It's core to the largest manufacturing process in the world, the Dreamliner. It's also core to our civic society. Every civic institution is fundamentally about knowledge exchange. The common platform today for knowledge exchange is the broadband platform. So what we saw was in order for the country to do well, it has to have a broadband ecosystem that facilitates what we think of as high-performance knowledge exchange. It doesn't guarantee success in the 21st century, but without it we absolutely guarantee failure. So the effort of the knowledge exchange was how do we facilitate high-performance knowledge exchange and that goes to having a broadband ecosystem that is ubiquitous, diverse and constantly improving.

So as we think about briefly spectrum and wireless, I'd like to make four observations. First of all, there is a need for 4G everywhere. It's going to be absolutely everywhere. You can think of it as universal service, but in fact the private sector is going to move to a very high number anyway, but that that is going to be an essential service that all Americans are going to have to have access to I believe. That doesn't mean we don't need wires, it doesn't mean we don't need elements with higher speed. In fact, I would argue though I'm constantly quoted by rural folks as trashing speed, I think we need much higher speeds than people commonly recognize to our schools, to our health-care facilities and to other places, but we're not here to talk about wired today, we're here to talk about wireless. It's just absolutely essential that we get 4G everywhere. There are many different ways to do that however.

The second point I would make is no matter what you believe about the spectrum crunch. We wrote the section. I think the spectrum crunch that Chairman Genachowski quoted, I think it's true then and I think it's true today. But the validity of incentive auctions is important to understand no matter what you believe because incentive auctions are simply a way to reallocate spectrum. As far as I can tell there are only three other ways to do it all of which are deeply flawed. First, you can assume that whatever we did in 1950 was perfect. This seems to be the view of some people, that it was absolutely perfect. Thirty-two stations in New York, perfect, 25 in L.A., perfect. Right? I don't believe that but you can have that view. A second view is just let the government reallocate it through a very long, painful legal regulatory process that

will take decades. A third is simply let the free market do it, but as I think even conservative economists would tell you, the government needs to be a market maker. If you simply say everyone can sell education anytime they want, in fact you hit a lot of dead weight loss so that the government has to be market maker in this and we can chat about that if folks want. The fourth option which is what we said only takes one sentence. Congress could pass it tomorrow. Give the FCC authority to share proceeds from an auction. That's valid no matter what you believe about the future of spectrum because it is a self-correcting market mechanism and if it turns out we don't need that much more spectrum, people won't throw it in and it's fine. If it turns out we need much more, then people will be able to reallocate based on market forces.

A third thing is we make better decisions is we get everything on the table when we know that something should be on the table. The other day I was at a conference and I said reflecting what broadcasters had told me that there are many broadcasters who believe broadcasting will have to evolve to a new video-compression technology, MPEG-4. If we're going to do that, let's have a plan today, let's start talking about it today because we want to do that, we also want to take advantage of OFDM in terms of radio modulation which is very spectrally efficient and it both can assist broadcasters but also assist the country. When I said this the response from the broadcasters was we just went through a transition. It hurts our head. They didn't literally say it hurts our head, but the sense I got was I can't think about it. It's too hard. That's not an acceptable answer. Let's put it this way. Broadcasters should either say no we don't ever

anticipate a need to MPEG-4 or let's start planning that process today. Let's get the cards on the table so we can have something that's good for the country.

Then the final thing I would say is a truth no matter what one believes about a particular merger or anything else. We obviously need enough spectrum for a competitive marketplace. I think everyone would agree with that. But it's also important to remember that competition drives spectrum efficiency, that it is by virtue of the competition that people develop better technologies, they develop better receivers, they develop better transmission technologies so that that's an important element that I know government officials will keep in mind as they start to review a particular transaction. That's what I think we need to do.

MR. WEST: Thank you, Blair. Adele, you have written this new paper on spectrum policy. You argue there are ways to get more efficient and make better use of existing spectrum. How can we do that?

MS. MORRIS: Thank you, Darrell. I'm going to take as a point of departure what Jim said, that networks weren't built to handle this traffic. The regulatory system wasn't built to handle this situation either and that's really the question that my co-author and I are grappling with.

In the old days command and control worked pretty well. There wasn't a great scarcity of spectrum and it worked reasonably well to have the government divide up the spectrum and put different kinds of systems in different bands and you can put a transmitter here and you can use this technology and we're going to protect you from interference. It actually was a pretty good recipe for managing the system. But as Jim eloquently pointed out, the situation has

greatly changed and if we want to exploit the potential for all of these new technologies for our economy we're going to have to come up with a more sophisticated way to do this.

These misallocations are increasingly costly. In addition, the way we have dealt with the need to reallocate spectrum I argue is also increasingly costly, this idea that there is a protracted FCC process, there are lots of transaction costs and lawyers and rent seeking and politics, and it's just not the right way to reallocate resources. And if you think about it, there is no other natural resource that we manage in quite this bureaucratically sclerotic way.

We have a better way and it's markets. The question is how do you structure the rights of spectrum so that markets can work? Even if we all agree that the historical way is not quite the right approach, how do you do it, and that's really what we grapple with in our paper. How do you articulate rights in a way that markets can work? One of the features you want is technical neutrality. You don't want to specify you can have this kind of transmitter and it has to be right here and these are exactly the signals that you can emit from it. Rather, what we're arguing is you want to articulate rights to spectrum that talk about the signals themselves, the physical properties of the signals themselves and how you emit those with whatever technology you use is up to you, but you have to keep your emissions of these signals within your prescribed set of rights. What we've tried to do is articulate the minimal necessary dimensions a regulatory system needs to articulate what the bounds need to be on radio signal strength.

What we've done is we've taken three-dimensional space so that the signal strength has to be below a certain de minimis level outside some three-dimensional space. I'm making the shape of a hemisphere but that's not what I have in mind. We know radio propagation is this squirrely function of a lot of physical things and environmental things. We can represent that. We have the technology and I'll talk about that in a second. But we have some three-dimensional volume or set of volumes that represent where you want those to go and you know what frequency bands. You can stipulate those. You can stipulate the time duration. This could be very short or it could be permanent over which you have these rights to access spectrum. Then you want to add a direction of propagation which takes it two more parameters because we want to be able to partition our rights and for example in a point-to-point microwave situation you want to be able to partition your rights across different directionalities.

We get these minimal parameters and this is the concept. The government sets up a rights database that reflects the rights of spectrum holders and I'm talking about licensed spectrum here, and generally after that butts out. Rights holders but, sell, subdivide, aggregate. This is not an act of Congress to do these sorts of transactions, but the government is there to enforce rights because they've been clearly articulated. The idea would be that the government doesn't have to adjudicate at great length because when rights are clear there is less to adjudicate.

There are several things that don't appear in the rights regime we've described. I've never said anything about interference. Why is that?

Interference is intrinsically a technologically specific concept. One radio signal might cause interference in one kind of receiver but not in another receiver. It's subjective from the perspective of the receiver. If you maintain your rights system such that the signals are of a de minimis level outside the electrospace volume that is licensed then that's the necessary receiver performance people need to adopt and other than that, interference is going to be a matter of market negotiation. You want a market to operate so that the marginal costs of interference protection are matched with the marginal benefits of interference protection. The government doesn't know what the optimal level of interference protection is from an economic perspective. It's costly to protect against interference so that what level of that really should be a market outcome and not something the government dictates.

Another thing that's not on my list of parameters here are receiver standards. A similar idea. Receivers don't even appear in the rights system I've just described. The government doesn't need to know where receivers are. They're not emitting anything so that the idea that the government needs to have as part of your rights system where you put your receivers to us makes no sense. I should also give proper creds to my co-author Bob Matheson who is a radio engineer. I'm an economist and he's a radio engineer. Somehow we managed to sort all of this stuff out at least in our own minds.

As I said, the role for government becomes focused on evolving and enforcing these rights. Another thing that doesn't appear in our rights system, and this is a bit of a digression, there's a bunch of social goals. Nearly

any social goal in our view whether it's children's TV programming or broadband in rural Montana, those social goals are probably met more efficiently in some way other than an encumbrance on a spectrum license. That's our view. We could talk about whether or not that's true, but that's my opinion anyway.

Finally, a little discussion that goes beyond our paper about how this rights database ought to work. One of the reasons I think we haven't grappled with this is because the technology to do it well I think hadn't yet been developed, but I claim we can do it now. We can estimate what the signal propagation characteristics are going to be with fairly sophisticated propagation models. I contend we can convert those propagation model results into a three-dimensional database. We do this 3D modeling thing in manufacturing all the time. Then if we had a three-dimensional model and we have through nonuniform rational B-spline representation which is a very complex free-form service we can have a database that incorporates all of those squirrely properties of radio propagation, have a 3D model of it and then you can do very straightforward analyses such as building operations or where do these rights intersect? Where do they not intersect? Where are the empty spaces in between? What if we aggregate these rights? What's the new three-dimensional model for that? What if we subtract rights? What's the empty hole? All of this can be done now with current technology. It just in my view needs to be applied in the regulatory context.

I'd be happy to comment further about federal spectrum if anybody has any interest in that. I worked very extensively on the President's Federal

Spectrum Management Initiative, but I also think a lot of this same concept I've described here could apply in the federal spectrums base to great end.

MR. WEST: Thank you, Adele. Rick, what do you think the framework for spectrum policy should look like?

MR. WHITT: First I want to thank you all for inviting me here today. I also want to note with approval that this is one of the times I've been on a panel with Jim Cicconi where I'm actually at the center of the panel or at the core as it were and Jim's over toward the edge, so I just wanted to note that for the record.

Google believes that U.S. spectrum policy should allow for far more efficient and productive uses of our nation's airways. That policy should be policy should be driven by market and technology realities and informed by the best data and analysis we can muster. To that end we support a number of major initiatives on Capitol Hill and at the FCC as part of a comprehensive and balanced spectrum framework.

The Commission already has identified many of these elements in the National Broadband Plan, but at this point the challenge is not so much a lack of vision but, instead, the need for thoughtful and timely implementation. I'll just run through a few of those elements very quickly.

First and foremost we believe that there is a need to conduct a comprehensive spectrum inventory. It's become a truism that major public policy decisions must be data driven based on an understanding of how markets and technologies really work and armed with reliable, current and complete

information. Obviously, we should know whether, when, where, how and by whom spectrum is being utilized. Such knowledge can help inform the decisions we are making now concerning all of the other elements of the spectrum policy framework. The Commission pointed this out with the National Broadband Plan, the need to "apply scientifically valid methods to measure and report the utilization of spectrum bands." That's just one example. A better understanding of how allocated spectrum is being utilized could provide a huge boost to so-called secondary markets. If market participants knew that a particular spectrum band was underutilized, that fact alone could facilitate transactions that would allow it to be put to more optimal use. In addition, in an environment where many assume that spectrum is in short supply, we can actually test that notion against pervasive reports that some 80 to 90 percent of spectrum in even the most-populated markets lies fallow at any particular moment in time. Whether that's true or false is a really important fact to know and basing our decisions on facts and not assumptions make for the best kinds of outcomes.

Second, we should promote and expand unlicensed uses of spectrum. The National Broadband Plan recognizes the huge economic and other benefits that flow from unlicensed spectrum and calls for both continuing to promote the TV white spaces and freeing up a new contiguous block of spectrum for unlicensed uses. Google strongly supports both of those recommendations. In many important respects, unlicensed spectrum mirrors the astonishing success of the internet. Not imposing a compulsory licensing regime allows for swift and far-reaching innovation without permission to develop. This steps from

low barriers to entry, the ability to experiment and collaborate, the deployment of open standards and the creation of multilayer competition all of which allow anyone to bring low-cost products and services to market. Just as the internet has become a ubiquitous platform for innovation, in their own way the white space has promised to become innovation bands that support an array of technologies, networks, business models and applications.

Third, we should explore ways for TV broadcasters to unlock the potential value in the spectrum they currently use. Obviously, voluntary incentive auctions are a hot topic this year in D.C. Certainly the general concept is attractive of using market mechanisms to incentivize broadcasters to repurpose their spectrum for uses like mobile broadband. To me the real issue is how to go about fashioning a successful auction; however one happens to define success. This involves countless important auction design questions which have yet to be fully answered. Here is just one question which maybe Blair or Jim can address. Does the possibility of having one or two of the largest wireless providers no longer at the bidding table change the parameters of what is actually doable? In some implementations of voluntary incentive auctions there is a real risk that the viability of unlicensed uses generally and TV white spaces in particular is curtailed or even eliminated. That kind of outcome, frankly, is unacceptable to us and should be resisted as contrary to the public interest. Any incentive auction framework should reflect the federal government's consistent and unwavering commitment to unlicensed uses in the TV broadcast bands. Dedicating a

healthy, commercially viable amount of spectrum for unlicensed uses also will help the FCC fulfill much of its spectrum policy agenda.

Fourth, we should open up government spectrum for commercial uses. Congress has expressly authorized NTIA to supervise U.S. government's use of spectrum both in terms of reallocating such spectrum for nongovernment uses and allowing nongovernment licensees to share spectrum with commercial operators. Those reallocation and sharing efforts remain ongoing and if anything should be accelerated.

Fifth, we should promote more robust secondary markets in licensed spectrum. Market-based mechanisms can maximize the utility of a finite resource. Secondary markets allow our airwaves to find their higher valued uses. But no market can exist let alone thrive with the proper institutions in place to bring together informed and motivated market participants. The FCC can and should use its authority to enable well-functioning markets and spectrum rights.

Sixth, we should facilitate opportunistic, dynamic uses of existing spectrum with smart technologies. Cognitive radio technologies and other opportunistic uses can lower barriers to entry for new competitors and entrepreneurs, foster innovation and encourage efficient utilization of a value resource. Our spectrum policy should adopt readily to encourage the potential in these cutting-edge capabilities.

Finally, we should explore novel approaches to managing spectrum. In short, we should be willing to subject all of our cherished suppositions and assumptions to scrutiny. Under then Chairman Michael Powell,

the technologists at the FCC were encouraged to think creatively about spectrum. We need more such fresh thinking today. One example is finding ways to improve upon today's vaguely defined and contentious standard for "harmful interference." The Commission could use the interference temperature metric to set maximum acceptable levels of interference thus establishing a worst-case environment in which a receiver would operate. Low-power, wideband underlain transmitters could then monitor for interference, temperature fluctuations and adjust their operations accordingly. This enables spectrum sharing even in bands that have on unassigned spectrum. The license electromagnetic rights concept that Adele just discussed, the so-called seven-dimensional approach, also I think merits come careful attention.

Finally, I want to lend my support to Harold Feld's very recent suggestion in his blog posting this week that Chairman Genachowski appoint SEC Commissioner Meredith Attwell Baker as Chair of the newly reconstituted Spectrum Task Force. Given her considerable experience and gravitas, Commissioner Baker would be a terrific choice to help the agency carry out many of the fundamental reforms recommended in the National Broadband Plan. Thanks.

MR. WEST: Thank you, Rick. Roger, you argue that the FCC's effort to foster innovation through what you call regulatory handicapping does not work. What do you think is the problem and what is the solution to that problem?

MR. ENTNER: First of all, thank you very much for having me on the panel. I'm very grateful. Thank you.

The problem is that with handicapping or championing, you're replacing wishful thinking with reality. One of the early cases of that was for example the designated entities in the PCS spectrum and what happened was the FCC set aside the C block and the F block for designated entities. Basically they had to prove that they cannot afford the spectrum and that they cannot afford to build it out and then they're expected to launch and pay for it. As a result we have NextWave who bid many billions of dollars like Monopoly money and promptly went into Chapter 11 after how many years, a decade-plus? Finally the Supreme Court decided that the FCC can't have their spectrum back, that they're just a subordinate debtor and NextWave paid a couple of million dollars and then turned around and sold their spectrum for a couple of billion dollars and the one who lost out was the government in terms of revenues and the American people because they couldn't have access to the spectrum.

If we look at the two success factors, Leap and Metro, Metro declared bankruptcy because it was the old GWS and then build out the network. Leap paid for the spectrum, but then after they built the network they went bankrupt. So you have the choice here where the economics don't really make a lot of sense. More recently if we look at the 700 megahertz spectrum, I think a lot of people got very excited when Google came along and said if you're attaching net neutrality to a piece of spectrum, we will bid on it, and I think a lot of people misunderstood bidding on it with winning it. They were very excited about having Google really mix up the market, but Goggle was true to its word, bid on it and Verizon won it at a substantial discount to all the other spectrum that was there.

Many months later the FCC asked how about we attach net neutrality to all the spectrum where the auction showed very clearly that net neutrality is worth money, the discount that Verizon paid so that consistent is very important. I was actually very surprised that none of the other winners went back to the FCC and said could we have money back because you changed the conditions of the auction and what we can do it and there was a clear discounting going on? How about that?

So when we have this handicapping, the loser in the end are the American people because it slows down the access to it and the revenues that get generated for the coffers of the Treasury are greatly diminished.

MR. WEST: Thank you very much. There have been several interesting observations and questions based on the comments so far so what I'm going to do is throw out a couple of questions and any of the panelists who want to jump in can do so and then we will open the floor to questions from the audience.

It seems like there were interesting questions in terms of how auctions actually should operate, what the conditions? What are the features? How should we do it to maximize value? Then what the impact of the merger will be in altering market competition over spectrum? Secondly, there were comments in terms of use of white space and unlicensed spectrum and what role those areas should play in future spectrum policy. Then the third issue was opening up government spectrum to nongovernment uses. Panel, your thoughts

on any of those issues. And don't be shy about jumping in. I know none of you are shy.

MR. LEVIN: Let me start. Unfortunately I haven't read Adele's paper and I look forward to reading it. But if I understood what you were saying it was that you'd just create a rights regime and you'd let the private market essentially continually auction and have transactions. I would say that we looked at this early on when I was at the FCC also when we did the first auction designs as well as with the Broadband Plan. The problem is I think there are a number of game theory problems like the difficulty of the last holdout and one of the reasons why it took so long to get a national build-out of cellular services in the 1980s was that we broke it up into such small pieces when the licenses were being given out in the early to mid 1980s that it took a long time to aggregate so that you have that problem. Secondly, the geographic configuration and the megahertz configuration have to be standardized for the equipment and the technology. Jim, correct me if I'm wrong about that. AT&T doesn't really want 6 megahertz from a TV broadcaster in Pennsylvania, they want 20 megahertz from the northeast or maybe national. Those are all difficult questions about what the geographic and megahertz configuration should be. But at the end of the day I think I speak for the majority of -- my interpretation of the majority of the economists and the majority of the businesses is that the government has to act as a market maker through an open and transparent process. This is why it takes at least a year for the FCC when they say we're going to auction this spectrum, it takes at least a year to figure out how do we break it up and do that

but that the notion of simply turning it over, it may be better than having a spectrum crunch, but it creates a lot of deadweight loss if I understood your proposal correctly.

MS. MORRIS: I think we're focusing on that which is auctioned and not so much the rules of the auction or the revenue sharing or any of that. I think there is an argument to be made to auctioning fairly large chunks of spectrum in highly usable ways for what we think might be the highest social value uses. I actually agree with everything you said.

More of what I'm talking about is how do you articulate the thing you're auctioning? I think a lot of emphasis has been put on, yes, let's have auctions. Who's going to get the proceeds? But not as much thought in my view of exactly what is auctioned, the articulation of rights and thinking about doing that in a way so that after that initial devolvement from the government, then what? You want dynamic efficiency and not just efficiency in the primary market; you want efficiency in the secondary market. Our contention is that it's really important that what the government devolves to the private sector is structured in a way so that after the government's role is done, private-sector actors can buy and sell and respond to market forces. Maybe the conversation is around what constraints are put on those secondary-market transactions, but my view is that if a major firm wants to buy a big chunk of spectrum and then they later decide they don't want those rights in Pennsylvania, they should be able to sell those off to someone else who does and that it's not the government's business to tell them not to do that.

MR. WEST: Jim?

MR. CICCONI: One thought here. I think this really comes home to us in the context of incentive auctions there. Provided your goal is to get public spectrum into private hands, you want to get it to its highest, best and most valuable and most efficient use quickly and I think auctions have proven to be that. I think we've also learned a lesson in auctions in that if that is your object that the fewer conditions the government puts on it the better because you end up doing a couple of things. First, you deprive the Treasury of revenue needlessly. Secondly, the government's track record in terms of predicting the value of those conditions or the importance of them versus the billions lost to the government, they don't have a good track record on that. So I think if the object is to get the spectrum out there, the fewer conditions the better which comes to the incentive auction I think.

I think the core problem that the Commission I think is rightly trying to address there and is asking the Congress to address is that large swaths of spectrum are being put to very inefficient or very little use today and I think the difficulty with this is that they really don't have an economic incentive driving them to put them to efficient use because they didn't pay for the spectrum in the first place. The government gave it to them for free so that they don't really have any downside economically to inefficient use of that spectrum or very little use of that spectrum and I think the beauty of the incentive auction process is it's going to test that. It's going to put to the broadcasters on a voluntary basis the proposition that you can get money in the marketplace for this spectrum. You

can be compensated for the spectrum which again you paid nothing for. Or you have your business plans and it makes them I think judge for the first time whether their business plans to use that spectrum to make money are going to make them as much money as they might get in an auction process if somebody else thinks they've got a more valuable use for it. So I think the concept is actually masterful in many ways and I think the broadcasters' resistance to it at this point is somewhat difficult for me to fathom because one would think they would at want the choice of making money with this spectrum or not which is essentially what Chairman Genachowski and Chairman Rockefeller are suggesting to them and I do hope they'll come around on that.

The only other comment I'd want to make is Rick mentioned unlicensed spectrum. I think it's a very fair point and I think if we're indeed to be able to free up a couple-hundred megahertz of spectrum we hope, knock on wood, there ought to be a place in that for some unlicensed uses. A lot of people take for granted today their WiFi use is a result of a wise decision to set aside the 2.4 gigahertz band there for WiFi, unlicensed usage, so that it does show that with some foresight and careful planning that one can actually find a lot of value in the economy for unlicensed uses and I think that if we free up enough spectrum that there's certainly a way to accommodate that as part of an overall plan.

MR. WEST: Rick, what's your view?

MR. WHITT: Just a couple of quick points related to auctions and one to correct the record. Back at the 700-megahertz auction, we did indeed bid

on the C block and I think there is a notion about some sort of a discount that applied to the C block because there was this condition applied. It wasn't net neutrality. It was simply saying you have to allow apps and devices on your network. So I think it's something far short of what the Commission adopted on the wireline side at least in their order last December. But what really happened there is you only had two major players that are bidding for nationwide spectrum blocks, AT&T and Verizon, and some months before the auction actually occurred, AT&T had purchased Aloha and Aloha actually had some spectrum in the B block so that AT&T was going was focusing on filling in the gaps in their spectrum bands. Verizon I think very cleverly decided to try to bid with AT&T, maintain their bidding credits in the B block, kind of bid it up as far as they could go and then at the very last minute they took their bidding credits and jumped to the C block essentially to trump our bid and eventually won the spectrum. So I don't think there was a discount based on anything really related to the conditions, it had more to do with the business models going in of the two companies and what they needed for their spectrum inventory.

The other piece of it that's interesting is when we talked to game theorists at the time, they all mentioned the same thing to us which they said was widely known within the industry and that is if you're a new entrant attempting to bid against an incumbent, almost invariably the incumbent will outbid you, and that's not because there is anything about some higher or greater good value in terms of what the spectrum is worth in some sort of platonic sense, it's very simple: an incumbent has much more to lose by having you enter their market

than you have to gain by getting in for the first time. We were told this repeatedly by everybody we consulted with, so in fact one of the things we talked about was maybe knowing Verizon probably will end up getting the spectrum anyway, why don't we make them pay $8, $9 or $10 billion for it rather than the $4.72 that they got it for, but there were enough folks within the company who were satisfied that we had done what had said we were going to do and no need to attempt fate on the off chance that Verizon would abandon the fight and allow us to have access to that spectrum.

SPEAKER: Or end up owning it.

SPEAKER: Think of how you could have solved our budget crunch.

MR. WEST: Why don't we open the floor to questions and comments, and if you can give your name and your organizational affiliation? We have a question here front row over here. We'd ask if you can keep your questions brief so we can get to as many of you as possible.

MS. KRIGMAN: Eliza Krigman with Politico and this is for Jim Cicconi.

MR. WEST: I'm shocked that you'd direct your question to him.

MS. KRIGMAN: You've sold the AT&T/T Mobile merger on solving a spectrum problem. It's not going to create any more spectrum. Is this giving more spectrum to AT&T or --

MR. CICCONI: I think frankly both. I think if we hit a wall in terms of spectrum usage, it's not just going to affect our customers, it's going to affect

all the businesses in the high-tech community that are planning their own growth on continuing to expand using mobile broadband applications, services and things of this nature. I think it gets the spectrum to a higher and more efficient use. I think T Mobile clearly doesn't have enough to do LTE on its own and they've made pretty clear, I think Deutsche Telekom made pretty clear, that they can't put more capital into this country to invest in that so they really don't have a clear path to that. And I think with this spectrum we'll not only be able to ensure sufficient density in the major urban areas to keep up with capacity demands and LTE there, but we're able to lay out to the government that with this added spectrum we'll be able to greatly expand our LTE footprint and cover 95 of all Americans so that that is a pretty big deal.

The President's goal was to cover 98 percent and we're saying that without caveats and without government assistance we'll cover 95 of that and within a fairly short period of time and these are pretty hard-to-serve areas. So I think that it's hard to define something as a stronger public-interest benefit than when the President of the United States has gone out some months earlier and designated that as such.

MR. WEST: There is a question right here.

MS. MELVIN: Jasmin Melvin with Reuters. My question is also for Mr. Cicconi.

MR. WEST: This is becoming a pretty conference here.

MS. MELVIN: Critics of the merger are saying that AT&T is already sitting on billions of dollars of unused spectrum that could be used to build out the 4G network. What do you say to that?

MR. CICCONI: We certainly got the 700-megahertz spectrum there. I think that's what they're referring to and that is being built out right now. I think on the spectrum we hold, the FCC as part of the auction process has build-out requirements and as far as I know we're meeting all of those. So I think you have a lot of spectrum that is in the process of being built-out now. We're deploying additional spectrum as quickly as we can, but you hit exhaust rates very fast.

I can give you an example. In New York City we have 55-megahertz of spectrum. This fall we'll install a fifth carrier there. Each carrier is roughly 10-megahertz of spectrum. This is to keep up with demands in New York City. We've been burning through these carriers rather quickly. As soon as we deploy one, usage catches up to it and we have to do another. But absent any action, roughly late next year we're going to only have 5 megahertz of spectrum left in the New York metropolitan area and this is a direct result of usage trends there and I think you can see it. This is why I think you hear about the impact in terms of network congestion in cities like New York and San Francisco and places like that. You can see why when you drive down 5th Avenue or through SoHo. People are standing on street corners streaming YouTube videos while they're waiting for the light to change. You have massive usage, far higher usage trends in these cities than elsewhere, but that wave is

moving across America and if we don't address it in the near term, we can't afford to wait for the incentive auctions. We will need that. That spectrum is vitally needed for us and for the industry, but we're in desperate need of that spectrum in the near term to continue meeting customer demand. And, frankly, so we can continue enabling all the cool applications and services that are being developed by a whole industry that has arisen around this capability.

MR. WEST: I'm sorry. Could you speak into the microphone, please?

MR. SNYDER: I'm Jim Snyder from -- I have two questions for Adele. I loved the electrospace model. I think it's a much more sophisticated approach to rights -- in the United States. One of the critiques of the electrospace model, and I haven't read your new paper, I've just skimmed it, but I have read Bob Matheson's earlier papers on the electrospace model and while it's a great and more sophisticated approach, it's still not necessarily a comprehensive approach. For example, polarization or unlicensed underlays like ultrawide band are not part of the seven dimensions. To what extent are you arguing that you have a completely comprehensive model of spectrum rights or merely a more sophisticated take than is currently implemented?

The second question is I think the biggest difference between your approach and say Blair or other practical policymakers is they're more interested in how we get to this and what we do when we get there because that's the difficult question. In the past I've noticed that you have argued that if we need to give it away to the incumbents, we should just give it away to the incumbents

because that's the only way we're going to get there. But practical policymakers find that too politically difficult, the public has to get something, so with the incentive auctions the public is getting a portion. What portion of the windfall that you've advocated should the public get versus the incumbents as they structure the auctions because I do know you care somewhat about the structure of auctions? Those are my two questions.

MS. MORRIS: Thanks very much, Jim. Yes, it's true that we did not put polarization or modulation on our list of physical characteristics of signals and the reason we didn't do that is because at least with current technology to fully exploit polarization and modulation you're going to need such a degree of coordination that it's unlikely that an entity would want to partition their rights along those dimensions. So it's not to say that a rights owner won't use those techniques in order to maximize the use of spectrum, but it's unlikely that two disparate owners would have partitioned rights and each use separate modulations. It was sort of more like what's the minimal set to exploit for rights purposes and partitioning rights at least with current technology.

As far as ultrawide band, I think your approach could accommodate ultrawide band depending on what you set enot to which is our de minimis level of emissions outside the licensed region. I think it's a kind of technical question and we have a section in our paper about dynamic spectrum access in cognitive radio so you can look in there and see what we have to say about that.

With regard to the auctions, I definitely believe that the design of the auctions and the incentive system is a political-economy question. Essentially the problem is we have an inefficient allocation of resources and we want to get to an efficient allocation of resources, but because there are rents to be had, there are very high returns to rent seeking which means holding out and trying to extract the rents that are going to be available in this transition. So as a policy-design matter, the question is how many of those rents are we going to extract for the taxpayers continent on actually getting it done. You might consider the policy problem is to minimize lost rents from the Treasury subject to actually getting the new efficient allocation. If that's your policy-design process, then ideally, and this isn't something I've thought a whole lot about, you want to come up with an incentive-compatible methodology for these broadcasters to reveal their actual preferences in terms of being compensated and maybe some clever auction types can think through how to do this.

I'm actually less worried about overcompensating the broadcasters than just getting it done and that's actually an evolution in my point of view. When I used to work for Treasury I used to have much more fixation on lost revenue, but now I'm much more fixated on the opportunity costs of the misallocation of resources because I think we really have to keep upper most in our minds that when this resource is underutilized, that's costing everybody. There is a huge lost opportunity here and delay is a cost of its own.

I'm not a big fan of giveaways, but the recipients of these giveaways are stockholders. Someone in society is going to benefit and it might

be a stockholder instead of a taxpayer, but they're kind of the same general crowd. The other thing too is that I think one of the impediments to the incentive auction is that there is a split incentive within broadcasters so that the people who benefit from the revenue of the auction aren't necessarily the people making the decision about what to do with that spectrum and in some cases there is a disconnect so finding a way to incentivize the decision makers within the broadcasting community is something to think about. At least that's my understanding of some of the impediments within the broadcast community.

MR. WEST: Why don't we get other members of the panel to reflect on that question as well in terms of what proportion of the money should the public get and how should we run these auctions?

MR. LEVIN: If I could just make two quick observations. You alluded to the fact that clever auction theorists could figure out ways of revealing preferences without setting a strict percentage. We had a lot of internal discussions which I'm not going to disclose until the clever auction theorists at the FCC decide to unveil it, but that's correct that you can design auctions to reveal that without saying X percent.

The second think I would note is that early on when I had some quiet discussions with the broadcasters about we have the spectrum issue, some of you guys obviously want to keep going with the business, but others may not so why don't we do something like an incentive auction and share some of the proceeds? They very clearly said we cannot support that because we do not believe this administration or the Congress will support letting us get any money.

I said fair point. I will take care of that. I feel a little bit like Charlie Brown and the football, but I have to say I went to Peter Orszag and Larry Summers and explained it and they were terrific as was everyone else in the administration. They understood very clearly that it's a useful thing to get tens of billions of dollars, but the real point this is the future road of the economy. Every business in America is going to be using the mobile broadband network. It is really important that we have a diverse, ubiquitous, competitive market in mobile broadband because it's going to be so essential to economic growth. We don't want to spend 15 years in a regulatory process and in litigation over it. Incentive auctions are a much faster way to do it, and even with all the time it's going to take it would still be faster than I think the alternatives and better. And I really have to compliment the folks at the White House who understood it very quickly and were very supportive and I just wish I had gotten the broadcasters in writing to guarantee that if we got that support that they would support incentive auctions.

MR. WEST: It's always good to get it in writing in D.C.

MR. LEVIN: Yes, I know. I went to law school but I forgot that.

MR. WEST: Right here on the aisle.

MR. BUSKIRK: Howard Buskirk, "Communications Daily." There has been a lot of talk today about incentive auctions and obviously aside from this merger that was discussed that was unveiled 9 or 10 days ago, it's a hot topic right now. I wanted to ask all of the panelists based on what you're seeing at this point, based on what the broadcasters are saying, looking at the Hill and

the way things are trending, how likely is it that we are actually going to see a successful incentive auction that's going to unlock a meaningful amount of spectrum for mobile broadband? That's my question.

MR. WEST: Great question. I want to hear the answer to that too.

SPEAKER: I'm happy to at least try. I think it's very likely whether this year or early next year. I think the need is compelling. I think the solution itself is compelling aided by the fact that there are almost no viable alternatives. And frankly I think the current recalcitrance by some of the broadcasters I think will have to get way to economic logic as this goes forward. The over-the-air broadcast industry is down to 10 million customers and it's falling like a stone. This will become the pager industry unless something dramatic changes which no one anticipates. Just like the paging industry which was an allocated spectrum at one point, the government can and should ensure that if a particular usage goes away or is going away, that that spectrum is put to a higher and better and more needed use. So I think the logic of it is compelling. Hopefully at a certain point it will be compelling for the broadcasters. As I said before, I think the only reason it is not today is that the broadcasters were given this spectrum for free and they have no incentive to do anything other than simply hang on to it and I think Congress with the public interest in mind has to ask a lot of serious questions.

By the way, one of the serious questions that they should ask is that if the broadcasters truly need all of this spectrum for over-the-air

broadcasting, why do they need a must-carry rule? Because you might be able to argue that you're entitled to one gift or subsidy from the government, but to get both is something rare in any industry and probably unsustainable. I think honestly, policymakers themselves ought to be asking that question. That rule barely survived in the Supreme Court by one vote. I think as this debate goes on policymakers on the Hill have every right to ask that if you really have to have this spectrum, if you're really going to resist what is a national good here for the sake of your own interests, then why do you need a must-carry rule on top of it compelling everyone else to carry your signals and pay you for them whether they want to or not?

SPEAKER: I'll add obviously the sticking point right now is the need for congressional authority. The FCC has some very smart people running some really interesting scenarios tying up a bunch of computers day and night and churning out a lot of data. So I think we're all waiting for Congress to act and frankly as you know in this political environment it's hard to tell whether and how they're going to act. But assuming they do, I think the Commission is poised to move forward as quickly as they can with something.

SPEAKER: If I could add on to Jim's comment, I'm not terribly good at predicting what would happen in Congress so I'll leave it to people who know better. I would just make the observation that must carry was upheld on a 4-to-4 vote in a time before DBS was a competitor to cable. It was around that time that DBS was really picking up. The telephone companies were not offering

it and were not offering multichannel video. There was not over-the-top video, a very different marketplace and it was barely upheld.

I'm sure broadcasters would disagree with my assessment of what a court might do if it were to face it, but here is what I would say if I were back at my old job as an analyst. If must carry was overturned there would be a number of broadcasters in larger urban areas, precisely the place we need spectrum, who would be knocking on every one of their congressmen's door please, please, please, please, please pass incentive legislation because that is our only way out. We no because anymore. We control an asset that we really can't do anything with and we want to be able to effectively exit. There are other scenarios which you could see do that. And that's why again I saw that incentive auctions are a good idea no matter what you believe about any set of facts, but particularly if you were to envision a future in which must carry were overturned.

MR. ENTNER: I think we're actually already in an incentive auction.

SPEAKER: An informal one.

MR. ENTNER: It hasn't been declared yet but the more assistance the broadcasters are showing, the more obstacles they put in the way and the more time that elapses the higher the value of that spectrum. It's perfectly clear for everybody that spectrum is a scarce resource, you will have no more and the need for it is greater day by day and the longer they wait the higher price they will get.

MR. WEST: In the very back row there is a question.

MR. BRENNER: Dan Brenner with Hogan -- this is for Blair. The only alternative I've heard from broadcasters who have not endorsed incentive auctions at all has been give us 10 years and we will repack, as you say, we will move to MPEG-4 and we will develop a new transmission system. As I understand it, does repacking most or all of the spectrum crunch without some amount of incentive auctions to fill in areas? And if it does do a substantial job, why doesn't that get put on the table as an alternative to instead of doing it in 10 years, that in the next year they will begin repacking and some of the proceeds from the auction will cover the costs of again new receivers as we had with the set-top box subsidies that NTIA provided to the American consumer? And as Jim points out, it's a smaller group of people now who are relying on broadcasters than there was at the time of the digital transmission.

MR. LEVIN: I'm actually not aware that the broadcasters have put a real proposal on the table. Certainly I've talked to a lot and frankly some of them said we need an evolutionary path to MPEG-4 and OFDM and all of that and my only point is, great. Let's get that on the table. During the entire process we kept trying to say if you don't like our idea, give us a better one. We're totally open-minded about it. We want to have the best idea and the best idea wins.

I think the government should be forcing them to be much more forthright about what their plan for that evolution is and let us not be in a position where we move forward and we do something and then you can see a scenario where 2 days before the auction they, no, you can't do this because we're going to need all that spectrum for another transition. No, no, no. Let's just get it on

the table now and plan. There is no doubt about it that modern technology which other countries are using could -- you never solve a problem. All you do is mitigate it. Right? If we just repacked today we could get I think if I recall correctly and so don't quote me on this because my memory of the numbers during the Broadband Plan is a little bit weak, but just pure repacking I think would get us about 40 or 50 which is not a bad thing. But why not throw the incentive auction in because if there are broadcasters who want to do it, great. But if we're also going to have a technology path that would double the efficiency, move from I think it's 19.7 to 30 megabits per second transmission, why not do it in an organized fashion?

MR. WEST: Jim, what's your view on that?

MR. CICCONI: I think that Blair put his finger on it. I think, Dan, all of would welcome the broadcasters actually deciding to be constructive in this debate and a number of us have written asking and begging and pleading and prodding them to do this. They haven't yet I don't believe. But I do think they're going to have to and if they've got a better idea they need to put it on the table. But the notion that they can just sit back with this grant of free spectrum from the government in the 1950s and hang onto it forever just because they want to despite compelling arguments that a greater public interest is at stake isn't to me a viable long-term strategy.

In that regard I'd probably comment on one point Roger made. I do think, yes, the longer they wait probably the more valuable the spectrum is I think simply because of the factors I mentioned earlier, that everybody is getting

at exhaust. But the longer they wait, the fewer over-the-air customers they're going to have and if we're still debating this at this point next year, I think that Congress is going to be weighing deficit demands and far fewer over-the-air customers as this number continues to drop. I think the broadcasters will be lucky to get what they could get today. I think the more time that goes on, maybe the spectrum gets more valuable, that doesn't mean the broadcasters will realize that value. It means the government will realize that value, but it doesn't mean they will and they're going to have a much weaker argument for getting anything over that period of time if they're not able to demonstrate that they're using it and that those numbers are reversing in terms of over-the-air broadcast users.

MR. WEST: We have a question here on the second row over on the side.

SPEAKER: Paul -- BNA. This question is for Rick. Rick, you mentioned white spaces and assuming that Congress gives the FCC the authority to hold incentive auctions, there is concern about what will happen to these white spaces. What does the FCC need to do to preserve the opportunities that white spaces hold going forward?

MR. WHITT: As I mentioned, in the National Broadband Plan the Commission actually noted two different ways of dealing with the unlicensed. One is to continue with the TV white space and since the plan was adopted a year ago they have adopted the reconsideration order and they're moving forward with a database approach. We have nine entities who have signed up to become database operators including Google so that that is moving along on a

nice path and hopefully at some point the databases will actually be up and running and people can start thinking about building the devices, networks and applications to use it.

The other thing the plan mentioned was a new contiguous band of unlicensed spectrum. It didn't say where, but there has been some talk about perhaps setting aside some of the spectrum on the TV bands separately for this sort of contiguous band for unlicensed. In our view that would be sort of a twofer and not an either/or situation, but a lot does come down to how this repacking scenario works out. In fact, Jim and I were talking earlier where I think some have talked about for example the area wound Channel 37 which is currently dedicated to radio astronomy. That's sort of a stay-away zone for anybody, but it may be that newer cognitive technologies can deal with that situation so that maybe you build some contiguous around there, and then in terms of repacking we would obviously hope there still would be white spaces left over that we could take advantage of with the new kind of multichannel hopping types of approaches that we and others have been investigating.

MR. WEST: A question over here.

MR. HUSSEY: Matthew with Senator Snowe. As you all know, Senator Snowe along with Senator Kerry introduced comprehensive spectrum policy reform legislation that includes incentive auctions but also several other provisions such as CSCA reform, more aggressive spectrum sharing and reuse planning and opportunities. My question is because the Senator has certainly been slightly concerned by the dare I say overemphasis of spectrum or incentive

auctions as being that's the one thing that's the golden ticket, and as we all know, the ITU, the 2006 report, said CMTS is going to need close to 1,800 megahertz by 2020. So how do we address this? Incentive auctions will certainly be helpful to a certain extent, but when we're talking about long-term planning in a spectrum ecosystem that includes radar, telemetry, GPS, how do we effectively balance addressing providing greater spectrum supply to broadband but also ensuring the other services that do exist?

MR. WHITT: Again I'll allude to the blog post that Harold Feld wrote I think it was a day or two ago. I think it was really insightful because his point was I think yours which is in some sense incentive auctions are taking a lot of the oxygen out of the room and no matter how strongly supportive you are of that concept, there are lots of other things that have to be done to make our spectrum policy systems much more efficient. His suggestion was let Chairman Genachowski on the politics of getting this done in Congress and moving forward at the FCC, and then let's have somebody like Commissioner Baker head up the Spectrum Task Force and work on all the other piece parts that are necessary to make this all fit together. I thought that was actually a very interesting approach, and as I mentioned we certainly would endorse something like that with a division of labor within the Commission to try to address all of these very important issues.

MR. LEVIN: I have a slightly different point of view on it which is that you talked about taking up all of the oxygen. That's just because in this town where there is controversy you think about that as taking up the oxygen. We

spent a huge amount of time on these other things, they all ought to be done, they're less controversial but they should be done, so, fine, go ahead and do them. They just get the attention because you don't have the battle of the incumbents and all of that kind of stuff.

But having said that, I completely endorse Harold and Rick's suggestion. I don't want to get Meredith in trouble, but she was actually enormously helpful on the spectrum chapter of the plan in particular. I don't want to blame her for anything anyone disagrees with, but she read it ahead of time, her staff was very, very knowledgeable about this, she has a lot of history and history matters so I think that kind of approach is good. It's frustrating for all of us I think the speed at which government works so that if you can speed that up.

The reason why incentive auctions take up the oxygen if you will is simply because that's the thing that really requires congressional action and it is the thing which is the new idea. Spectrum inventories have been around a long time, secondary uses have been around a long time and we're talking about incremental changes to those all of which I'm in favor of, but they don't have the big appeal. All of the journalists in the room can disagree with me, but they don't have the same appeal for the headlines that the incentive auctions do.

MR. CICCONI: I think what Senator Snowe and her colleagues are doing is important. I think as Blair alluded to part of the problems that we've had in past years or really past decades is that the congressional interest in this issue has been episodic and it scratches the immediate itch and then it moves on and now all of these inefficiencies of government spectrum policy are hitting

home. Seriously, over-the-air broadcasting has been dying for a lot more than just this past year and that allocation for gosh sake was made in the 1950s and we should have been reexamining this a heck of a lot sooner than now. So incentive auctions is obviously an important part of that in terms of the next stage, but I think what Senator Snowe is doing there is important because it's a reminder to us that we have to have a rational, sane and ongoing spectrum policy in this country involving constant review and oversight of the uses but also examining government uses too because there is a lot of government spectrum as this legislation points out that is frankly barely being used or lying fallow. I think somebody mentioned the other day that at one point in the past when agencies were allowed to get a credit against their budget if they're giving back spectrum, a lot of them gave some back which gives you a sense of how badly some of them really need it. I think it's doing an important service and focusing us on the fact that we've got to have a whole strategy and not just dealing with the immediate issues in front of us.

MR. WHITT: One other quick thought is David Reid who is a noted technologist commented not long ago that all of American spectrum policy is premised on the cheapest, least efficient Japanese television you could purchase in 1952 and that we are some 50 to 60 years down the road and we're still using a lot of those very same parameters as the very foundations for our spectrum policy.

MR. LEVIN: I would add that David Brooks had a column the other day about what scientific concepts everyone should understand and one of

them was path dependency which is exactly that, that problem we should understand it and we need to change it.

MR. WEST: I think we will make that the benediction on this discussion, but I want to thank Jim, Blair, Adele, Rick and Roger, and also thank all of you for coming out. Thank you very much.

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I, Carleton J. Anderson, III do hereby certify that the forgoing electronic file when originally transmitted was reduced to text at my direction; that said transcript is a true record of the proceedings therein referenced; that I am neither counsel for, related to, nor employed by any of the parties to the action in which these proceedings were taken; and, furthermore, that I am neither a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

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