U.S. DEPARTMENT OF COMMERCE

+ + + + +

COMMERCE SPECTRUM MANAGEMENT

POLICY ADVISORY COMMITTEE

+ + + + +

COMMITTEE MEETING

+ + + + +

WEDNESDAY,

DECEMBER 9, 2009

+ + + + +

The Commerce Spectrum Management Policy Advisory Committee met in the Diplomatic Boardroom of the Herbert C. Hoover Building, 1401 Constitution Avenue, N.W., Washington, D.C., at 9:30 a.m., Bryan Tramont, CSMAC Co-Chair, presiding.

PRESENT:

DALE HATFIELD, Co-Chair
BRYAN TRAMONT, Co-Chair
LAWRENCE E. STRICKLING, Asst. Secretary

DAVID E. BORTH, Member
MICHAEL C. CALABRESE, Member
MARTIN COOPER, Member
MARK E. CROSBY, Member
DAVID L. DONOVAN, Member

GARY EPSTEIN, Member

BRIAN FONTES, Member

HAROLD FURCHTGOTT-ROTH, Member

ROBERT M. GURSS, Member

KEVIN C. KAHN, Member

JAMES A. LEWIS, Member

MARK A. McHENRY, Member

DARRIN M. MYLET, Member

JANICE OBUCHOWSKI, Member

ROBERT PEPPER, Member

RICHARD REASER JR., Member

GREGORY ROSSTON, Member

R. GERARD SALEMME, Member

JENNIFER WARREN, Member

TABLE OF CONTENTS

P-R-O-C-E-E-D-I-N-G-S

(9:40 a.m.)

CO-CHAIR HATFIELD: I would like to welcome you all to the second meeting of the new Commerce Spectrum Management Policy Advisory Committee. And I am listening here to opening remarks but I think we could swing right into the substance of the meeting.

Do you have anything Assistant Secretary, Strickling?

CO-CHAIR TRAMONT: Very very quickly I just wanted know to officially welcome our three new members, Michael Calabrese, Gary Epstein, and I think we have got Greg, hopefully on the phone.

And I also wanted to announce that we have still three vacancies on the committee. We received a lot of good nominations several months ago from which we made the initial selection of Gary, Greg, and Michael. We are going to put out an official announcement in the Federal Register seeking

additional nominations to fill the last three slots, which we will then take and combine with the pool of nominees we still have before us and make selections to complete the membership of the committee early next year.

What we are looking for first and foremost are good, talented people who have a commitment to serving on this group but, obviously, we are always interested in expanding the diversity of the expertise we have on the committee, the parts of the industry that people come from. We are interested in geographic diversity. And just in general, we would like a more diverse group. So we encourage you to talk the group up and get folks to either self nominate or to have you nominate folks. But we do want to go ahead and get the group up to its full membership strength as quickly as we can next year.

CO-CHAIR HATFIELD: Okay. Bruce? Bruce where are you?

MR. GOTTLIEB: Right over here.

CO-CHAIR HATFIELD: Okay, Bruce Gottlieb from the FCC will make a presentation to us. Of course you all know Bruce as chief counsel and senior legal advisor to Chairman Genachowski. Bruce?

MR. GOTTLIEB: Well, thank you very much for having me here today. I thought it was true, I checked with Paul Kirby, he tells me it is true that this is the firs time in some time that somebody from the FCC has been over to work this group. So I was delighted to get the invitation and I am really happy to be here.

I am going to sort of give some of my own thoughts. I am going to focus a little bit more on the kinds of issues and questions that people at the FCC are thinking about. I am not going to say as much about the conclusions I think we will reach because everybody knows we have got a national broadband plan due in about two months and

there is a lot of talk now between staff and the commissioners and chairmen about exactly where that is going to come out.

But I do think that it is important to start by saying how sort of strong the initial working relationship between the FCC and NTIA has been and also to, if I may, ask some questions and get some thoughts from people around the table about how the FCC can work with this group, how certain advisory committees that the FCC will have can work with this group. And because there are people here who have long and deep experience about the relationship between NTIA and FCC, thoughts on how we can coordinate what we are doing and what NTIA is doing more effectively are very welcome.

Obviously we deal with the same spectrum, the same laws of physics, the same technologies. And I was reading through the list off issues that you are going to be getting reports on today and I thought that

every single one of them is something that people at the FCC are going to look at with great interest, adjacent band interference is something that we spend a lot of time with. We are very interested in the type of incentives work you are doing. Transparency and spectrum inventory are all things that happen to be top in mind at the FCC right now.

I do want to just let people know that we hope in the next few weeks to be able to announce a reconstituted Technological Advisory Committee, which has met at the Agency for some time. As you know, the TAC typically deals with a variety of issues not just spectrum but certainly including spectrum. I think we will probably be able to benefit from what you are doing today and what you are doing in the future and there may be ways that we can coordinate what TAC is doing and what you are doing. Everybody around this table I think are folks who follow what happen at the FCC very closely and are involved

there. So I think there is a lot of opportunity for working together.

In terms of what is going on at the FCC, oh that's right you can tell this crowd too much there, I have two kind of major developments that will really be effecting the way we think about a spectrum policy.

The first is that the Chairman has announced and we are off to a good start on a real focus. On the first day he gave a speech in which he laid out I think it was four possibly five priorities for this time there. And one of them was to make sure that the U.S. leads the world in mobile and that we accelerate the roll out of 4G, which is going to be a key priority for him.

And the first thing that we did was to, in the first open meeting, release notices of inquiry, all of which involve mobile too, which were exclusively focused on mobile. The first was a wireless innovation and investment, NOI, which many of you are

probably familiar with. It was part a lot of good ideas that people in the Agency had that they wanted to get comment on and that were taken out of desk drawers and aired. And it was part an invitation to let anyone in the industry in academia elsewhere who had new and interesting ideas to signal to them that they should come with those and that there is a spectrum team at the Agency that is very committed to working on those topics.

As many of you are also aware, the wireless bureau sent some letters to Apple, AT&T, and Google asking questions about the handsets and other issues related to innovation and consumers. And recently there was one that went out about early termination fees.

The Chairman's second major policy speech was given at CTIA, where he laid out his mobile broadband agenda. I won't reprise all the points of that here. It is available on our website. And just last month, we moved

on a petition that had been standing around for some time on tower citing.

So this is the first set of things that we are able to do early on in the mobile agenda. There will be others, some of which we have talked about, some of which we will develop through the national broadband.

One thing I would highlight that I think will be of interest here is that the second NOI was seeking additional information and comment on the annual wireless competition report that the Agency has put out. For a number of years it has been sort of updated with new facts but the same framework, same set of topics that it has been for probably six or seven years. The Chairman was very interested getting comment on whether there is new ways to think about these issues, including in particular a real focus on spectrum and spectrum holdings and the relationship between that and competition in the industry, in the link to consumers, and

those sorts of things. So there were a series of questions on that.

I am not entirely clear when the report will come out. It will probably be in the first quarter of next year and the goal is to make it a concrete statement in one place of all the things the Commission knows, as well as a lot of reaching out to academics and a lot of the work the broadband team is doing in one place that would be of interest to investors, academics, people across government who are focused on this issue about the entire value chain of the commercial mobile marketplace. I think there will things in there that will be of interest and relevant to the work that you are doing.

And then of course there is the national broadband plan. For a lot of reasons, the chairman began a new stint with a mandate from Congress to look at the big picture and to come up with some long-term statements about policy and direction. That

is a very helpful exercise when you are starting out on that. It actually reminds me a little bit of how I understand OFCOM operates where they begin with a strategic plan and then spend time for the remainder of the year executing against that plan. I think that is one way to think about what the national broadband plan will be with respect to spectrum policy.

I do want to mention one thing which is that while it is the next big step in spectrum policy at the FCC, we don't think of it as the end of the story. Commissioner Baker recently gave a speech in which he noted that we needed an ongoing spectrum policy process and that the exercise of planning, stating goals and executing against them is really essential for good long-term spectrum policy. And I know that the chairman is very eager to work with her and the other commissioners on finding ways to do that.

So I think the National Broadband

Plan, we will see how it works and we will get a lot of experience from it but we don't think that that will be the last time that we will go through this kind of periodic process.

I think another thing that we have heard and that makes a lot of sense is that building in a certain amount of periodic review and automatic considerations of allocations and things like that serves a very useful function in a large organization, particularly forcing hard looks at how old policies and old allocation decisions are related to current uses and technologies and finding ways to decide whether everything that we are doing currently makes sense.

So, one of the things that are going to be in the National Broadband Plan, as I said, it is a document, it is an effort that involves a lot of different people and there are discussions going on right now that will shape what the final document looks like. But I think I can talk about a few broad areas

that will be helpful, I think.

The first is looking at spectrum usage and data. Congress is considering a number of bills on the topic and we are, of course, doing a lot of preparatory work so that we will be able to respond to those when we learn what the precise content would be and if the bill is going to move. It is not hard to see the tremendous benefit to government, to industry, to the public to being able see, for instance, in a given band who the licensees are, but also in a particular geography across bands who are the licensees. That can facilitate a lot of good things.

I think that, and I understand there will be presentation on this later today, we also would like to know a lot more and think a lot more about what other metrics there are to measure whether spectrum is being used in a reasonable way. There are a lot of different things that we could use over time to build out a number of users. But there are

others that I think we need to explore, including if there are ways to monitor the amount of traffic that you see in the real world in particular places, in particular bands. Obviously, different technologies are going to have very different footprints. Broadcast, for instance, will look very different than any kind of mobile broadband thing but that is certainly one piece of the picture.

Finding ways to estimate the amount of economic value that particular spectrum allocations support is obviously, very interesting, very important. And then there are other social values that we need to think about how we can try to measure, or even if they can't be directly measured, how to account for and think about that.

I am not here to say, I gave myself an out at the beginning, that I have answers or conclusions on how all of that should be done but these are certainly the

issues and the questions that people are asking.

There are existing dockets that I think the Broadband Plan will address and say things about. It will not be an item that changes the actual rules or has the force of an order but it will be an opportunity to state principles and provide a framework for moving forward with order of NPRMs or whatever the appropriate vehicle is coming out.

I think as I said, we will say things about wireless competition that will be of interest and important. I think we will say things about public safety spectrum and -- interesting to people.

We will say some things about bands that are currently in the FCC's inventory like AWS3 and others, as well as bands that are part of long-standing proceedings that have real implications for spectrum use policy, like WCS, S-STARS, and others. Again, this is not the end of the

discussion. This will not result in changes in allocations or rules but it is something that we are really looking at.

CO-CHAIR TRAMONT: Lucky start over.

(Laughter.)

MR. GOTTLIEB: We are working very hard on spectrum policy and doing important things.

So the last piece is, obviously, we are looking at various allocation decisions. We put out some public notices. The goal here is looking at existing allocations, older allocations, evaluating them against current technologies and user preferences. I think the low star here is that we want our allocations to actually be following users, not vice-versa. And the message I think that is very relevant to the work that you are focused on is that we recognize there are no easy pickings on the spectrum chart. We are looking at commercial

allocations to develop spectrum that would potentially be available for wireless broadband. Everybody understands this controversial, this is difficult work. This raises really difficult policy choices but we are certainly committed in engaging in those issues.

When you look at the major auctions, work was started ten years ago or more. In 2006 we had a major auction that involved reallocated federal spectrum. In 2007-08, we had a major auction that involved reallocated commercial spectrum. And so we are very interested in continuing to be engaged in that process. It is a long process. It is a slow process. In the meantime, we are seeing, you know, in a period that we have seen 3-X growth in spectrum available for commercial wireless, we have seen 30-X growth in usage.

And so as we see it, it is not a question of when spectrum becomes the rate

limiting step in mobile broadband -- it is not a question of whether. It is a question of when. So we want to start that early and I think that is going to be a big part of the Broadband Plan.

Because there is no question that it is going to be a period of years before there could be any major reallocations that could lead to an auction, we are also focused on a variety of new tools for the interim period, the kinds of things that people are talking about and discussing include spectrum fees which is something that has been proposed, I think, for administrations for quite some time. We are looking at two-sided auctions, various proposals for covering relocation costs that have been in legislation with the FCC and NTIA have worked on implementing at various times. I mentioned providing additional information on how spectrum is available and underused, with the goal of increasing use of secondary markets.

Unlicensed is going to be a big part of this. We are moving forward with work on white spaces. I put out a PN recently on database manager, which I think is something that I knew Julie Knapp and the folks at OET are very excited about, is a new model for spectrum management that could potentially have implications beyond just the white spaces.

There are, Roger is looking carefully at new technological approaches for sharing, including work that we are doing jointly with NTIA in the test bed, looking both at opportunities for commercial users to share with federal users but also vice versa. And there is a lot of different ways. People here know far more than I do about how to accomplish that, sharing spectrums, splitting geography, various customer and joint venture relationships, I think are all worth exploring.

And then we are working

collectively to think about ways to promote innovation and new technologies in the test beds but also in expanding opportunity for experimental licenses and streamlining some of those processes at the FCC. There are a number of proposals in the innovation and investment NOI. And we are certainly open to others from companies that think that there are things we can do to make it easier to develop new products and to test them.

So that is a summary of what we are doing. We would love to get thoughts on any of these topics, but particularly how the FCC can work with this group to further our joint objectives.

CO-CHAIR TRAMONT: Great. I think I speak for everyone. We are very excited about you coming this morning and the opportunity to work in a cooperative fashion with the FCC on our task going forward. So are there any questions for Bruce or comments?

MEMBER OBUCHOWSKI: I will raise a

pet issue. Enforcement. Sharing is very much on the table between NTIA and the FCC. And I think everyone around this table would be supportive, in the right setting.

My experiences of sharing without enforcement is really just low "reallocation." So what is the FCC going to do to take a look at this because at the FCC, enforcement has been notoriously slow in happening?

Frankly, one of the things that was always occurring with sharing is the notion that the FCC rarely will enforce when the Hill is involved and that comes under the license area. And frankly, even when the FCC tries to enforce, if you are sitting on a valuable right spectrum, you take it to court. And that is a five-year process.

So how does enforcement factor into your thinking about sharing?

CO-CHAIR TRAMONT: Before you respond, ironically, can we use the wireless mike, though?

(Laughter.)

MR. GOTTLIEB: Well, I mean, I am going to answer your question with a question. First of all, I understand the point you are making. It is a very, very important one. It strikes me as a precondition to doing the type of work that I think we all want to do.

And any question is, do you think that the problems we have seen with the enforcement process are structural ones that will require rule changes at the FCC or is it a matter of commitment by the leadership to doing the things that you talk about?

Obviously, a right without a remedy is not a right. And we are not interested in creating any rules or sharing arrangements that are simply ignored. I think it obviously has costs for the particular spectrum usage. It also has costs to the institution and to our ability to be credible when we promulgate rules.

So this is something we take very

seriously. I don't have at top of mind right now solutions. I could imagine this being a pretty useful topic, although we would have to talk about whether it is a committee at the FCC or a committee here. But I think either place getting some thinking on how to achieve this would be very welcome.

MEMBER OBUCHOWSKI: Well, I think that is probably a very broad question for the whole committee. I mean, from the personal perspective, technology has to be well placed, requiring a licensee to embed ID information and prices. It might be a useful place go to. I know there are a host of some of the think tanks that would like to go in the opposite direction.

I think dealing with fear about regulatory amnesia is kind of a leap of faith but enough said.

So I think there is a regulatory piece and a technology piece that, at least in my estimation, have to be central.

CO-CHAIR TRAMONT: Rick and then Jennifer.

MEMBER REASER: I like the word precondition. I mean, what has to happen is, in a world where you are packing things tighter and tighter together and you are sharing the spectrum, is that the guy who is sharing, the guy who is going to share, he has to have some sort of comfort or certainty that that whole arrangement is well documented and that they can go back if somehow that gets trampled or violated. Whether that is through -- enforcement sounds like police to me. But monitoring or having the ability to go back and redress those issues and have things stick.

Because many times, some of these things could be a problem of a bad device, bad software, lots of different things. But if the government is not watching that process and helping to make sure that those things are all okay in terms of what it is a national

resource, no one is going to be interested in sharing at all.

Mr. Marcus, put this paper together and he sort of talked a little bit about that whole notion about you know, if you don't figure out how to share and do all that kind of stuff and where it goes, even in regards to an encore appearance.

But the point is if a guy who already is there doesn't feel good that the arrangement is going to be upheld and monitored and enforced, then there is going to be very little incentive for anybody to do anything. And that needs to be a priority in terms of any kind of arrangement in terms of reallocation or sharing or whatever in the Commission's mind. Otherwise, this thing, we will be arguing about it for 15 years and nothing will happen.

MEMBER WARREN: To go back to your question about whether it is regulatory or leadership and commitment, I think there are

regulatory commitments that would need to be included and thought about such as consumer protection provisions, whether it is labeling or some of the things Janice talked about because one side of this is political and one way to address political concerns is to make sure there has been a lot of notice for the consumer, so that the consumer is not left hanging.

So whether it is labeling or other methods as I said, Janice and Rick have already mentioned and time lines and clear redress of authority. I mean, we have seen where there have been questions about what the authority is of the FCC, in certain instances. So all of those things, I think would be very helpful when you are wanting to foster an environment of sharing, particularly among users that have different regulatory authorities and frameworks.

CO-CHAIR TRAMONT: I think the garage door example is the one that always

comes up. And the problem there of course is two things. One is a disincentive for federal government users who share going forward because they have had that experience because when there is widespread consumer harm, it is hard to redress. And the manufacturers don't internalize the cost of the experience. Instead, the federal government ends up internalizing the cost.

So unless you have a regime in place, and I think it is both a regulatory regime and a commitment on behalf of the leadership to make some touch choices about cabining consumer harm and internalizing cost, it is very hard to move forward.

David, you had something else?

MEMBER DONOVAN: Yes, I think -- and Bruce thank you for your presentation.

I think the fundamental question to ask is is it structural or otherwise. And I think to some extent it may be, and I don't have all the reasons, it has been a while

since I have been in the Commission, but it seems that as we go forward, spectrum efficiency which heretofore was premised on sort of unit control notions of how one licenses spectrum and how fundamentally we're going to ship. And that spectrum efficiency, particularly whether it is in a licensed or shared environment, spectrum efficiency will now be the function of the device and how they work with each other, which means the Commission's structure, the Commission's responsibilities if it is to maintain efficient use of the spectrum, we are going to ship them out to who is doing the manufacturing.

And that may require statutory changes. I mean, I remember the old days where you had the FCC's Marshal's badge and you had a bunch of guys at the docks in LA saying no, no, no, this won't work. We are going to have to go way beyond that.

And so I think those are the kinds

of things structurally and maybe even statutory exchanging of FCC's authorities regarding recalls and things of that nature to move forward with that to move forward with that. Because right now I know Julie works very, very hard. She does a great job with the certification requirement. But now I think efficiency will rest solely in the hands of or primarily in the hands of the devices, whatever they are in whatever vehicle.

So I think that creates an incredible burden on the FCC structurally.

MR. GOTTLIEB: Right. Now actually, coming back to some of the things that David has started with, I think what I heard you saying is that these types of relatively small enforcement decisions aren't ones that can be made very quickly by a multi-member commission, you know, that operates with a variety of constraints.

One question that I don't know the answer to but that I think will be quite

interesting is to look at other agencies that do enforcement and look at how they have set up, for instance delegated authority, the use of ALJs and other things that I think are designed to get at those types of concerns.

Just yesterday I think the Supreme Court heard oral argument an interesting case about a board created under the SEC through Sarbanes-Oxley that was, I think, my understanding of the case attempting to answer some of those concerns. So a survey of how other places in government have dealt with the issue. But of course beginning, and this is the thing that people who have practiced before the Agency for a long time will have a lot of insight on about the nature and the route of the problem strikes me as a very useful contribution.

There are plenty of conversations going around, some in academic circles, but also on the Hill about FCC reform. And if we can clearly identify a persistent bias against

being able to enforce particular types of rights, that strikes me as something that a lot of people would be interested in.

CO-CHAIR TRAMONT: David, quickly.

MEMBER DONOVAN: Let me just follow-up because I agree. And I guess where I wasn't going was to divest the Commission of jurisdiction. I actually think the Commission is the right place to deal with this.

If you move it into other agencies and they have conflicting policy, whether it is a series of equipment coming over. Well wait a minute we have a trade issue coming on here. So maybe we will let this one go by.

I think what you really want to have is an independent agency such as the Commission whose primary mission is to focus on efficiency.

MR. GOTTLIEB: I think we agree. I just want to make sure that Paul accurately reflects that I am not proposing to --

(Laughter.)

MR. GOTTLIEB: -- in any way decrease the jurisdiction of the FCC but rather to learn the processes of other agencies and implement them at the FCC.

MEMBER DONOVAN: The other thing I think for everybody at this table is how the process works. I mean, all of us have been involved in ALJ proceedings and what have you. And to the extent there is a situation where you have interference as an ongoing basis and whether it is the form of TROs or what have you, waiting for that process to work its way through could seriously render some of these services in dire straits.

CO-CHAIR TRAMONT: We are short on time.

MEMBER DONOVAN: I'm sorry.

MEMBER PEPPER: I just want to make a point that David I think you are overstating the inadequacy of the Commission. There have been some recent decisions in cases on equipment where there is delegated

authority, where the Commission staff and the bureau and the Enforcement Bureau have acted very quickly. So, you know, this is not --

MEMBER DONOVAN: Bob, with all due respect, I have called the 1-800 number in case of interference. I am not so sure that that is what we would call the most effective way to handle --

MEMBER PEPPER: No, no. I am not talking about that at all.

CO-CHAIR TRAMONT: Let's have Kevin quickly and then Gary.

MEMBER SALEMME: Yes. I just wanted to make sure that as this discussion goes forward, the problem gets considerably more complex with the two agencies, the NTIA and the FCC.

You know, the FCC is talking about commercial-commercial sharing and various issues there. We are talking about government spectrum and how it might be shared to commercial uses. This whole thing is a fairly

complex interaction set, especially as the frequencies become even more intermingled with one another.

So as you look at structural reforms or other things you might suggest within the Commission or to Congress, you know, working on how that will work between these two agencies that are kind of traditionally command and control kept them apart, except when you absolutely had to. And as these things get more flexible, it is going to get a lot worse.

CO-CHAIR TRAMONT: Very critical.

MEMBER EPSTEIN: A quick question, just to shift a little bit. I was interested when you talked about the first topic on the Broadband Plan was between usage and data, something near and dear to this Advisory Committee's heart.

I was just curious about your initial view about the quality of the information you already have to put something

out in the Broadband Plan in February. How confident and comfortable you are. Are you going to ask a lot of questions, or where are you going to go with that?

MR. GOTTLIEB: The most that will happen in February will be a first step. This will be an ongoing process. I think there is first the task of taking all the data at this database and putting it in a single database interface and then the process of proving that data. And if that indicates that the second is more important than the first, we will just have to see.

But I take your point. I think I agree with you.

CO-CHAIR HATFIELD: I think we need to wrap up, although I do want to add one thing. We mustn't forget about unintended radiation, too. Because I think some of the problem now is interference with things like switching power supplies. It is a different form and I think we need to think about that

as well. But I think we need to wrap up and move right to --

MEMBER COOPER: May I just make one comment?

CO-CHAIR HATFIELD: Very quick. Very, very quick.

MEMBER COOPER: Very brief. Bruce, you mentioned three times an increase spectrum, 30 times an increase in usage. And of course, I agree with that.

The part I disagree with is that the only solution to the 30 times is getting in the spectrum. If we had that attitude without having tried to use the technology of 50 years ago today, we would have made a million times more spectrum and that is not an exaggeration. I don't think we need more spectrum. We need more use of the technology and that technology exists today. But if we continue to propagate this thought of let's get more spectrum, then we are going to end up with some big problems.

CO-CHAIR HATFIELD: Why don't we shift then to Karl Nebbia, who is the Associate Administrator of NTIA and head of their Office of Spectrum Management? I am really pleased that we are going to get this briefing. And I turn it over to Karl.

MEMBER NEBBIA: Good morning everyone. I have asked the lovely Ms. Lauren to spin the dial and turn the letters for me. And we appreciate her doing that this morning.

(Laughter.)

MEMBER NEBBIA: The briefing this morning is a going to be a little bit like going to church on Sunday and having the pastor fast forward through the bible within an hour and give you everything that he knows.

Just starting off, we have got some general breakdowns of statistics set on our background of the NTIA spectrum chart, with the 225, the 3.7 gigahertz range that everybody kind of things of as the sweet spot. These statistics are certainly not locked in

concrete. Anybody that you ask to look at the allocation table and come up with these statistics will come up with slightly different numbers because allocations are embedded in footnotes. They are embedded in other rules and so on. So this is certainly ballpark.

In this range, about 18 percent of it federal exclusive, 30 percent for non-federal. The big piece here being shared for both of us. But as I have said in other cases, the keys in this range as we really move away from traditional land mobile spectrum, most of what is here is radars, radionavigation, radiolocation, and their related infrastructure. Oftentimes, it is fixed. Sometimes it is not. The total significant interest there is approximately the federal exclusive plus the shared together.

And as I go through this, there are probably going to be a few bands that I

don't discuss. They are just too small or they are completely passive and, therefore, there is no way that you can make use of it, that sort of thing.

Okay, looking at this particular range, as I have said, I have eliminated a few of them. Here is a another critical one because I know as we have talked to people up on the Hill regarding the legislation, the folks on the Hill always say and of course we don't want to have an impact on DoD. Well, every one of the bands we are going to talk about today here, I think, has some DoD interest, with the exception of one that is a radio astronomy band which we try to keep DoD out of. So anyway, DoD has got commitments all along.

CO-CHAIR TRAMONT: Karl, did you say DoD has every commitment on the bands that are highlighted in that chart right there?

MEMBER NEBBIA: In every one except one that is the radio astronomy band.

So what we have done here is that we have dropped off those bands that do not have federal interest. And I am going to step through these as we go along. So please feel free to ask a question.

Also the briefing set that you have actually has text that is going to be very shortly up on our spectrum use summary on the web. There is text up there right now in a slightly more summarized form. So at any time in probably the past ten years you could have looked at this data. It is always interesting to us how many hits we get and, oftentimes we realize people don't know this information is already available. But the text you have is about to go up on the web in the next couple of weeks as we do final editing and so forth. It has been through IRAC review and all that sort of stuff.

So starting out, the first band actually begins on this side and continues down there; 225 essentially to 400 megahertz

is critical DoD air to air, air to ground band. It is agreed within NATO and with other U.S. allies that this is the prime band for communicating from aircraft to troops on the ground.

Interesting enough, for that reason it also becomes the mechanism for controlling and talking to airplanes, military aircraft and the FAA in fact uses it for that purpose to lighten the load on other commercial air traffic control communications type things. This is the key band for DoD operating its own mobile satellite activity and there are thousands of earth stations that DoD has in this band.

Also I should note, in the flight control there is one segment approximately in the middle of the band that is actually ILS for actual control, dealing with landing of those aircraft. And then at the very top end, at 3A to 400, DoD has been actively been building out land mobile trunk systems to meet

their needs for about ten years now. And that is where the garage door openers are and that is where the conflict has been. But we should make note of the fact that throughout this band, the unlicensed community has found this, because we have to recognize there is only so many aircraft up in the air at one time, this has been a band that has been very attractive for them to build key fobs and other small distance type devices.

So if we look at this band in the future, even though you might say well we are going to squeeze DoD in some way, you have got an awful lot of unlicensed stuff, not a whole lot like the 700 megahertz microphones and so on. Next please.

From 406 to 420, this is the only true land mobile band in this whole range we are gong to talk about. There is one other band below it, 162 to 174 that the feds use. This band they have been building out mostly narrow band trunk systems for about the last

20 to 25 years. So it is a significant land mobile commitment band. We also have channels in there that state and local public safety interoperate with the feds in that band. So all of our law enforcement agencies, agencies that are managing, for instance, national forests, there are channels in here for relaying data on environmental levels or water levels to monitor flooding and a tremendous number of things.

So of all the bands in the table, this is the second most heavily populated in terms of total assignments and probably in the end total equipment. Okay, next please.

From 420 to 450, we have got a number of national defense radars in this band. There are four major fixed locations around the country. These radars have been in existence for a long time, essentially looking out ward from the United States for incoming. Okay, they have been there for a long, long time. These radars are somewhere probably

between 10 and 15 stories high. That is not one you are going to pack up and move and say we are going to take you to another band somewhere. But anyway, the distances they get and so on related to the range.

There is also quite a number of airborne radars in this range, some of them the DoD is using but also it is getting increasing use for blur monitoring by DHS and others. So, that is a significant operation. And as you know, every time you put an airplane in the sky, 20,000 feet, 30,000 feet, 40,000 feet, has a pretty significant footprint.

So, there is also a system that DoD calls EPLRS, which is actually kind of a combination of location data that they use in tactical environments and for training. And there is also RFID activities in there for monitoring big containers coming into ports and so on.

We also have to note that in this

range the radio amateurs have been operating in there for years compatibly, for the most part, with the federal agencies. We now have new medical device proposals to go in there because, once again, people see this in terms of less actual use. And then, of course, there is non-federal RFID activities going on in there also.

This is the one radio astronomy band I am going to mention and I am going to mention it here because it is for the most part radio astronomy. There is not a passive satellite sense and component in this band. So it makes it more appealing for geographic sharing with the radio astronomers. And for that reason, the medical telemetry community is already authorized there and operating around the country. Once again, staying away from the specific radio astronomy site but they are already in there.

That medical telemetry equipment, we will just leave it there, that is also used

by like VA and military hospitals and so on.

Okay, the next band up, 902 to 928, we have got Navy ship radar. So we say okay they are out at sea, not too much of an issue there. Some perimeter detection and wind profilers which, of course, look straight up. Once again, it is something reasonably easy to share with.

The only issue here is the band is full of unlicensed systems. This is one of the bands that has become unknown as an unlicensed band and, essentially, for the federal agencies with the exception of operating offshore in a couple of these very kind of unusual instances, the band is practically unusable for the allocated service. Okay, so it has really become an unlicensed band. Next.

From 960 to 1215, this band is used around the world for aeronautical radio navigation aids. I have listed a number of the systems here. At the very top end of this

band is where GPS L5 is going and all the related international systems like Galileo.

And miracle upon miracle, the feds have come up with a way of using the spectrum efficiently. DoD JTIDS, which is a data system, tactical data systems actually overlays this whole capability of that was enabled through about 20 to 30 years of dialogue between the FAA and DoD. It certainly was not a short decision.

This band, I think you would get arguments all around the world about getting into this band. It is already heavily used. We are, at times, having difficulties finding channels for some of the radionav devices that they want to install.

The next band 1215 to 1300, first of all we start with GPS, the L2 channel, which is being used by many commercial groups. It started off being primarily used for military aspects but now it is used to help people get a better, tighter fix from GPS

information.

Starting in this band also, we have got air route surveillance radars. These are those devices that track aircraft coming across the country, for the most part, at high altitude. There are both military versions and FAA versions of these devices. The FAA devices of course are there to track the civil aircraft. Military devices not only can participate in that national airspace activity but are also then applicable to tactical situations for tracking aircraft.

There is also tethered surveillance radars in that band. Kind of when we went up the Hill one time, there was some interest in this. It kind of sounds like an old concept. Maybe, you know, something we should have done but actually it has become a very new concept and one that we are seeing expanded a lot. It is a great way of putting a device up in the air and leaving it there for long periods of time. The pilot never

gets tired and it never runs out of gas. Also, there is a lot of Navy ship-borne type radars in there also.

Okay, 1300 to 1390 is essentially a continuation of this air route surveillance radar band. And I should say in that case, in order to deal with fading issues, and that is a technical concept, these systems tend to have two separate frequencies so that it is not a single frequency system but actually is operating on both frequencies in order to avoid having issues regarding fading to make sure they are getting the signal that they need.

And the critical thing here then is that in coordinating those frequencies, we always have to be providing for two at these locations.

Now, the band just below it where we have had air route surveillance radars for a long period of time as we have been operating GPS L2, we essentially stopped using

the surveillance radars down that low in the band with concerns about interference from GPS L2.

The kicker here is that Galileo and Compass and all these other systems are being built now to the top side of GPS L2 and they are going to present the very same issues. So all those radars that used to extend down to 1215 are now being packed up into this range even tighter.

GPS L3, I will just mention there briefly, has to do with identification of nuclear --

MEMBER KAHN: Karl?

MEMBER NEBBIA: Yes, sir?

MEMBER KAHN: Do you guys know from the FAA what they expect the impact, positive or negative on spectrum use of next gen to be over time?

MEMBER NEBBIA: Well here is part of the issue. One of the logical thoughts that we immediately go to is every year

aircraft is getting GPS information. That is perfectly possible. You can set up data links from that aircraft to the ground reporting on their location. The concern that I hear most is that we certainly had instances during 9/11 where the folks that took those airplanes turned the beacon devices off. And people are concerned that they are still going to have to, under at least those circumstances, have those radars up and operating and tracking whatever comes in.

Now the military application is both the national airspace application and it is a tactical capability.

MEMBER KAHN: Yes, I know that the military part of it is. I just wondered in things like --

MEMBER NEBBIA: So, that is a slightly different situation.

MEMBER KAHN: -- ADSV and the like, would they net reduce or not? You are saying --

MEMBER NEBBIA: So at this point in the national airspace plan or the radio navigation plan, there is no commitment at this point to eliminate these radars.

Now, most of those radars in fact fix location and that has -- yes?

MEMBER REASER: Just going back a slide. They really don't tune right around L2. There is all the JSS radar still both operating openly. They just don't take up two megahertz at the old 1227. So that is, they actually use the band down there to tell staff entire time to stay out of the center frequency, so youþve got that seeing that sort of a band issue.

MEMBER NEBBIA: That may be the case for DoD. I'm not sure it is the case for FAA.

MEMBER REASER: Itþs the case for DoD.

MEMBER NEBBIA: There is another. Yes, sir.

MEMBER FURCHTGOTT-ROTH: I just wanted to clarify on your previous slide, were you saying that the air route surveillance radars are migrating above 1300 to avoid interference with the GPS L2?

MEMBER NEBBIA: Probably, from our sense, we have already kind of avoided, at least the FAA had avoided that conflict. But as Galileo -- see, in a number of the GPS frequency ranges, there is a clear overlay of the capability from one international system to another. In this particular range, that is not there.

So we have L2 at Rick?

MEMBER OBUCHOWSKI: At 1227.

MEMBER NEBBIA: At 1227. Compass and Galileo are going up higher than that and trying themselves not to bother each other. So as they get turned on, I think you are going to find more of those radars having to be moved up into this range. I mean, there is already plenty of them there now but they are

going to be, they are, in fact, going to be freezed.

Okay, this is a true passive band. And because there is passive sensing from the sky, there is not too much you can do there. Next one.

From 1435 to 1525, aeronautical telemetry, this supports the whole Aviation Development Program within DoD, supports FAA, supports aircraft developers around the country. And as we have been looking at a number of issues related to this, we are finding more and more sites that actually employ these systems. And in this case these are primarily, and they are primarily telemetry downlinks from the aircraft. But once again, if you have an aircraft doing maneuvers at 40,000 feet, 100 miles away, you essentially have a very directional beam antenna trying to pull that data in at the ground site.

So, the impact of those aircraft

flying a couple hundred miles out and so on at those altitudes is very significant. Okay, next.

GPS L1, in my office we refer to this as the third rail. Nobody touches it. We safeguard that with our lives and everybody in this country right now is using GPS L1. If not, those other GPS channels. But this one and the once again related or frequencies next to it for GLONASS and Galileo are significant.

From 1610 or 1670 to 1710, two major things in there. Radiosondes. Most of us until we saw "Balloon Boy" recently didn't realize that a lot of weather data is still being taken by putting up balloons all over the country every day and tracking, measuring data as it goes up through the atmosphere and reporting that back. Once again, big footprint. Military operates them. Our weather service operates them but so do universities, TV stations, and so on, sending these devices up.

In the same band, we have got meteorological satellite downlinks. So the NOAA birds are reporting down, providing data back in this band and the country is covered by earth stations receiving that data and being used for TV reporting, for other types of environmental analysis and so on.

From 1755 to 1850, of course lots of folks are looking at this right now to see what they can do, having just we are working through 1710 to 1755. This has a lot of the stuff that used to be in the 1710 and 1755 band rolled up in there. The precision-guided munitions, for instance, are now packed in the tighter range.

We have got these other airborne, air-to-ground video systems in there that DoD trains with, guides weapons with. Certainly we want that to work right when they are doing that.

DoD's mobile subscriber equipment DoD is actually employing in the field, stuff

that looks basically like tactical PCS or cellular system as part of their operation, we do things like shuttle payload control but the key is, the biggest areas here right now is DoD satellite control links take up most of the center of this range. They are at a series of sights across the country, not just one or two. And because they are controlling a satellite, telling it what it needs to do, it might be tumbling and they need to get it straightened out, essentially they are trying to pick up the satellite at the horizon, following as it goes overhead and talking to it for as long as they have, until it goes over the other side.

So it is one of those areas that requires kind of an immediate access when it comes up. The satellites themselves, of course, some are being launched today. Some are launched ten years ago. Most of them have, I would say probably, and Jennifer would know better, 20 year life spans,

realistically. Some of them have lasted longer than that. So those systems are going to have to be controlled at least until they die.

Now, mobile law enforcement nationwide, this is once again, one of the miracles of federal spectrum management. We have a nationwide operation that basically operates in the same spectrum with all of these other activities. And it is very localized but they have to be able to go where they need to go, do their investigation work and move on.

These systems did operate down to 1710 and essentially at this point, almost all of them have moved out and essentially have gone from a 1710 to 1850 range to operate in to this range. So they have essentially just lost the spectrum. They have been paid to move or alter their equipment but they now have less spectrum than they used to have.

Also we did have some testing of

these devices in 1710 to 1755 to see if they were compatible with current day cell phones were moving in there and both sides there was just no way they were going to work together. Okay, next please.

From 2025 to 2110 is actually the control link space for mostly other of the federal agencies. Now, DoD has some satellites that are going in with this band in it also. But as far as I know, DoD, at this point, is not operating in the earth's terminals. NASA, NOAA, on the other hand, do and they operate these various very critical systems. And also we have to remember the electronic news gatherers are in that band also and NASA and NOAA kind of work around them. And that is one of the reasons why this band, at least at this point, is not appealing to DoD is that they have to do a lot, they are more active than NASA, NOAA generally and could not be in a spot. We are sorry, somebody says well I am doing a news broadcast

now, you can't control the satellite.

Okay, next band up 2020 to 2290. This is actually the key telemetry downlink recognized worldwide. So those systems that are talking up and directing satellites in the other band, the information, the telemetry on those birds is coming down here. And also in many cases, the satellites themselves are talking to one another, relaying data around the world.

And we have some talk internally here as to whether this would fit a case where you could operate geographically around the land sights but then when you look at those cross-links, creates a whole different concern.

From 2360 to 2395 is the other major aeronautical telemetry band. Right now, there are medical device proposals at the Commission looking to move into that band. But once again, this band and the band down at the L band range, 1435, there is a lot of data

that goes through these systems. Once again, high altitude, long distance, very difficult to do a lot of detailed coordination, although they do a lot of time coordination and so on.

From 2700 to 2900, all the airport surveillance radars around the country are in this band. So, every major airport that is directing aircraft in, once that air route surveillance system hands them off, they are all being tracked in. This is probably what you recognize most when you see the screen with the person there at the airport directing traffic. They are probably looking at something from this output.

Also, the NEXRAD weather radars are moving into this band whole hog because the next band up where most of the weather radars are, it is getting filled up.

So let me just mention here, in this case, these weather radars, once again, are operated by TV stations, universities, in addition to the federal government. And with

each new generation, as we are doing with most of these radars, we are looking for improvement improved capability. And that often, for instance, when you used to see your weather radar on TV and all it was was the screen going around and it was either yellow or black, now you get multi-colors. You zoom down to your neighborhood, all that kind of stuff. And that is brought about the by increased capability of the radar system.

Next one up is 2900 to 3100 is the top end of the airport surveillance radar range or airport surveillance radars, NEXRAD, weather radars, there is others. Maritime beacons. We all love how cute lighthouses are but the electronic mechanism now is that there are electronic radar beacons along waterways that you can use for navigation and so on.

There are security radars in there and there is also radars that are used, hopefully most of them offshore to monitor arms control type activities, looking for

launches. So if you hear anything from the North Koreans, maybe it is in here. Okay, next one.

The last band I am going to cover 3100 to 3650 is, I realize, a huge swath of spectrum. But throughout this band there are mobile high-powered military radars on the ground, at sea and in the air. The use of them generally requires very wide band widths. The technologies tend toward your capabilities that use a lot of band width and certainly they support all of our commitments around the world.

Some people have asked me, well how about in the United States? Do we really need these things in the United States? And I think one of the things we have to recognize that we do train at home. Every military unit has to be able to train at home. But there are times when these devices may be called into play. I have to believe on 9/11 that there were certain things lit up that maybe

hadn't been lit up before here domestically. But anyway, there are requirements I think even within the U.S. for these applications.

So that is all of the bands in this range. Yes, sir?

MEMBER KAHN: On these kinds of things, and maybe Jennifer, you may know the answer to this question more, they operate in or presumably they are designed to operate in hostile environments.

I would assume that the interference situation is asymmetric in some sense, that the radar is going to work. The question is, is there anything you could put there underneath it that would still work?

MEMBER NEBBIA: I think that is a good question and, in fact, I think you will see some of both. You are going to see, certainly I remember, I was in the Marine Corps a long time ago, and the big issue back then was that the Russians were going to jam us. And that was the doctrine. That was,

they were going to try to stop us from talking and so on.

Well, any of you who have watched recent military activity see that the first thing that the military has learned how to deal with is any omissions on the other side. So actually although you can say that there are certain systems here that clearly use a frequency technique or technology that enables them to be jam-resistant, once they have I think taken those initial steps, there are other systems that come into play that are not so jam resistant and have to be, in many ways, more sensitive.

And for instance, when we got into the debate on five gigahertz Wi-Fi, everybody kind of said well why are these systems sensitive? Well, they are brought in at a point in time when you have dealt with much of the other play but you still have to be able to pick up an incoming fast-moving missile, that sort of thing.

So some of the devices actually are probably not quite so jam-resistant. They actually get the ability of them to pick up a target gets lessened by clutter that they have, or noise that they are impacted by.

But I am happy to say that on this committee, we have some people and companies represented here at that are experts in this field and I know they will help as we move this forward.

MEMBER WARREN: And I think that is a good topic in subcommittee.

MEMBER FURCHTGOTT-ROTH: Yes, I don't know maybe just as much to the whole committee is to Karl is that, I think, you know, following up on what Kevin said, it would be really useful, and I think this was mentioned, that we might be able to get a briefing specifically on the radar in technology and radar issues.

Because just at the end here, you have described 1,000 megahertz that is used by

radar and, in addition to this issue of well shouldn't they be built to be somewhat interference resistant anyway, there are other questions such as presumably the civilian aircraft being tracked by airports is not trying to be evasive. You know, they would like to be seen. So why does it take 300 megahertz to do that if they are using beacons, for example.

So if there is a bunch of technical questions, it would be kind of interesting to understand better. And then things like the lobe issues, you know, back lobe, side lobe.

MEMBER NEBBIA: Okay. Just before I quit, I certainly think that looking at radar because it is such a huge portion of the spectrum is critical for the group in understanding that better.

I did want to mention a couple of things just before I broke off here. And this may get discussed more as we start talking

about the spectrum inventory, is this issue of what information becomes useful. We started discussing some things related to contours and you have got this on your other briefing sheet. And what I wanted to indicate here is that as we are doing our inventory work, in fact, what we are going to find is that we are going to define what we provide in terms based on our understanding. And it would be helpful for us to have input from all of you concerning what some of those characteristics that we should be looking for.

So, we have started defining some characteristics that we think are critical from our side, from our operations side. But I just wanted to take note of the fact, let me just go to the pictures that follow, if I can here. This is a Word file. It is a little bit different. Once again, I haven't given a specific band, all I have indicated here, we are dealing with a radar band with fixed locations. And the first picture here is

essentially taking the first 20 megahertz of that spectrum and saying using some characteristics that we have assumed for the potential commercial use, what contours we might come up with. And we have then broken that out in 20 megahertz segments.

So this is the first 20 megahertz. If I were to break it out in six megahertz, the picture would look different. So we picked 20 because everybody is saying 20 megahertz is an LTE requirement. Okay, if that is not the case, we have to come up with some other mechanism that is useful.

But then you go on, of course, to the next one which is the next 20. And if you look at them together, you will notice slight differences. Okay, so in some geographic areas, the next 20 is open, whereas it was occupied the previous 20. So this is one way of us showing the fact that there may be some geographic openings that would help us here.

But so this is a technique that we

would like to consider. But once again, these pictures are based on assumptions that we would like your help on. What bandwidth do you want to look at? What field strength do want us to mark off as the contour? So these are things that we need your help in pursuing.

So, that brings me close to the end of my time. So, any other questions this morning?

MEMBER COOPER: Karl, you have looked at this entire spectrum inventory. The prior institutionþs is superb. The information you have, does that fulfill, in your mind, some of the needs about this proposed spectrum the military will ask for?

MEMBER NEBBIA: Well there are a couple of pieces of legislation on the table. One of them asks more specifically about frequency and location. That of course, presents challenges from a security and policy standpoint. The other is not as specific. And certainly we can tell a story here that I

think becomes understandable to people.

So, they get a sense of what it is that we are doing in these bands, what type of challenges that may be faced. For instance, we were talking about the 406 to 420 band and whether there was something that we could do with that. Well, one of the agencies raised their hand and said well, we have all the state and local folks now operating on channels in these bands in order to be interoperable with us. So if you come up with a move to reduce this band width and that money comes to us through CSEA, who is going to pay them to move?

So, those types of complications. But I think we have data necessary, I think to portray a good picture of how the feds use spectrum. We are going to certainly have to be very careful with the security issues and work closely with the agencies on what kind of information is releasable and what isn't.

MEMBER NEBBIA: You only get one

question, now. You got to lose your turn on the wheel.

MEMBER COOPER: I take it that some of these requirements that they are asking for, you don't think are either necessary or that they are more difficult to achieve. What you are suggesting is that this is a great basis to start a conversation about how to use the spectrum better.

MEMBER NEBBIA: And I think that is the kind of discussion -- I mean, you have to have that kind of discussion. So I am not really in a position to say.

But I would hope by the presentation today that you at least understand that it is maybe a different picture than or are we using 12.5 kilohertz channels or 6.25. It is a whole different issue than that. And I think that is, at this point, about as far as I could go.

MEMBER McHENRY: Your chart is totally misleading. This is where I might

detect a radar. The question is, if I emitted 100 milliwatts, would jam the radar. These are dot plots of where the other guy could use them. So I think this plot is not --

MEMBER NEBBIA: Well that is important input to us. And I think in the end, we may have to plot both components, potentially. But once again, in that case, we need to know what the input is that we are looking that may present a problem to us.

MEMBER McHENRY: Whereas, Peter might jam you so that he can't -- you don't want to exclude that. That is the use. Someone else can't do that.

MEMBER NEBBIA: Actually, I want to do both. I do not want to end up in a situation in the future where we are jamming a bunch of people and the public is out there, I just don't understand why I can't operate my system.

MEMBER MYLET: Yes, Karl, this looks like a book with chapters in it. And

then how easy, and how quickly, and I guess how hostile, to ascertain specificity in this by agency, by geography, so that you get true accountability of the asset? Does the radar cover the entire United States and is two megahertz? Easy to describe. If it is a land hold system for special operations, then a different level of system.

MEMBER NEBBIA: That is true. There is no way to get away from that reality. There is going to be some information that we can't talk about. We will hope that the descriptions that we are able to provide will lead to the necessary discussions on the policy standpoint for where we might go from here.

The inventory is, you know, essentially a statement of this is what we have. It is not the end of any discussion that might go on. But it is important that people know it.

Also, one of the things that we,

and I think we have said this before, if there is a particular band or particular activity where somebody says I would really like to try doing this in this range, we can, I think, get the doors open to have a more direct discussion with the people who are operating there to see what we can proceed with. It is very hard to do that when we say well, can you tell us, can we operate unlicensed in here? Can you tell us, can we just deploy this? And it is kind of a very wide-open question. And we know that people would like on the other side to have flexibility and so on. But to actually get into discussions about what might be done five gigahertz, if we had not been able to get all those parties together and start working through that directly, there is just no way that would have happened.

Yes?

MEMBER DONOVAN: Karl, just for clarification, I guess, and maybe this is discussion more than a question. You focused

on up to 3 gigs here, essentially. But there was use beyond 3 gig manner, for example, 5 gigs for example. The voucher bill I think asked for inventories up to 10, correct?

MEMBER NEBBIA: Yes.

MEMBER DONOVAN: Would you be able to, sort of at this chapter one, I know it is a lot of work, but is there a second chapter that provides similar information further up?

For two reasons. One, I think, not only just to see what is up there, what can we use, but to the extent there are recommendations regarding allegations that are going to be called beach finders, then maybe you may need to know where other places are.

MEMBER NEBBIA: Sure. And certainly the unlicensed community I think has indicated clearly that they are not necessarily locked in to those lower frequency ranges. We haven't quite heard that from the public mobile community that they are happy about going higher. But we can certainly

provide that at a future time.

MEMBER DONOVAN: I think that would be critical for decision-making.

MEMBER NEBBIA: Yes?

MEMBER FURCHTGOTT-ROTH: Yes, how much, so thinking just about the range that you presented, how much would actual spectrum measurements, you know, add to this picture? So for example, what OFCOM has done recently with fairly extensive dry test, does NITA have any resources currently that would go towards that or is that something that you would need in addition to your current resources?

MEMBER NEBBIA: Well first of all, certainly every one of the GPS bands, there is no question. The signal is operating. L5 is coming along and going to be used for aircraft. All of those aviation systems at 960 to 1215 that they are loading up are at airport facilities and so on. You are not going to find many cases, if any where you find somebody who says well, yes, we used to

have a system there and we turned it off 20 years ago.

All the air route surveillance equipment, you are going to find documented in FAA flight information. The same thing with all those air traffic control locations, the weather radars are being deployed in greater numbers.

The place where one could argue that monitoring might have some basis or help is in those bands where the uses are primarily mobile. And it is not that we couldn't spend time doing it but I can tell you, if you go into the 225 to 400 megahertz DoD band, you will not see much in the way of activity all the time.

So it really leads to a question, is that useable in some other way. Once again, we have got unlicensed in there. We have got MSS in there. We have got a number of other things. Some of those particular uses are also not all that easy to hear, if

you run out with your spectrum analyzer. They are just not that fineable. The same thing with, you can go into one of these telemetry bands. And if you are not pointing directly at where that aircraft is beaming back and you are picking that thing up, you probably can't see the aircraft, you are not going to get the signal. You are not going to have the capability of doing it.

So some of these, you are not going to get much monitoring data out of but we are certainly willing to look at that path.

MEMBER WARREN: I was going to say, I think in addition to if there is a decision about monitoring or not, particularly when you are looking at DoD bands, there is a long lag time between acquisition and deployment. So a snapshot of what is monitorable now, is in now way indicative of what it will be in four years, five years. You can look at 225 to 400 right now to make expansion up the mobile user system there, the

MSS system. There is a lot of other examples.

So, I think we could be misleading ourselves, also, if we at least in some veins, try to do it that way. But again, the group has to take into account the acquisition cycle.

CO-CHAIR HATFIELD: But that doesn't argue against doing the monitoring.

MEMBER WARREN: I think it did.

CO-CHAIR HATFIELD: If you do the monitoring, then you have an excuse that this has been --

MEMBER WARREN: It has to be supplemented with other factual information.

CO-CHAIR TRAMONT: We are about out of time. Is there anything else for Karl?

So with that, it is 11:00. So why don't we reconvene at 11:10 and we will kick off with the committee reports.

(Whereupon, the foregoing meeting went off the record at 11:02 a.m. and resumed at 11:15 a.m.)

CO-CHAIR TRAMONT: Greg, are you still on the phone?

MEMBER ROSSTON: Yes, I am.

CO-CHAIR TRAMONT: Excellent. We are reconvening.

MEMBER ROSSTON: I hope you enjoyed the coffee break.

CO-CHAIR TRAMONT: Exactly. I hope you were able to take full advantage.

All right, very good. We will now proceed with the subcommittee status reports and discussions. A quick change in the schedule. Mark and Jennifer will start and then Darrin will go second and then David and then Rick will wrap us up and clean up for the subcommittee reports.

So with that, I will turn it over to Mark and Jennifer.

MEMBER CROSBY: Thank you. I will start but I need some help. You have the current version of the document. This one with the checkmark that one includes edits that

were made this morning as I was driving in.

CO-CHAIR TRAMONT: Very safely as you were driving in, for the record.

MEMBER CROSBY: I will start by the committee at this point to --

MEMBER BORTH: There is a request to be closer to the microphone.

MEMBER CROSBY: Is that better? Okay. Goodness.

As I was saying, my co-chair and I will ask her to share with her visions of how we are doing. Again to my left, Michael Calabrese, Bob Gurss, Marty Cooper and Gary Epstein have been participants.

This document serves as our interim paper. I have been asked to say what our timelines are. We will meet the timelines. We do plan on meeting with representatives from NTIA and the FCC to see where they are, what we can learn, how we can make this the work of this committee clearer and more beneficial.

I think one of the things we also want to work on, because it is clearly not in the legislation. What would be the benefits of a spectrum, all of the various benefits that might be made available and probably come up with some benefits of the spectrum inventory and how it can help with telecom policy.

One of the things that we did highlight as we were a little not necessarily concerned, but we have questions about appropriate funding for the agencies to accommodate their mission for a spectrum inventory. We have a lot of work to do but after hearing Karl's speech, it looks like we may not need this for NTIA but we will strive to persevere and will continue to come up with what we think might be optimum components of spectrum inventory.

Jennifer.

MEMBER WARREN: I think Mark really covered it. I mean, towards the end on

the pages two and three are the questions that were set out and tentative answers that the group has put together, and more work that, you know, we can see, if necessary. There are follow-up steps, etcetera, that we believe could be taken and should be taken. And that would be the next step of our working group.

CO-CHAIR TRAMONT: Okay. And for all of the subcommittees, I think our goal would be, if possible at the next stage, to present draft reports and then at the meeting that follows, give final reports.

MEMBER CROSBY: We will get that done.

CO-CHAIR TRAMONT: Excellent. And I think, as we will discuss at the end of the meeting, we are trying to roll together the next session somewhere in February for our draft report.

MEMBER CROSBY: That will be appropriate, thank you. We will make that.

CO-CHAIR TRAMONT: Excellent. So,

that is our tentative -- so unless we are able to assume every subcommittee is driving toward those two goals.

MEMBER NEBBIA: Can I just mention very quickly, if you have a need for one of our folks to participate, please let me know what that specific need is and I will have somebody participate and specifically try to provide that input. I would hope also, at the same time, you might be willing to accept the idea of some of our people just more or less getting on your list to just kind of monitor what is going on. I really want to stay away from the idea of our people doing a lot of the work.

MEMBER CROSBY: That won't happen.

MEMBER NEBBIA: We used to have a meeting like this where all of our people wrote the recommendations and the committee would come in and do this or this.

MEMBER CROSBY: I can assure you that will not happen.

MEMBER NEBBIA: But we are happy to come and answer questions and so on. I just don't want our guys to get into to do a lot of writing and all that.

MEMBER CROSBY: I assure you, that is not our expectation.

MEMBER NEBBIA: So, you know, working through the contact, you know, the working group chairs, please just let me know if there is a specific request that you have and then I will have other folks that will probably contact you saying they would like to get on your list and then you set them up.

CO-CHAIR TRAMONT: One other thing I would ask, in light of the inventory, it seems possible that the agencies will conduct inventory with or without legislation. So I think one of the important is to look beyond what the legislation calls for and speak more broadly about what could be done even after legislation.

MEMBER SALEMME: You had mentioned

when Karl was doing his presentation that there is a lag time, especially around satellites and some of these other technologies. How would we take this into account?

MEMBER WARREN: That is a very good question. It does not take that into account, explicitly. I mean, I know that the legislators have recognized that there is a lag time between what is there versus what is coming and I am not quite sure how that is going to be addressed in their spectrum inventory though. But I think that is a very good point that that should be captured.

For example, when the FCC issues a license, the time when it is actually used in a satellite context or when NTIA does the spectrum one certification for a system versus one that is certification forceage.

MEMBER NEBBIA: And certainly one of the major challenges is some of these systems have a long life span. You can't pull

the satellite back, for instance. But also one of the things that the agency has been stressing with me, if you are dealing with an air navigation type of radar, at any particular point in time, development work is going on on that radar to improve its capability to the future. So, even though you may say we would like this radar out in ten years, they are in the middle of the development program right then with congressional funding and so on to develop the next modification of that radar. So you are not only telling them you are going to plan to move these devices out, you may be shutting down development programs or shifting development programs that come up with new technology for other bands. So, it is pretty involved.

MEMBER SALEMME: Follow-up question then. Do you also need to know how capable those models are to include new frequency bands or somehow you have to capture

those already working?

MEMBER WARREN: Did you think that that needs to be done in the context of a special inventory? A capability which you have in setting up the framework?

MEMBER SALEMME: Well something you would say I have actually thought that, my goal that I include it in development and then begin to move that forward with authorization from appropriation for work. And that is one of the reasons we can't move without that.

CO-CHAIR TRAMONT: Well and some of these factors are equal issues, certainly what you could call safety community adjustment contractive sacrifices.

So I figure this is probably part of a larger conversation about when you come to a certain manager thereþs no use -- quite a bit of policy in the commercial bands claiming two years because of X, Y, and Z. There is a number of factors that go into this assessment on the personal hand --

MEMBER WARREN: Well two of the ones that I think come out this year are the allocation issue and the acquisition issue. So those are two --

We were going to incorporate the acquisition and allocation issues that have been flagged here into the draft report that we will be working on.

MEMBER KAHN: One other thing that might be worth picking up was the point Karl made, I think in his charts, the contra charts, that we need to get kind of some kind of an explicit granularity of what a meaningful allocation is so that if the inventory spends a lot of time finding, you know, to be absurd, 100 kilohertz chunks of spectrum, it is wasted. It is useless at work. It may be useless. It might be useless work, if all of the interest in commercial applications we are looking at going forward have a minimum granularity of 5 megahertz or 10 megahertz or something.

So some way as we do these things of providing the right kind of filter on kind of the value proposition of what you recover. And I don't know whether that goes in the inventory or somewhere else but it certainly would shape what an inventory might look like.

MEMBER WARREN: What you also bring to mind is the fact that we probably need to look at how the frequencies are also divided in terms of the international table of allocations, too, particularly whether it is for satellites or some of the allied interoperable equipment that we should be looking at things probably in comparison to that, not just how the FCC or NTIA has sliced and diced it.

CO-CHAIR TRAMONT: Darrin.

MEMBER MYLET: I mean, this seems likes an unprecedented opportunity to really look at inventory as being a very meaningful operative transparency and accountability. I mean, that is the case.

And radars are one area that I think a lot of us are weak on. But if you look at a radar system being planned, let's just say as an example, 10 megahertz or 20 megahertz or maybe even less across the entire United States and it takes ten years for that system to be built and brought online, is that spectrum basically thrown into the warehouse for that period of time or is it used or allocated by somebody else? Or you know, what sort of processes and who is accountable to that? If that is a DoD system, is that DoD is taking control of that particular asset accountability?

MEMBER NEBBIA: Well certainly, there are radio locations, radio navigation bands in the allocation table, both internationally and domestically. And anybody that is developing radar systems is saying to themselves right now, this is the bandwidth that I have to operate in and I am going to build the best system that I can within this

context.

So for instance, when jamming became a big issue for DoD and radar systems, they began to build radars that hopped across large portions of the spectrum. Now if you had a public mobile receiver in there, would you want something that is megawatts hitting you, even with a short pop as it went by? I know that there is concerns about the impact to the receivers themselves from that power.

So those things have changed over time but they are looking at their planning saying this is how much bandwidth I have and this is what I am going to work within.

MEMBER WARREN: There is another aspect to his question, which is as you can see there is not a lot of -- I mean, the spectrum that is being used for radars is not just sitting idle. Radar modernization occurs while existing radars are in operation. The use doesn't go away. It is just you then substitute.

So I don't remember what the acronym stands for, you know, the SLEP. I'm sorry. It is a radar. I was hesitant to say it. I was hoping you would remember but it is a radar modernization effort that is ongoing.

MEMBER COOPER: Does Cooper's Law apply to radars as well?

MEMBER WARREN: Remind me of Marty's law.

CO-CHAIR TRAMONT: David one more thing.

MEMBER DONOVAN: Yes, just briefly, just taking a quick look at this. It looks like you have done a fairly good job really with assessing utilization --

I was wondering whether or not you could move toward developing some additional usage on the license side. I know that is a lot more difficult. You could certainly look at a number of things. For example, put the manufacturer on this who is coming on a specific band. You could look at it from the

retail level. You could look at it from the wholesale level.

To the extent that you are doing a lot of power-based station installation we need to be able to get it back. To the extent that services are being provided on a subscription basis, you may be able to get the generic subscription data.

Not that either one of those are dead spot on but if we are going to look at inventory spectrum usage on a going forward basis, to the extent a license could be a great part of that regime, I think we ought to think about looking at some additional metric of how you measure the spectrum.

CO-CHAIR TRAMONT: Bob.

MEMBER GURSS: Some of those might be areas where monitoring might be discreetly beneficial.

I remember a case quite a few years ago looking at a band where there were a lot of microwave ovens in use. And someone

did some monitoring in LA to see what the potential for sharing was and, predictably, it peaked at mealtime.

(Laughter.)

CO-CHAIR TRAMONT: Anything else for Jennifer?

MEMBER CROSBY: We welcome all suggestions and comments.

MEMBER WARREN: Dave, your comments were really helpful. Could you reiterate those in writing by e-mail?

MEMBER DONOVAN: Good, God.

(Laughter.)

MEMBER WARREN: Okay, the transcript. Thank you.

CO-CHAIR TRAMONT: He is so articulate live, we can just transcribe it.

All right, very good. With that, thank you very much for the report.

Darrin?

MEMBER MYLET: Okay. So our task is to focus on transparency. Since spectrum

and transparency are obviously over the last year or so that on Google and the internet have gone up 10,000-fold, I think, as far as searches and information requests and I think rightly so.

It appears to me that we do have artificial scarcity. And I do think it constrains a lot of things that could be going in our economy and public safety and grids, and even mission performance, robust broadband, all these things are, in my humble opinion, very dependent upon getting spectrum transparency and understanding the specifics about who has what where, how much do they have or control, and do they use it, and when will they use it. And I think this crosses both FCC and NTIA both, both at the federal and non-federal levels.

Now I predict that if we do transparency right and we do inventory right, we are going to identify tons of spectrum across multiple geographies. So the task of

this particular subcommittee, you know, I think if we went around the room and we asked for specific how do you define spectrum transparency, we probably would have 20 different answers.

So the task group is trying to identify a definition of spectrum transparency. And we think we ought to break it down into internal transparency. So this is for Karl and the team that have classified clearances. So that there truly is internal transparency, what does that mean to those federal bands and DoD bands? And then there is external transparency and a push to try and make as much information about federal spectrum available so that scholars, academics, equipment vendors, whoever it may be can actually start looking at federal spectrum and how it might be used, as long as it is not going to affect mission critical or other types of missions that we know are really important to specific federal agencies.

So can this data, does this data exist? Is it going to exist that can be put into aggregate pictures to describe what I am talking about? I am going to show some examples of just one aspect of spectrum transparency in just a bit, after I go through a few more comments here.

Why is it important? Again, why is spectrum transparency important? Again, if I am in charge of spectrum or I am the assistant secretary, you know, I might want to know specifically, how is the spectrum used? I might want to be able query how many different agencies are using spectrum here in D.C. at any given point in time certain? Or the staff may want to know this question.

So I think the accountability and oversight is another, I think, important factor of getting transparency truly out into the forefront. Then, we can move to benefits of transparency, real time sharing, secondary use, and so on. There are so many different

entities out there right now looking for spectrum. You have got the FCC maybe showing up here as a wolf dressed in sheep's clothes because I am looking for spectrum.

I think also this applies to the other side. You know, there ought to be transparency on the FCC side as well. And that is another topic that our group is going to tackle as we move forward.

There are concerns with external transparency and our groups have intended to identify those and bring those to light asking specific questions, trying to determine, you know, is it really an important issue as public safety you have to disclose their towers, their sites, their locations. Broadcasters have to disclose their specific sites, locations. And often are those particular -- have they ever been attacked? You know, has it caused a disruption in service by disclosing specific information about how specific spectrum is used.

Getting to FCC spectrum

transparency because I do think it is part of the remit, you know, got to FCC.gov and try to determine how much spectrum different entities have. How much do they use? And I know for a fact two of the bigger carriers in the city control directly 100 or more megahertz of very good valuable spectrum. Well how much do they use today and on what basis are they going and trying to get more? So that we have this information about specific allocation assignment at the FCC level. And I think I heard that today that was the number one topic, the first topic that was actually brought up.

So that is exciting and I think that is needed. And I think internally, I don't think the federal government should worry about getting spectrum taken away, if we can force the FCC to look at their allocation assignments and how efficient they are as well. So I think we ought to look across the

lines there.

Examples of spectrum transparency. I thought today that I would actually show a system of one of many that may exist out there. Federal agencies may have their own systems already that are better than this or in the works to be done. But pictures can be worth a thousand words. So this is a particular system that speaks in real time records from FCC databases that exist today. I pulled the outputs. You can go and make a query and you can see, okay, city. You can query frequency. You can query channel and at any given time, in any given geography, who actually controls that spectrum.

Now the million dollar or billion dollar question maybe is, do they actually use it. You know, that is a separate question. And also can you aggregate the different frequencies and channels and can you create algorithms to determine how much specifically do they control in any specific geography.

So, I will ask the lovely Karl Nebbia.

So this is just an example of a query that asked for a PCS C Block in Georgia. And bang, within a matter of seconds it is displayed on an output. Now utilization, again, you know, we talked about spectrum monitoring, you want to throw this in as a concept, as an idea. Maybe we don't need to measure all the spectrum nationwide in this country but there is a group in Boulder that are very, we met with them I think last year that have a truck. Perhaps it will be useful from time to time to reinforce their capabilities to give them funding so that they can go out and not only measure federal utilization, but to measure commercial, and to make that data transparent and put it out into the market so people can actually look at it and see how the commercial sector is actually using spectrum in specific sites and locations.

Next slide, please.

CO-CHAIR TRAMONT: Darrin, real quick. Does this reflect leasing? So does that reflect ownership of the licenses only or does it reflect leasing long-term, short-term? How dynamic is the database now?

MEMBER MYLET: It takes the records as they exist today. And if it is a C Block and it is a big block and it hasn't been partitioned or disaggregated because a lot of these blocks have not, but if it is the record, there has been a lot of, over time, hiding of entities and so on within the FCC records. So there are methods for us to determine who might be the real owner of that particular spectrum, based on an e-mail address going to the same site as AT&T.

CO-CHAIR TRAMONT: Okay but is not as linear.

MEMBER MYLET: It is not. Certain bands are more transparent than other bands. And again, that is a recommendation I think we

need to look at.

MEMBER SALEMME: Is this proprietary software that is being used here or is this just an off-the-shelf product that anybody can purchase?

MEMBER MYLET: Anybody can purchase. It is available. You can go out and get access to this type of system tomorrow.

MEMBER SALEMME: This specific system is available?

MEMBER MYLET: It covers most of the FCC bands where there is really activity, where there is really any usefulness, 2-5, 2-3, 2-1, 1-7 and so on.

But again, so here is an example of comparing, talking about comparing agencies and assignments, etcetera. So here is where you can compare maybe two different carriers, a Sprint or an AT&T. Or maybe if you had this within the federal side, you could compare how might Department of Agriculture be using this

system versus the Department of Interior, if they are using two different bands or the same band.

So we do think there are methods to show transparency of who has the allocation, how they are actually using that particular spectrum. You know, this is, I think, modern transparency.

CO-CHAIR TRAMONT: So this data that you said is the market territories. So this presumably is what the carriers have on their map on their websites --

MEMBER MYLET: Correct.

CO-CHAIR TRAMONT: -- and you are comparing those to, not a government database.

MEMBER MYLET: That is correct. You know, the carriers doesn't have to disclose how they use their spectrum which, again, I think would be a very useful recommendation if we could come up with that recommendation but you know, to actually disclose where they actually use their

spectrum, their market-based assignments. But this is just using the information they put out in public record.

MEMBER KAHN: Although you do have to be a little bit more careful, I think, and certainly this is not my side of the business but you know, on spectrum that has been explicitly auctioned for large sums of money, you know, the government has already taken a position on that, at least. Which it said that is willing to allow a certain amount of stock piling of spectrum against a believed business plan. So when you talk about kind of utilization there, we can't have our cake and eat it too. There obviously are limits. But I mean, you know, there is public good, etcetera. But there also has to be some balance here that if we are going out to people and saying go buy the stuff.

MEMBER MYLET: Well Kevin, the point that I am trying to make with transparency is we are not trying to make a

policy.

MEMBER KAHN: No, I understand.

MEMBER MYLET: You know, this --

MEMBER KAHN: I was just referring to the passion with which you were describing some of it.

MEMBER CROSBY: The other issues is that it doesn't reflect what may be used. The companies that are rolling out these spectrum, they have purchased them.

MEMBER MYLET: Yes.

MEMBER CROSBY: That information has to be considered in one form or another.

MEMBER WARREN: Well I think that is a good point of debate when we get into whatever subcommittee that is going to be, whether the assignment mechanism makes a difference or not.

But I do think it begs the question in the very first chart when it talks about ownership of spectrum. I think there should be a discussion that we have been using

the concept of ownership of spectrum because I think we would have very different views in this group already on whether there is that regardless of the assignment mechanism used.

MEMBER KAHN: Well I wasn't, by the way, I was not discussing ownership or lease or whatever you want that to view.

MEMBER WARREN: But it is tied in.

MEMBER KAHN: Just that if we have said to people, pay us a lot of money and we will give you the spectrum, we have sort of taken a position on that.

CO-CHAIR TRAMONT: Well, in exchange for an explicit build-out. Right?

MEMBER KAHN: No, no, no. There is a whole set of time things associated with that. All I am saying is that those things have to be reflected in an analysis of this sort. You just can't say well, here is this huge block of spectrum and AT&T bought it but they are not using it.

MEMBER CALABRESE: But that is why

you need transparency, so that the policy makers can make the kind of arguments you are making.

MEMBER KAHN: Like I said, I was simply addressing the passion.

CO-CHAIR TRAMONT: Okay, we have a couple more committee reports. Let's roll through, if we can.

MEMBER MYLET: Okay. So, we will move on to the next one. You know, here is an example of spectrum where there was significant efforts of rule changes and the spectrum is now being put to a use by entities around the country. But again, this shows the particular E Block of ERS spectrum. You know, this is 196 megahertz of spectrum that has been allocated and assigned to 42 beta services, etcetera.

Now the interesting thing about this, if I were to go into the system right now live and switch to EBS, which is the 100 or so megahertz of this particular band and

ask for that information, by default, it would show all the white space that exists out there in the 2.5 gigahertz band. And a lot of that spectrum is sitting in rural parts of this country waiting for a rainy day.

So you know, transparency at the commercial level will certainly allow us to identify a lot of other white space "spectrum" that exists out there. So we have the transparencies that create this real time analysis. Next, please.

MEMBER FURCHTGOTT-ROTH: Do you have this more granular?

MEMBER MYLET: Yes. This goes through all 196 megahertz. This is just 106 MEG channel.

MEMBER FURCHTGOTT-ROTH: Oh, E-1. Okay. Fair enough.

MEMBER MYLET: This is just E-1. So we could do all of them. We could bring it down. You know, this is the level of specificity I think we have to get to sooner

rather than later, in my opinion, across all spectrum bands.

This is an interesting one. So this shows spectrum ownership by frequency channel and geography query. So you can pick in systems and you can say I want to see who owns a specific block in California. I want to see it at the county level. I want to see it over five states. You know, it is important to be able to do the quantification and qualification across very specific geographic footprints of a specific channel box. Next, please.

This is an overlay. So we were talking mostly there about market-based and some contour-based. This is an example of site-based spectrum. And the microwave in our country, I think that will be focusing in the short-term the middle mile and microwave is a technology that I think 90 percent of I think the back hall in Europe to the bay stations and microwave. So as we move forward, site-

based allocation of assignments, I think they are going to become even more and more important, although there is a lot of spectrum out there already for that today.

MEMBER FURCHTGOTT-ROTH: And what bands of spectrum are covered by this particular segment?

MEMBER MYLET: All of them.

MEMBER FURCHTGOTT-ROTH: All the way up to like 50 gig.

MEMBER MYLET: You can go and do a query of any band, as long as it is FCC, FAA, or some commercially available format, we have got it in our system already today.

MEMBER EPSTEIN: Including leased and unlicensed?

MEMBER MYLET: Not unlicensed.

MEMBER EPSTEIN: But --

MEMBER MYLET: This is licensed. This is dedicated hertz, 18 gigahertz, 23 gigahertz.

MEMBER FURCHTGOTT-ROTH: There is

a lot else going on out there.

MEMBER MYLET: Yes. This is just one --

MEMBER FURCHTGOTT-ROTH: Yes, I know. I understand. You are capturing part of the picture here.

CO-CHAIR HATFIELD: Just to be clear, though and make sure I understand. I am showing my age here. When the Commission has gone to area licensing, the Commission is not maintaining detailed site-by-site information, like they do in Australia. So therefore, if I was really trying to do detailed engineering, I would not add information that would need to do a traditional type interference analysis. What you have done is overlay what they claim to be their coverage area, which doesn't tell me because they may be using fill-in type repeaters or boosters and there may be cells and all kinds of stuff out there that I might have to take into account. So that is far

from anything that is in the existing database.

MEMBER MYLET: That is correct. You are exactly correct.

CO-CHAIR HATFIELD: That is true on the microwave link site?

MEMBER MYLET: On the microwave links, the data is out there. Any FCC common carrier license, the data is there so it can be manipulated into a system.

MEMBER CALABRESE: Well a microwave's point is site-based licensing.

MEMBER KAHN: Right. That is what I thought. That why I was trying to --

CO-CHAIR HATFIELD: That goes exactly to my point. We gave up on site-based White Papers which was good in some ways.

MEMBER KAHN: No, no, no. There are two things going on here that I am just trying to understand.

I thought that this was specifically a discussion about microwave

link.

MEMBER MYLET: Yes, this is --

MEMBER KAHN: No, no. But that still is site-based. Right?

MEMBER PEPPER: Yes, but I thought that actually even with the geographic licenses, as bay stations go in, that there re requirements of the Commission for filing that and that there are some questions about lag time.

CO-CHAIR TRAMONT: I think a link implicates FAA.

CO-CHAIR HATFIELD: The FAA. There are some indirect ways like the FAA stuff.

MEMBER MYLET: This is contour-based. So if there is a contour filing at the FCC, you can query it and it would output it over the specific geography. And you can query all the contours based in the geography that you pick. So if you pick a state and you want to see all the contours, it can be shown.

Within a county, if you want to pick the contours within a county, it can be shown. Pick nationwide, it gives you all the contours nationwide.

So this is transparency of specific contour-based assignments as mostly the cellular and some of the other contours. Next.

Here is an example of spectrum that is largely in use nationwide, 2.3 megahertz, 20 megahertz channel size or a 30 megahertz channel size with ten megahertz having S-STARS interference. You can see how big these auctions were for this particular spectrum. And again, I think this a topic for another subcommittee, but auctions don't always present in the best way to put a spectrum to a use, let alone a best and highest use. Thanks.

CO-CHAIR TRAMONT: Okay. Any question for Darrin? And obviously the same expectation holds on the transparency

committee. Hopefully we will move to a draft report in February with the final report in March.

CO-CHAIR HATFIELD: Darrin was looking the other way. I wanted to see if you got the commitment.

MEMBER MYLET: Pardon me?

CO-CHAIR HATFIELD: Draft report in February and final report in March.

MEMBER MYLET: Yes. We are on task.

MEMBER OBUCHOWSKI: Can I ask, in this topic, it would be very useful, at least to me, at the next meeting for us to have a resemblance of a report from the FCC. Maybe it was done on Broadband Plan.

And spectrum is the issue there, I would love to hear the band-by-band thinking of the FCC.

CO-CHAIR TRAMONT: Depending on our timing, because we may or may not be before the broadband report but I mean, we

could reach out to Julie and see if she would be willing to come over and do it.

MEMBER OBUCHOWSKI: The micro was interesting but on some level with macro is -- you know, people are making very broad statements about the 800 megahertz for this or that. And frankly, I have listened to this for 45 minutes. I don't know where these statements are coming from. I don't know where.

(Laughter.)

MEMBER OBUCHOWSKI: I mean, what is useful to me here would be if both agencies setting out who has what.

MEMBER EPSTEIN: So that is kind of why I asked Bruce what kind of data they had.

MEMBER COOPER: So this actually picks up. So it might be, in terms of the timing of the next meeting, to do it after February 17th. So that last week in February probably makes sense.

MEMBER WARREN: But we won't get FCC people before the 17th.

MEMBER DONOVAN: Right. Let's have a special meeting in December on that. December 20th.

MEMBER EPSTEIN: Exactly. A special holiday meeting.

CO-CHAIR TRAMONT: All right. We will begin on the timing of the drafts. Okay, thank you very much Darrin. Anything else for Darrin before we move on?

Mr. Donovan, you are up.

MEMBER DONOVAN: We are running out of time. I will be brief.

We have been working fairly quickly here. Essentially we have been tasked with looking at both adjacent channel interference and sensing. Looking at the issue, we believe it probably extends beyond that.

The first step was to identify the technical mechanics of interference. And

David did a good job in preparing a document which he is doing right now on that point, in which he identifies all the ways one can interfere.

The next section of the report that we are working on is interference avoidance and what are the mechanisms one can use on a going forward basis with respect to this. And that would include guard bands, harmonized spectrum allocations to facilitate moving a services boat consisting of international allocations and also domestically; sharing of light services and issues, given the intermixing of disparate services; establish of sensing, state-of-the-art frequency, agile, cognitive, and software defined radios; database, a database approach to the spectrum to interference avoidance.

And the more we began to think about it, the issue of receiver standings and how one deals with interference at the receiver level really becomes tough.

Since Janice is on the subcommittee, I think we will also look at the enforcement issues as well. So our goal is to take the full panel of interference issues and deal with them.

I think one of the things looking forward and stepping back, as sharing of spectrum increases, one of the key things that really has crept up is the ability to avoid interference as much as defined technically and the issue of how it is define in terms of powerful interference. The issue of having certainty if you get spectrum at an auction or otherwise of what that means. It is important you end up with something you wanted.

CO-CHAIR TRAMONT: And one thing maybe all the committee chairs should keep in mind is it may be that we do a report. We don't want to make the report so broad that they are not meaningful.

MEMBER DONOVAN: Correct.

CO-CHAIR TRAMONT: So it may be

that you do a report on some subset of what you just described.

MEMBER DONOVAN: Sure.

CO-CHAIR TRAMONT: For this next one then we do a second report, we can keep the same committee together. So we will defer to the committee chairs on what the recommendations are for subsequent work or how those things should happen. But I want to make sure we get enough depth to make a contribution to the intake in this process.

MEMBER NEBBIA: Can I just -- We do have some new folks. One of the essential components coming out of any of these reports are specific recommendations for us to take on, not ones we need to like find in the text, somehow pull it out of the talk and so on. But ultimately at the end of the report, that there be specific, this is what we recommend that NTIA do and then that is something that we take on and begin to work with.

CO-CHAIR TRAMONT: This is

something we learned the last time. So there should be a section at the end that says recommendations and bullets that are very precise.

MEMBER DONOVAN: One question on that point. For example, in the process of examining this, let's assume that we found that, let's stick with something on here, the Commission needs to increase or alter the mission requirements for a certain band because of interference.

Are we to make recommendations that NTIA to recommend to the commission or how does that work? I don't want to start stepping on jurisdictional toes.

MR. GATTUSO: If I could join in and preempt the leaders. But this advisory committee is chartered to advise our Assistant Secretary. So I think appropriately, the recommendations should be to the Assistant Secretary. I field this directly because I also record how he has responded to the

recommendations and it is a little less clear how we would answer, how would we respond to the recommendations of somebody else.

So speaking from how I understand it, I think it would be best to phrase them in terms of recommendations to the Assistant Secretary. We have numbered the previous ones and reported to the General Service Administration numbers. I would like to pick up California members' proposition.

MR. STRICKLING: So let me, maybe I could just augment that. I mean obviously I subscribe to what Joe just said, which is that in addition to managing the federal use of spectrum, we also advise the President on all telecommunications issues. But it ought to be couched in that fashion, which would be a recommendation that the administration take the position of the FCC for X because they are independent and we can't tell them what to do but we can certainly appear before them with recommendations.

MEMBER DONOVAN: Fair enough. Thank you.

CO-CHAIR TRAMONT: Anything else on David's report? Very, good. Mr. Reaser.

MEMBER REASER: I will have the shortest report.

Our committee is slowly starting. When I walked into this, I didn't realize I was really walking into sort of a landmine and so that you had the new guy be in charge. And so it is sort of like handling kryptonite, I understand. But we have a new set of faces and maybe the new fresh outlook.

The thing that I would bring to this is something of a different perspective, because I spent 28 years in the federal procurement business. So I am very familiar about how impervious program managers and certainly government programs are to incentives and other kinds of things.

So one of the things I will bring to the table is some other ideas about how you

incentivize program managers in the federal government about how to deal with spectrum, which is pretty much an unknown for most program managers, to be honest with you, in terms of federal program managers. And that is across the board. They don't really find out about spectrum until later.

But what we are going to be doing is we will have our first teleconference. We are going to be on task. We have a recovery plan and all that kind of stuff.

(Laughter.)

MEMBER REASER: Just a couple of the economic stimulus package that we will talk about as a part of our incentive.

But anyway, what I would say, the first thing we are going to do, there was a lot of work that was done. The NTIA published a report in 2008 in November that had a lot of interesting recommendation. Working Group II actually addressed this in the last Commission.

So one of the first things, we are going to have the new guys and the old guys that are part of the new committee go back and take a look at that. One of the first things we want to do is sort of categorize all of that and catalogue that with some pros and cons and then add some new ideas from a guy who actually came from the side, one of the persons who was supposed to have been incentivized by all these wonderful things. So, I will bring that perspective to you and then we will talk about that.

Because there is a giant disconnect between the federal procurement process and what goes in the spectrum process. I think that Karl and others are well aware of that. And I certainly was well aware of that as a former government program director for 28 years.

So that is one of things we will try to bring to the table, maybe some new ideas, some new people. We will have our

first meeting next week. One of the things we need is to get all the contact information. Apparently now Joe told me that we are going to now get the rest of the contact information for the new folks, now that they have embedded into the system. So we will be able to start off on that. And we will remain on task and have some initial, our initial draft report out on time with some draft recommendations and so forth. But this is sort of a fairly daunting task because in some ways incentivizing government program managers to do things spectrum wise is an interesting task and it needs to be done at a fairly low level.

And most of the concepts have been way at the high level, like OMB and those kind of things. Those are just three-letter acronyms to some guy out in the field who is trying to get his credited aircraft or his radio, whether it is an FAA radio or DHS or DoD or whatever.

So anyway, that is kind of where

we are at. And any comments or questions?

CO-CHAIR HATFIELD: I guess we are in the public comment portion of the meeting. Is there anybody from the public here who would like to make a comment?

MR. FELD: I did have one question, actually.

Well first, my name is Harold Feld. I am legal director for Public Knowledge.

I was curious with regard to the question of the transparency issues that appears to have been spectrum use transparency which is critically important. And I want to, by the way, just mention that it is possible, very painfully but it is possible and I know because I have done it, to extract the leasing information for at least some of the bands from the FCC's ULS database.

But that raises the actual transparency issue that I did want to raise I was curious if this committee was addressing

is the transparency around the FCC's and the NTIA's and more broadly the federal government's spectrum allocation proceedings. There are actually specific provisions in NTIA's underlying statutes with regard to the transparency of IRAC, transparency of the federal spectrum allocation process. And I was just curious if the committee has any intention to take that under advisement and examination as well.

MEMBER MYLET: You know, the IRAC process, I mean, I really I don't think our team has been exposed to any of those meetings. I think it might be interesting. I think other people on my committee have actually raised that process of understanding how that process works, how those allocations have been made in the past, how they might be made in the future.

We are open to all types of suggestions, Harold. So if you have anything you would like to submit specifically, we will

include it in our review internally.

MR. FELD: Where would I submit those? There is obviously the National Broadband Plan, which is ongoing and open at the FCC. But with regard to sort of general submissions to this committee in specific, is there some central place to submit the comments or suggestions?

MEMBER MYLET: Would that be to you, Joe?

MR. GATTUSO: I believe so, yes.

MEMBER REASER: Darrin doesn't remember this but we actually talked about this in quite a bit of detail. This gets into the issue of internal transparency between and within the agencies themselves because one of the postulates that we had in one of our telecoms was that it is not always clear that the agencies themselves are internally transparent, in terms of what goes on.

How much does the FCC really know what is going on in terms of the licensees and

how much does NTIA really know what the functional agencies are doing with respect to their spectrum as well?

And so one of the things that we were going to take a look at was the issue of internal transparency within the government process itself. Because it wasn't clear to because you know, Karl does a great job of defending the interest of all of these functional agencies but I think he is maybe one or two questions deep in terms of what really goes on. He is sort of the head of all this stuff. And we have actually talked about that kind of stuff.

CO-CHAIR TRAMONT: A related issue is trying to request that the FCC, in the IRAC process, you all certainly know there has been talk about trying to figure out a way to have at least transparency of the parties to FCC proceedings which are currently in the IRAC process.

MEMBER REASER: There is a website

that has all of that, by the way. We check it all the time for our FCC stuff that goes over there. There are ways of doing that. It is a little, I think obtuse to look at but I think I sent you a link to that as a part of our group.

MEMBER WARREN: Can I make a suggestion? A couple of years ago Karl and I guess now it would be Eddie, but Karl did a brief on the IRAC, all the different subcommittees, what they do, you know, one committee does the licensing, another committee does the frequency assignments, etcetera, etcetera.

So even though that is all publicly available, maybe it would be beneficial in the subcommittee to ask Eddie or whoever is appropriate to come and do that brief. Because if it is really very good and opened a lot of eyes as to actually how accessible it is.

MEMBER NEBBIA: There is also a

process, for instance, for if a group wants to come in and address the IRAC, there is a specific process in our rules for allowing them to do that. Our record on that, certainly while I was the chairman is that most of the groups that wanted to come in, wanted to come in and sell equipment to the federal government. And I had to finally tell him we would like to see your presentations in advance because we are here to do spectrum management and not buy gear.

CO-CHAIR HATFIELD: Than you very much. Any other?

I do have a statement that was submitted by Mike Markison, but he is not here. And I would just propose that we make it a matter and put it into the record, however that process works. The same way Harold, I think, if you have comments, we will put them in the record.

And he raises, I don't want to -- his comments speak for themselves but deal

with the issue of how you define harmful interference. And I think that is something that we are definitely interested in. So I would propose that we take this into account as we move forward for the next sort of segment of our work.

CO-CHAIR HATFIELD: Any other public comment then?

Okay, I guess we are up to scheduling the next meeting.

MEMBER CALABRESE: There was one thing Michael recommended that we have a briefing maybe from some of our own members on radar.

The question was that it would be useful at some future meeting to have a briefing on radar. A couple people mentioned that. I just wanted to mention that because I, for one, do not understand how radars work and I am sure I am not alone in that.

CO-CHAIR TRAMONT: I think we have two topics to be briefed on. We have to have

something from the FCC on their mission and the radar thing and whether we try and do both of those at the next meeting or whatever.

MEMBER NEBBIA: We have specifically given some of the agencies heads up that we would probably like to have them come in and talk about what they do. I think specifically DoD, FAA, NASA and DHS I think were the four that we specifically sent indicators out.

CO-CHAIR HATFIELD: Okay, shall we move to the topic of the next meeting date?

We have the proposal is the week of December 8th, I think. I'm sorry. I'm showing my age here. Okay, it is February.

CO-CHAIR TRAMONT: Well then why don't we do it after the National Broadband Plan? I think we are looking at the third week in February now.

MR. GATTUSO: Mr. Chairman?

CO-CHAIR TRAMONT: So what we will try and do is -- this is not -- I'm just going

to try do all of this now. So what we need to check schedules and we will send some proposals around in the next week to ten days. But in terms of your work plans, the draft reports should all be driving toward a delivery date of that week.

CO-CHAIR HATFIELD: Is there any very major sort of problems in that week like a major convention or anything like that that anybody is aware of?

MR. GATTUSO: If I may, because we are now talking about deep into February as opposed to earlier, per our previous discussion, perhaps I could share with the group some thinking that we had at NTIA and want to find out, would this group be interested in having a meeting outside of Washington?

The reason I ask specifically is that NTIA is considering doing an event possibly on the West Coast, possibly Los Angeles in the February/March time frame,

which works really well for you, Rick. And we have not developed the plans for that yet. We are not announcing that.

If Mr. Strickling wants to have viable denial, this is clearly that.

CO-CHAIR HATFIELD: I think it is a great idea.

CO-CHAIR TRAMONT: Why don't we just plan on working through that over the course of the next week.

MR. GATTUSO: And we have had precedence in meeting elsewhere. Marty was nice enough to host us in the last cycle, as well.

MEMBER OBUCHOWSKI: You know, I would like to comment on that. It is a welcome idea. In my estimation, the National Broadband Plan is so impactful of the theory of spectrum for both agencies and that activity is going to be happening here in Washington. I don't think that kind of adjourning someplace else in the month of

February is a good idea. Perhaps the meeting after that would be more useful. It is just a comment.

CO-CHAIR HATFIELD: Anything else?

(Whereupon, at 12:09 p.m., the foregoing meeting was adjourned.)

N