U.S. DEPARTMENT OF COMMERCE

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COMMERCE SPECTRUM MANAGEMENT ADVISORY COMMITTEE (CSMAC)

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MEETING

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FRIDAY,
DECEMBER 13, 2013

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The Committee met at the U.S. Department of Commerce, Herbert C. Hoover Building, Room 4830, 1401 Constitution Avenue, N.W., Washington, D.C., at 1:00 p.m., Brian Fontes and Gregory Rosston, Co-Chairs, presiding.

PRESENT:

BRIAN FONTES, Co-Chair
GREGORY ROSSTON, Co-Chair
LARRY ALDER, Member
MICHAEL CALABRESE, Member
MARK E. CROSBY, Member
THOMAS S. DOMBROWSKY, JR., Member
DAVID L. DONOVAN, Member
HAROLD FURCHTGOTT-ROTH, Member
H. MARK GIBSON, Member
DALE N. HATFIELD, Member
KEVIN C. KAHN, Member (by phone)
MARK A. McHENRY, Member
JANICE OBUCHOWSKI, Member
ROBERT PEPPER, Member (by phone)

PRESENT: (cont'd)

CARL POVELITES, Member

RICHARD (RICK) REASER, JR., Member (by phone)

DENNIS A. ROBERSON, Member

BRYAN N. TRAMONT, ESQ., Member

JENNIFER WARREN, Member

ALSO PRESENT:

LAWRENCE E. STRICKLING, Assistant Secretary of Commerce for Communications and Information

KARL B. NEBBIA

JIM SNYDER (by phone)

PETER TENHULA

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

(1:01 p.m.)

CO-CHAIR ROSSTON: Welcome. We'll get started with the roll call I guess while we're waiting for Larry to come. So we'll go -- I guess Larry Alder -- I'm going to go through this so that people on the phone can hear, and then we'll try and get the people on the phone.

So we have Larry Alder here, Michael Calabrese is here, Mark Crosby -- yes, there you are, okay -- Tom Dombrowsky, David Donovan, Brian Fontes, Harold Furchtgott-Roth, Mark Gibson, Dale Hatfield, Mark McHenry. You're hiding behind there; I can't see you. Janice, okay. Pepper. No Pepper. Call --

MEMBER PEPPER: I'm on the --

CO-CHAIR ROSSTON: Oh, Pepper's on the phone. Oh, I see, it says yes, by phone. I just can't read.

(Laughter.)

CO-CHAIR ROSSTON: Carl? There you are. Dennis is here. I'm here. Jennifer Warren.

On the phone, now let's see if I can read by phone -- Kevin Kahn.

MEMBER KAHN: Yes, I'm on.

CO-CHAIR ROSSTON: Oh. Bryan Tramont I did not say, because it doesn't say yes or in person. I was just looking for that. Bryan Tramont is here. Pepper has already said he's here. Rick Reaser?

MEMBER REASER: Yes.

CO-CHAIR ROSSTON: Okay. Did I miss anybody around the table or on the phone?

(No response.)

CO-CHAIR ROSSTON: Great.

MR. McGINNIS: Doug McGinnis is here as well.

CO-CHAIR ROSSTON: Okay. Just for the members of the CSMAC. Oh. I'm sorry. Who was that? Oh, Doug McGinnis.

Okay. I didn't hear. I'm sorry. I blanked there on the response. Okay. We're still waiting for Larry.

CO-CHAIR FONTES: Do you have any opening comments?

CO-CHAIR ROSSTON: I do not. Do you?

CO-CHAIR FONTES: I have no opening comments, in order to save time for the meeting.

(Off the record comments.)

CO-CHAIR FONTES: I don't know if you want to maybe go to your spectrum update, and then we can -- if Larry comes in, we can stop. Oh, is he walking down right now?

MR. NEBBIA: Okay. So why don't I go ahead and do that, and then Mr. Strickling -- sorry. So let me give you a quick update on where we are in a number of different activities.

First of all, the 1695-1710 band, of course you know, is in play in the AWS3

rulemaking. The working group -- one, folks who supported our CSMAC efforts are continuing some outside discussions led by Steve Sharkey and Ivan Navarro, continuing their perfecting of the arrangements in terms of what kind of monitoring might be done, experimentation might be done, testing in advance, and so on. So those discussions are continuing.

On the 1755-1850 portion, of course, you know we submitted our letter to the Commission a few weeks ago indicating our support for the DoD proposed path forward, which included access to the 2025-2110 band as a way to provide them greater flexibility as they yielded up most of the access to the 1755-1780.

There are still going to be some operations, the satellite operations, EW type of work, and possibly a couple other things that would still be operating in there. But, nonetheless, we put forward our support for

that approach. We provided the Commission a draft allocation footnote proposal for the 2025 band, and we forwarded the reports from the CSMAC on to them with our support for them, and we also had a document that we attached related to some NASA feedback on industry comments that had already gone into the process on the 29 -- well, actually, the whole 2025-2110 analysis, but of course industry had specifically cited the upper portion of the band. So they were the things that we provided to the Commission.

I must say, in all my years of working in the government, I don't think I've ever gotten anything with such a positive response as we received about this arrangement being worked out. So I think everybody involved was very happy with it, and we're excited to move it forward. The agencies now are working diligently on their transition plans, preparing those for the January timeframe. A lot of work to be done,

particularly on the DoD side, but they are moving forward on that area.

3.5 gigahertz, of course, that we had put on the table somewhat earlier, the next steps with that, as far as I know over at the Commission, is they are going to hold a workshop on January 14th to talk about the various approaches that are being suggested there, and certainly the idea of this spectrum access system concept -- in that case, it's a multi-tiered arrangement, and so on. But there's a lot of discussions going on related to how the government information would be covered in there, so it links very closely with what we're discussing here in CSMAC.

One of the other things that came out of the road map or path forward on 1755 was a conclusion within DoD that they would not pursue the 5150-5250 band for additional airborne activities -- it was primarily telemetry activities -- which opens up the

possibility for that band heading toward outdoor operations, and so on. Right now there are limits as to the levels in that band. So that really opens up, I think in a much broader way, 100 megahertz of, you know, fully accessible spectrum.

Now, we're continuing on with the work in 5350-5470. The analytical work is still going back and forth within the ITU-R prep activities. That's where that discussion is actually taking place. I know there's been a lot of work, like we did here in CSMAC, talking about how you model densities of equipment and how the radars, and so on, in that band would respond to those things. So we have some real challenges there. We have airborne and satellite-borne systems in that band that we've not dealt with before in the DFS arrangements at five gigahertz, so we've got some additional challenges.

But I think the work is still

going on. I know you have received some feedback from our initial analysis, and some additional runs of the analysis are being made. So we're at least getting closer, I think, to a positive solution, though I can't say -- can't say that we're there yet.

5850-5925, the discussions related to that band are for the most part, if not in total, going on within an IEEE group, where both of those activities are represented. And we're seeing some dialogue between the two sides related to how those technologies might work together as opposed to just being two opposing or interfering signals in the air, but how they might actually try to take advantage of the structure of the signals on each side and solve some problems there.

So we're seeing a lot of work going forward and progress toward the goals that we're, you know, reaching for. So I think people are doing good work, and we're

excited about the outcome. That's it.

CO-CHAIR ROSSTON: Are there questions for Karl on his report?

CO-CHAIR FONTES: For those on the call, we should recognize that Larry Strickling has joined us in the meeting here.

MEMBER GIBSON: I have a quick question. On IEEE, if you're working it through the 5850-5925 --

MR. NEBBIA: I could get you the specific name or designator for it, but it's I think primarily the one that was set up -- set up by the auto -- to deal with the auto industry technology and -- that's right. So they've invited the other folks in to, you know, move that conversation forward.

CO-CHAIR FONTES: Other comments?

(No response.)

MR. NEBBIA: I got off easy.

(Laughter.)

MR NEBBIA: Oh, can I mention -- I should mention also that we are continuing

our work under the second President Obama memorandum, so we're going to be, in the not-too-distant future, putting out as part of our annual plan -- or, excuse me, as part of our annual report on these activities, we'll be talking about our plan for quantifying federal spectrum use and how we're going to try to add some clarity to how much the feds actually use the spectrum that they're in, which from our standpoint is primarily a case of taking known assignments and characteristics and so on, and adding a time of use component to it to try to give some sense of whether one percent of the time it's being used, or 100 percent of the time, so you get some grade of the availability.

You still need to do more work to engage directly, to understand how specific systems operate, and so on, to move toward shared use environment. But it will give you a sense I think of how much a piece of spectrum is used and whether geographic

approaches or time-oriented approaches might be a good solution.

MEMBER GIBSON: So it is a time-space, not just time.

MR. NEBBIA: Yeah. Well, the assignments right now, we have space information. I mean, we know where the assignments are. We know the characteristics that create some sort of contour or whatever around them.

The question's how much is that used? Some of them are -- admittedly, there are some nationwide assignments for which the space aspect doesn't -- isn't that meaningful on a moment-by-moment basis. But in the end, we are trying to link -- the time of use, for instance, on an air traffic control radar is 24 hours a day, seven days a week. That will be able to tell you in linking that to, you know, some sort of metric involving population and coverage, and that sort of thing.

Once again, we still have real challenges in providing information that gets made public, giving specific location and frequency information. So it's going to result more in a metrics evaluation of, you know, how much of this band in terms of population and bandwidth, and so on, is occupied, and how much of the time.

MEMBER GIBSON: But you could say percent of the country or some metric like that.

MR. NEBBIA: Sure.

MEMBER GIBSON: Then you wouldn't identify a specific location, but you would put the spatial --

MR. NEBBIA: Right. And our idea of percent of the country is a population-oriented metric as opposed to square miles.

MEMBER ALDER: What is that?

MR. NEBBIA: The plan itself is part of our annual report, and that's gone through an interagency review process. So

we're going to walk through that, so, you know, we're working on, you know, getting it out now. So we'll see when it comes out.

CO-CHAIR FONTES: Okay. Any other questions? Any other updates?

(No response.)

CO-CHAIR FONTES: Okay. We'll go next -- now, this part of the agenda, we're actually moving into the reports from the work of the subcommittees -- oh. Did you want to --

(Laughter.)

CO-CHAIR FONTES: I thought, I'm sorry. I thought you didn't want to -- all right.

(Laughter.)

ASST. SEC. STRICKLING: So I take note of the fact we are already 10 minutes ahead of schedule, and I don't want to do anything to disturb that.

(Laughter.)

ASST. SEC. STRICKLING: So I will

be very, very brief. I just -- hello. I'm sorry I'm late. I thank you all for your service.

We had a great discussion this morning, all of you who were able to participate in the lessons learned session, so a lot came out of that.

I'm looking forward to hearing about the new work that we are going to try to get across the finish line before the charter for this group runs out next spring.

So with that, let's keep going.

CO-CHAIR FONTES: Thank you, Larry. Sorry for that oversight.

Next, we're actually getting into the reports, and the first one on our agenda today is the Enforcement Working Group. And, Mark, are you giving the --

MEMBER CROSBY: I'm happy to. Dale, do you want me to lead off, and you can add color commentary?

Okay. Well, you have a document.

It's an activity report. We haven't been quite as diligent at meeting as often as Janice's group, who I hear has met 15 times.

(Laughter.)

MEMBER CROSBY: Just this week.

(Laughter.)

MEMBER CROSBY: We -- recognizing that people are busy, we've had like one and a half meetings. And the first meeting was sort of an unofficial get-together to share ideas. And the first -- that unofficial first meeting we sort of said, you know what would be more, I think, productive for CSMAC purposes, and for purposes of our working group, would be perhaps to focus on the bands that are imminently in front of us for sharing for purposes of enforcement policies, because it would be more perhaps productive. And Karl and others, during a call recently, agreed with that.

I don't want to spend too much time on this, although I do want to

absolutely -- as you know, the work of -- this working group has -- I mean, we have great people, and Mark McHenry and Collin Alberts is involved, and Tom Dombrowsky. And I can't do it without David Donovan, or the committee can't function without input from David and Jennifer and Mark and Steve Sharkey and everything. So, as you know, to work well, these are collaborative efforts and that certainly holds true for the enforcement group.

So we sort of weighed in. So we have our purpose and mission that was provided us, you know, initially, and then we looked at the initial objectives. And these are just illustrative kind of questions that we think that the working group should look at and help, but by no stretch of the imagination is this an exhaustive list. Probably with the great minds of this table, enforcement to me is one of the legs on the stool for spectrum management.

There's probably another 150 questions, so we're happy to have them, receive them, and input from everybody is absolutely solicited and welcome.

I want to also make it abundantly clear that this is -- I was looking at an icon on my -- for like a skull and crossbones that really would like indicate that this is a very early preliminary draft, right? But I think, Dale, a preliminary draft serves its purpose. We have a lot more work to do. This is just a first shot at the effort.

So we had, earlier in the week, a very good meeting and had very good attendance, and we had some initial observations. I wouldn't necessarily call them recommendations at this point, but observations, and that being we thought we'd focus on 1695-1710 and 3.5.

I think we also agreed that interference detection, measurement, cooperation among people that identify that

they are causing interference or receiving interference, and all those things that go towards resolution of the interference, is not enforcement.

Enforcement is an activity where professionals and people that, you know, know the stakes and are cooperative and are responsible, they can work it out. Enforcement is when you have irresponsible or other folks that enter the spectrum management thing, have all good intentions, and potentially can corrupt the objectives of the spectrum use. That is where you need enforcement, and that's -- so that's what we're working on.

And of course with the work with the TAC and what we've wrestled with, coming up with a definition of what really tips it to being harmful interference, as opposed to nuisance, is very difficult, very, very, very difficult, and it was agreed that perhaps the enforcement working group would meet --

right, Dale -- with the TAC. That is, we'd get together and share ideas or get the benefit, because in some bands interference -- harmful interference might be one thing, but in another band it is totally different. And so we need to work on those type of things in the working group to perhaps help, and we need to spend more time with the TAC, and so we agree we needed to do that.

And then I think the working group, perhaps the most substantive type of recommendation/observations that we came up with, is like in bands that are licensed -- for example, there's going to be a license 1695-1710, and you have national carriers, and they know where they have -- they know where they have their service, they know where they have their sites, they know where they use -- I mean, they just have it in the federal agencies, and they know where their users are, they know where the coordination zones are, and the databases are sort of in

place. Everybody knows one another.

In those type of instances, the enforcement function, if you will, probably could be worked out through some sort of agreement between the national carriers and the federal agencies. You don't need to necessarily create another body or entity or fund something else, because the likelihood of the risks associated with federal agencies and a national carrier who is licensed -- they are professionals, they know. They can fix -- they do it now. They do it today -- resolve instances of interference and things.

So that's -- we sort of called that -- this was David's term, which I thought was great, Track 1, you know. So when you have everybody behaving, and you know everybody's going to behave, and you know that there's going to be interference, but you know you can solve it among yourselves and stuff, that's sort of Track 1.

And then, we just took it a step

further. You may not need agreements between the carriers and the federal agencies. But it might not be a bad idea to have, just in case, just in case, to have some sort of an agreement or collaborative effort or committee or something, whatever you want to call it, between NTIA and FCC, because we know that the FCC can't go to a federal agency and go, fix this.

Right, I don't think that will work, Karl, and I don't think that a federal agency could go to Verizon or AT&T or Sprint or T-Mobile, or whatever, and go, fix this, right? So there's probably -- when it gets to that level, maybe they can. Maybe. But if it gets to that level, it might not be a bad idea to have some sort of structure between NTIA and FCC in the event they need some assistance to resolve certain issues and certain things.

And then we have Track 2, and Track 2 is when it's not necessarily licensed

spectrum. And the risks for -- we actually -- we had other terms for the bad actors and we edited all of that out. But the potential for rogue operators to corrupt the intent on some of the -- perhaps some of the bands that will be more aggressively shared, and the opportunity for devices to enter the country that are not type-accepted, where somebody as smart as Tom Dombrowsky can open it up, fix it, and remove all of the do not enter zones and the coordination zones and things.

So we can manipulate the equipment, or whatever. So those are much more difficult. Those are enforcement issues, and we sort of called that Track 2 enforcement, if you will, and we need to spend a little more time on that, and we need to study it a little bit more. We need to meet with the TAC. We need to discuss the claims-harm thresholds and things. So I guess that's a long-winded way of saying we have more work to do, and I think we are

going to probably start spending a little more time on definitions of harmful interference, harm-claims thresholds, and Track 2 enforcement initiatives, in our next couple meetings.

So that's a summary. David, Dale, Collin, Mark, everybody that's been -- Tom, that's been active in the thing, please comment further. Thank you very much.

MEMBER KAHN: A quick question from Kevin on the phone. In Track 2, as you just called it, would it be worth trying to maybe subdivide that into kind of what I call organized and kind of individual, because, you know, there's only a sort of one-off hobbyist who does the kind of thing you're describing where, in all likelihood, that's not what you're talking about, I mean, because that -- it's not -- I mean, if it is a big source, then do something special to track them down, but I think what you really should worry about is the more organized

effort to, you know, modify or, you know, alter to non-compliant a decent-sized collection of devices. And it just might be worth kind of distinguishing those two cases.

If a Radio Shack hobbyist -- you know, he is always going to be out there and isn't probably what you want to spend energy on.

MEMBER HATFIELD: And you can also distinguish between malicious and non-malicious, too. I mean, it's a person who is deliberately doing something, but they think they're doing something that's good, and then versus the person who is doing it for bad reasons and wants bad things to happen.

MEMBER GIBSON: I thought that was where we sort of had Track 2A and B, basically.

MEMBER CROSBY: That's a great idea. Go ahead, David.

MEMBER DONOVAN: Yes, I think certainly we could do that. One of the

reasons -- and, Kevin, I think you're right. I don't think the issue is to go after the -- you know, the Radio Shack hobbyist. But this experience actually was born, frankly, from the FM radio band in New York City, and which it is not a one-off. Today, I may have more illegal radio operators in New York City than I have licensed legal ones. It is a business making a lot of money.

The scary part of course is that these guys are sitting and interfering to stations that are a fundamental part of the EAS system in New York. But to really get at it is incredibly complex. You can take the FCC truck and find the illegal operator, but that's just the first step. That's the easy part. You find the transmitting antenna, now you've got to go find the actual illegal operator.

And that's not easily done, and the FCC's enforcement powers in terms of having to go to the U.S. Attorneys' Office,

having to get warrants, there is a lot of stuff behind that that as a result overall lends to a lack of enforcement.

So why do we care about that in this band? And I think that's a fair question. It seems that the more we open up bands for sharing with federal systems and commercial systems, and the more those commercial systems become popular, either with receivers or what have you, the greater the probability that we actually may have bad actors. And the current enforcement scheme at the FCC was really designed to take care of folks who want to play by the rules, and maybe an occasional kind of bad guy, but not someone who truly wants to get into this.

And so I think, you know, particularly because of the concern with federal systems here that it is worth a look to see what recommendations we can make to try to facilitate the ability of the FCC or, you know, federal government, however we work

that out, to move and move quickly.

I think earlier, for example, Janice, you -- like a shot clock or something of things to -- because, you know, we're moving towards -- everyone knows we're moving to a spectrum-based economy here and -- but the FCC's enforcement -- spectrum enforcement approach is -- I don't think has really anticipated what is going to happen in the future.

And it's no fault of the FCC. This is a resource issue. The folks over there do a phenomenal job. They work very, very hard. But if you saw what they have to do on a day-to-day basis -- for example, to go after one unauthorized operator -- the New York office needed six armed New York City policemen.

I think we want to at least be prepared, as we begin to open up these bands for greater and greater commercial use, to have a system in place that can move and move

that in an expedited fashion.

So I think that's what was --

MEMBER KAHN: I'm good with that. That would go into my first category, although you're right, the termination of one-off then is probably wrong, because there you have a one-off who is doing systematic damage. Probably if you guys think about it, you can find some better terminology or maybe there's three categories.

I just think, you know, for discussion purposes separating out, you know, kind of the categories of user in this second track will be helpful.

MEMBER CROSBY: Sure. But at the end of the day, if they cause interference to federal agency operations, they're all bad, right. No matter how -- well, I didn't mean it. It's still an issue. And vice versa.

MEMBER DONOVAN: I think, Kevin, a lot of those issues, whether they meant it or didn't mean it, get into sort of the

Scienta requirements of various aspects of the law. But I agree with you; we do need categories.

You know, a high school kid, working at home and figuring something out that happens to interfere, we don't want to waste time going after him. But if you've got, you know, hundreds of folks who are doing a one-off, and it has become sort of a system unto itself, then I think we have an issue.

CO-CHAIR FONTES: Can I just remind everybody to identify themselves when they're speaking? Both for the screen there and also for those on the call.

MEMBER DONOVAN: But, Kevin let's talk -- this is Donovan. Let's talk more on that, because if you have some ideas and categories, yes, let's do it.

CO-CHAIR FONTES: Janice? Oh, I'm sorry.

MEMBER OBUCHOWSKI: I thought the

overarching point of view here that most people want to do right, and we expect them to want to do right, is exactly the way to go, because, frankly, you know, it's going to be increasingly complex, and we can hope that government gets all the right tools to do complex analyses and enforcement, but we can't predict it.

So, you know, number one, that ought to be the priority. I am a little -- you know, each of these questions sort of precipitate a taxonomy. How do we break out the various, you know, issues? And with enforcement, I think the goal there remains a tough gray area between the good guys and the flat-out bad actors.

Look, I'm not saying that Nextel was a bad guy, but you look at the whole re-banding thing that happened between public safety and Nextel, and the fact that this dragged on and cost lots of money. And, you know, the point becomes, okay, they weren't

doing anything wrong, but they were maxing out their utilization of those bands, and, frankly, it was not in their own enlightened interest to back off. And ultimately they got a preferred result, better spectrum by pushing matters to the limit, and then the government says, well gee, it's not wrong, but it's painful, it's difficult for public safety. Why don't we re-band? And, you know, it worked out to be a nice little windfall for Nextel and a headache for the government.

Now, that's just a case. But, you know, I saw that in, you know, Part 68, that band, you know, among our licensed. Most people are mature, most users are mature, want to experiment. But some people max it out. It's in their interest not to have expensive equipment that is very refined. And I don't know what we do about that gray area, but I believe it exists and I believe it is going to become perhaps even

more of an issue because spectrum is extraordinarily valuable, as we all know. And in a sharing environment, if you get a leg up, you know, you're in good shape.

CO-CHAIR FONTES: That was Janice Obuchowski. Bryan Tramont?

MEMBER TRAMONT: Thanks, Brian. I just want to respond to Janice's point. I do think all of this enforcement -- effective enforcement is predicated on well-defined property rights. That's fundamental. If you don't have well-defined rights and rules, there's nothing to enforce.

And so I do think undergirding any conversation about 3.5 or these other issues is clearly-defined rules by the agency, so that there's something to enforce. And only then can the resources that David talked about, and other things, you know, truly and effectively be deployed. I just think it's fundamental to any effective enforcement regime.

CO-CHAIR FONTES: Dale? Dale Hatfield?

MEMBER HATFIELD: I could -- I could talk way too long about this topic, because it's essentially what I've been thinking almost exclusively about. But let me say a couple of things.

One is the importance of automation. And I was looking at the flow diagram the database working group has here, and what I'd really love to have is another box over here that's associated with enforcement. So that how does the people who are doing spectrum monitoring and finding bad stuff, how does it feed into the SAS system, or whatever you call it, to be able to shut things off, and so forth. And I think in the future we probably need to -- I think this has been discussed before -- we need to do that quickly. If you're getting some interference with an important national defense stuff, we need to do it fast, that

calls for automation. And so we need to flesh out these diagrams and show the interfaces into the enforcement process.

The other thing is in -- with so much pressure on budgets here in Washington, even in that case where people are going to work things out voluntarily, it may require resources of going out of the kind that Mark -- going out and actually doing some measurements, and so forth, and that's expensive. And I just was riding around in one of the FCC vans day before yesterday, and, you know -- and it's really kind of state of the art. It's sort of neat stuff, but it's not made for a dynamic spectrum sort of thing where you have these complex digital signals, and so forth.

So realistically, if we're going to be able to trace down, find the sources of this, we're going to have to have more sophisticated equipment. And, quite frankly, the training of the people driving the cars

around, trying to do this, it's an entirely different situation than in the old days. And I'm an old man, if you put the earphones on, you could listen to this stuff, you know. It was AM or FM. It was pretty easy to do. Now you've got these complex digital signals, and so forth, and it's a much different environment.

It's a long-winded way of saying that -- you know, who's going to pay – who's going to pay for that troubleshooting? There's no bad guys. We're just trying to figure out, something's gone wrong, let's try to figure it out together. And that has implications for the type of equipment. There's implications for what you do, Karl, on your side in terms of what you can do in monitoring and so forth, and what the FCC is doing in terms of monitoring, and how is that coordinated across these different -- I promised I wouldn't talk too long, so I'll leave it at that.

But this is an area that we really, I think, need to spend some time, and there is a lot of need for coordination between this group and the FCC and the TAC, and so forth, what's going on there.

CO-CHAIR FONTES: Dennis?

MEMBER ROBERSON: And I guess I'd just add on -- Dennis Roberson here. Just add on a little bit to what Dale put at the very end. That's why I flipped up my card and then flipped it back down, because this coordination issue is one that we have gone back and forth on quite a bit.

As we start to share these bands, especially -- and we're going to get into this with the SAS kind of system -- with the mix and match in a spectrum -- government, commercial, unlicensed, licensed -- it gets to be very messy. So just another dimension to what we have already been talking about.

And who has what responsibility in that regime is really, really tricky. So

the work between NTIA and FCC in sorting this all out is going to be really, really important. And Karl's nodding his head knowingly, because --

MR. NEBBIA: Karl Nebbia. I can speak for myself.

MEMBER ROBERSON: I'm glad.

(Laughter.)

MR. NEBBIA: A couple areas that I think it's probably worth your considering and me being clear in the response. We're now moving into this environment where we're going to be creating potentially a lot of new kind of sharing arrangements, and part of the question that comes up is, is enforcement all about fixing or correcting interference issues? Or are there going to be pieces of, you know, people stepping up and saying, well, I'm not getting interference yet, but so-and-so is not going by the agreement that was reached. We know they're operating in this area. The Commission said no, they

weren't supposed to be. So I think we're -- or ultimately is it always going to be driven by, if I don't get interference, I don't complain, and so on. So I think that's something to -- because we're going to get more and more of these complex arrangements.

For instance, 2025-2110, we are going to end up with an MOU between DoD and people from various components of the broadcast community or cable community, and so on. The question gets to be, is there going to be some -- certainly, the Commission or NTIA going to be called in to resolving differences that were to come up. Hopefully not. Hopefully it's something that's self-working, and so on. But this whole new area I think, you know, raises questions.

With respect to certainly, as we have seen in some of the radar bands, all it takes is one operation out of whack in some area, put strobes on the radar, you go out there particularly in a dynamic environment

where they may be sensing one another, and you take -- you get the Commission to go out and correct that case. What we've seen, at least happen at five gigahertz, is that the other devices now see that as open spectrum again, after we have eliminated the interferer, and we find their devices responding by entering right back into the same space we just chased somebody out of.

And that's kind of a very fluid environment that we've got to work with. But even one person, one device that's not operating properly, can in fact cause, in the case of five gigahertz, the FAA to decertify a wind shear radar, because they couldn't get rid of the strobing that kept popping up in the area. It wasn't always from the same person, but it was there.

And the last thing I wanted to mention -- this idea of enforcing through automation. I think in the 1695 band, monitoring is going to be part of what --

well, certainly part of what they've been talking about. So the question that I wonder is, do the monitoring devices, that sort of thing, get tied into the automation in a way that by what they are seeing they are automatically telling people you've got to -- you have to stop doing this or that or shutting down certain signals, and so on. Or is the monitoring just the trigger for us to call the FCC and have people run out there and chase folks down again? So can we realistically set up an automated way of kind of enforcing the rules to keep ourselves out of trouble?

CO-CHAIR FONTES: Okay. Dale had his card up and down and up and down. It's up now. And then we'll go from Dale to Michael.

MEMBER HATFIELD: I'll just make a really quick -- somebody said, much brighter than me, that a lot of the enforcement now is complaint-driven. It's

like going to the emergency room of the hospital. And what's not being done enough, perhaps, is -- and the reason I hesitated to say this is I can't pronounce the word -- epidemiologist. You know, you get 100 people show up at the hospital, and you treat each one, and you then -- who picks out the patterns and says, hey, there's something bigger wrong?

I think, Karl, that goes a little bit to what you're saying. We need to do some of those type of studies, which may indicate, hey, there is something -- it hasn't caused major problems yet, but you can see it in the aggregate that it eventually may do so. I think there is that aspect that is an important part as well.

CO-CHAIR FONTES: Okay. Michael?

MEMBER CALABRESE: Yeah. I would just echo I think that same sentiment as I think Karl was suggesting. You know, a major contribution of this committee could be to

think about certain ways we can I guess you might call it do pre-enforcement. In other words, do enforcement that heads off the need for complaint-driven enforcement.

And so thinking about -- for example, Karl mentioned the terminal Doppler, you know, weather radars, you know, the thing that happened there. Well, sure there is -- in some cases they were a bad apple. You know, some of these are trying to, you know, turn it up too high.

But also, there is equipment being certified that has maybe a simple switch that allows it to operate in an unlawful way in this country. And so maybe equipment should not be certified for sale in this country that is so easily used incorrectly. And so I think device certification needs to be, you know, a real enforcement issue.

MEMBER CROSBY: Mark Crosby. We agree. But, again, I want to make sure that

I don't blur what the objectives are of our working group. Finding interference is one thing. To me, that's not enforcement, unless you all tell me we want this working group to work on methodologies, to find interference, and to resolve interference. That's not enforcement to me.

You know, enforcement is when you have all of that in place, and you have procedures and processes and automation, and all this kind of stuff to make sure that everybody cooperates, that's great. Enforcement comes in when somebody goes on to care about all of that, and they purposely and maliciously agree, and then you need an enforcement arm.

Maybe I'm oversimplifying it, I don't know. Maybe not.

CO-CHAIR FONTES: Go ahead. David Donovan?

MEMBER DONOVAN: Yeah. I think both thoughts are right. I mean, that's

exactly what enforcement is. I think the one area where we have to -- may have to begin to look at enforcement is in the device area. I mean, what happens when you have an entity, whether it's offshore or what have you, who continues to intentionally sell equipment knowing that it's not type accepted or -- that's a bad apple.

So our -- I mean, to Michael's point, at some point we are going to have to deal with that as an enforcement issue, and that is sort of kind of a new area I think in terms of, you know, following through and how we deal with that, because that becomes a resource question again. So I think both points are valid.

CO-CHAIR FONTES: Okay. Harold?

MEMBER FURCHTGOTT-ROTH: Just quickly on the difficulty of defining what is malicious in the enforcement area. There are a lot of times there are real disputes that involve real enforcement that don't

necessarily involve malicious activities. And I think the most pronounced one, which we haven't discussed today, was the LightSquared episode over the past few years where -- this gets really to Brian's point about defining the property rights very precisely. You wind up with a great mess. I don't know that there is any malice on the part of any parties there, but it certainly is, in my view, certainly an enforcement issue.

CO-CHAIR FONTES: Okay. Janice?

MEMBER OBUCHOWSKI: Janice Obuchowski. Just a quick comment on Mark's enforcement point. I generally agree that we want to try to narrow this, but, you know, enforcement gets me back to sort of parenting. You have --

(Laughter.)

-- which I haven't been wholly successful at.

(Laughter.)

But what I have learned along the

way is that if I define up front the expectations, and I cite the consequences which can potentially be painful, enforcement becomes less of an issue, because this duality that you have set up here doesn't -- getting back to my original point about where there is very big money on the table, opportunities to take a lead to the market, people may not be, you know, bad actors. They are not the rogue broadcasters in New York, but they are people that understand that if they push things pretty hard they may just get a leg up. It has been known to happen, you know.

And so I would at least make a little pitch for a linkage with very committed initial expectations.

CO-CHAIR FONTES: We are going to have to move on. And there is one other little footnote to add into this enforcement activity or enforcement working group, is that if there is ever a need to rely upon

state, county, or local enforcement agencies to help in the process, you may soon find out that all of your well laid plans is perhaps fiftieth on their list of top 10 things that they want to engage in.

And so just FYI on that one.

CO-CHAIR FONTES: Okay. So we'd like to move on.

CO-CHAIR ROSSTON: So moving on to transitional sharing, Mark is putting on his glasses and getting -- are you taking charge?

MEMBER GIBSON: Yes. Well, "taking charge" is a strong word, but I will give the brief.

CO-CHAIR ROSSTON: Okay.

MEMBER GIBSON: I think if I use Mark Crosby's definition of "meeting," we have met --

(Laughter.)

-- we've met one and a half times as well. Tom and I and some others had a

discussion as to getting the group kicked off, and then we did have a call a couple of weeks ago. I will say that, you know, picking up from a bit of a discussion we had this morning, we suffered a little bit from CSMAC fatigue getting this one going. And, you know, the bottom line is it sort of transitions from the work we had been doing before, hence the name transitional sharing.

So there is a bit of inertia and momentum that we have sort of picked up and are moving on with, and so that is what you are going to see here. And what I'm going to do is sort of describe what we're doing and our plans of action, and we are continuing to work it.

One of the things that we thought was important was to have a common taxonomy, definitions, and it occurs to me that we don't have a definition of transitional sharing, because I think as we learned from the previous CSMAC work, you know, different

entities can have different understandings of what transitional sharing might mean.

But what we do have is -- actually, we have it there. I don't even know what I've got in my own brief. So we have a definition of transitional sharing.

(Laughter.)

It has been a long day. But we also need to define these zones.

In the previous CSMAC work, we had protection zone, we had exclusion zone, we had sharing zone, and we all agree that we need to be more precise as we do this work, and so we need to define both of these definitions, and any more that we think we need to do.

What we did do is define their areas of study. These are the things that we're working on to try to get some definitions and work around. And, again, a lot of this picks up from the work we did previously in previous working groups. But

when we say about how to define -- so here is the list, and it's -- this is actually boiled down out of a set of questions that I think were -- kind of came from NTIA, we added to, but rather than put the specific questions here, we just thought we'd define them as areas of study.

So the first thing is, you know, how do we define the protection zones. The reason that's important is because the protection zones begin to define, if not define totally, when you have transition sharing versus when you don't. In other words, if you're operating outside of a protection zone, you don't have transitional sharing, where in fact if you're operating inside a protection zone, and the system is going to be relocating, that is kind of the definition that we might agree as transitional sharing. So we need to agree on how we define protection zones.

The other thing we need to agree

on and study is how we effectuate the coordination. We have a lot of lessons learned from AWS1, and then just general, those of us that do frequency coordination can apply. But it may be different in this instance as we apply it to AWS3 and other areas where there will be sharing, transitional sharing. And there is a flow diagram at the end that is -- again, begins to set it up.

We also -- that kind of goes with the first bullet -- how do we develop the analysis methodologies and tools? We kind of got hung up in the previously CSMAC work on how we do that, and so this group wants to take a little more deeper dive on those specifics, the methodologies and tools.

So, for example, what might be in methodology is, do you do a Monte Carlo simulation as opposed to just a point-to-point type of analysis? And what are the merits and benefits of each? And how do you

do that? What tools do you have at your disposal? Do you use MATLAB? Do you use commercial products? You know, those types of things.

The DoD portal is kind of -- it's in the center of this, and that is sort of an abstract concept right now because the DoD portal was used primarily for the DoD but not exclusively for the DoD. In the AWS1, Justice used it as well, but they didn't use all the aspects of it. And so the concept of a portal for information-sharing is important to this, and so we are going to use the DoD portal as an example and we are going to try to expand on that for the rest of the work.

Again, we talked about this this morning -- obtaining data. How do we get data on these systems? How do carriers share data on their systems? How can we be assured that these data are shared -- you know, protected? How can we just be comfortable that we are sharing data openly? And this

isn't necessarily data on systems; they is also data on interference parameters, operational, all that stuff.

Market prioritization kind of begins to define where we start and maybe where we end up. So the idea -- again, this is taken from what we did in the previous CSMAC -- is if you have a whole mélange of activities, how do you begin to prioritize it in terms of the carrier's primary interests?

How is this resourced? You know, we ran into this as well. We heard from DoD through the previous CSMAC work that they did a lot of this work taking it out of Hyde, I think we heard from Fred. So we need to talk about how this is resourced and how we make sure it's done with appropriate resources.

You know, for example, the Act talks about -- Spectrum Act talks about how work can be accomplished to support transition plans before the auctions occur. What if this falls under that? So we need to

talk about that.

And, finally, we need to talk about the roles of every actor within the whole effort. So that's what we're studying.

The approach, you know, is before you; you can see it. There is a lot of lessons learned from previous work. AWS1 I mentioned. There is a lot of work done from the voluminous work that was done from the previous CSMAC work that was filed on the record. So we are going to go back and look at a lot of that.

There was a whole lot of sharing work that has been done in other areas, and so I think we can take that on as well, again, from AWS1, but in other areas when there is transitional sharing.

Take, for example, the PCS days where there was transitional sharing before the microwaves were relocated. And on the other side of the AWS1, in a 2.1 gig band, there was all kinds of transitional sharing.

And then there is lessons learned from there.

In the context of sharing information, the whole concept of trusted agent really needs to be investigated. I'm not sure we'll fully understand it, but what we will do is we will try to surface key issues and key points that need to be identified, you know, for transitional sharing. Larry is going to talk about that, and the database work as well.

And then, finally, you know, again, this kind of could dovetail with enforcement, but measurements to review techniques and results. It is great to have sharing methodologies, technologies, data, but it really can be substantiated by measurements. And we learned that a lot in the previous CSMAC work, that there were a lot of measurements that were done that could support the effort.

Finally, the last page is sort of a diagram that we used, Comsearch used, in

the days of AWS1. So this sort of begins to set up sort of a taxonomy of process, if that even means anything, for how transitional sharing worked in AWS1. And we can use this as sort of a road map to pull it apart for this effort.

And we're not just studying AWS3 here. We may be studying, well, other bands, five gig, 3.5, and others. But at least it begins to lay down what has to be done in the concept of transitional sharing.

And so that's a quick brief on transitional sharing. You know, we will plan to meet more in the new year, and we will have more work for the next effort.

And I -- some of my co-workers -- co-members are here, Tom and others, and Karl. Any comments, guys? I guess not.

CO-CHAIR ROSSTON: Are you guys going to meet one and a half more times?

(Laughter.)

MEMBER GIBSON: That would be

three total.

CO-CHAIR ROSSTON: Are there other --

MEMBER GIBSON: Karl has got --

MR. NEBBIA: Karl Nebbia. I just wanted to ask a couple questions. First of all, as I recall in AWS1, we essentially had no -- other than there were some designated permanently staying sites that you guys had to work around, or the community moving in had to work around, there was no other designated protection zones, right? I mean, all of the other operations, fixed lengths, all that kind of stuff, there were no protection zones laid out there.

So as we talk about transition sharing as a general concept, there may in fact be protection areas and there may -- there is a very good chance that it is never brought up. It is just, as you begin to do what became known as early entry, when of course to those who are entering early they

thought it was entering on time, and everybody else was moving more slowly, you know, so -- so that certainly was I think a place where the federal agencies had to change their mind-set, that when they laid down that they were transitioning out in three years or five years, or whatever, it wasn't they had three years or five years to -- nobody was going to bother them. It was going to start right away, and so on.

So transitional sharing may in fact be supported, and I guess part of the question here is, should it, in general, be supported by protection areas that lessened the amount of that day-to-day interaction that has to go on as people are moving in. Is it just better for everybody to have, you know, laid out protection areas that maybe ultimately become part of the transition plans, that they are protected in this area for a certain period of time where they are going to be left alone in that area, or what?

So I think it would be certainly helpful to get a sense of whether -- you know, of whether that is useful or not. And I think another aspect is, as we develop a portal, which we may end up doing again, is it absolutely critical that everybody understand the analytical methods are used in those -- in that device? Because I think that was a point of controversy last time, that people didn't believe or didn't understand the outcomes that DoD was giving them.

And then the last part, I would appreciate -- and I think this -- your diagram here maybe begins to help people understand the resource requirements of this kind of sharing, because at least as I saw it, this type of analysis that was looking essentially cell by cell, base station by base station, was being presented to the agencies for their feedback. So they might be given a map where there are 100 or 200

locations on it around a major city, and they are asked to come back with, which of these points would we make green, and which are going to stay red, and tell us when they should be turned to green.

So it was a very complex interaction. It was not a simple yes or no. It was very complex. And I think anything that you can say in that about the kinds of resources that are necessary would -- you know, I realize in this current transition planning it may be too late for that, but ultimately agencies need to be able to look at, what is it going to take for us to actually walk through this when people start moving in and calling us and asking for these kinds of analysis.

MEMBER GIBSON: Let me just make a few comments. This is Mark Gibson again. On whether we need protection zones, we can talk about that. I think the general feeling of the group -- and I don't mean to speak for

the group, because you haven't gotten into much, but I will speak for the group.

(Laughter.)

And the members of the group can speak for themselves. You know, the concept of protection zone sort of begins to define the rules of engagement, or at least the areas of engagement, you know. You may be able to have transitional sharing without it, of course, but, you know, the concept of protection zones came out of the analyses that were done around several of the equities that -- several of the equities from the feasibility analysis.

You know, for example, take microwave. If you have a microwave system that may be relocating in a period of time that would require sharing, you know, you may not need a protection zone, but what you're going to need is a coordination zone. And so we need to kind of define our taxonomy, so that it is broad enough to accommodate that,

because we need to know when you broach the whole concept of transitional sharing.

And it's -- in a situation where, for example, you -- and we ran into this with AWS1, if you have classified information, everything was transitional sharing. You know, you sent the data, and, as you said, you run the analysis, you get back red and green. And red is too many, so we go back and, you know, there was all this interaction.

So does that define transitional sharing? Is that long-term sharing?

So there needs to be something sort of a priori that defines what it is you are doing. So that is either a protection zone or it's something that defines rules of engagement.

Now, with respect to transition plans, I thought that something like area of operation or something like that was part of it, and so that might end up being what it

is. So that's on the protection zone.

On the DoD portal, I think we would agree that the methods behind the scene on the DoD portal need to be understood, and that is part of what we are trying to do is to create an approach where there is mutual understanding that when you begin to do the coordination you have some assurance -- not assurance, but some understanding that on the other side this is what's happening. So that you are sort of trying to obviate the back and forth that it takes to get from red to green.

So, for example, if you submit PCNs, or coordination notifications, and there is an understanding that -- of how the process worked, that when the answer comes back no one is guaranteeing that everybody is going to like it, but at least there is better understanding of how it -- how that happens. That really didn't occur in AWS1.

And, finally, I think everything

we are talking about will affect resourcing as well, and so I think we will take what you mentioned about resourcing and mention -- see that in the context of the diagram.

CO-CHAIR ROSSTON: Tom?

MEMBER DOMBROWSKY: Yeah. I just wanted to sort of react to the lack of protection zones the last time. And I think that worked better last time, primarily because we were primarily talking about terrestrial services for the feds. This time we are talking about aeronautical, and I think that makes this much more complicated.

And, frankly, you know, based on the preliminary efforts that we did in the Working Group 5, for example, protection zones we're talking about there are enormous. So if we actually map that out and it actually shows the whole U.S. is a protection zone, that actually does help to some extent to tell people ahead of the auction, hey, until these guys move, you're not using this

spectrum.

So I think with this aeronautical wrinkle, if you will, with the use here at 1755 to 1780, the need for protections are at least to explore. And, frankly, from Working Group 5, I think we got to the first step of figuring out what the protection zones are. I don't think we actually finished. And one of the hopes I think we had was that we would continue that work to sort of drive to something that, you know, the government agrees to as well as the industry agrees to, that sort of says, if we're in here, in this area here, we've got to be talking. If we're outside that area, maybe we're okay.

CO-CHAIR ROSSTON: Are there comments or thoughts? Anyone from the phone?

(No response.)

Okay.

CO-CHAIR FONTES: Okay. Next on the agenda is the short titled working group, General Occupancy Measurement/Qualifications

of Federal Spectrum Use.

MEMBER CROSBY: Quantification.

CO-CHAIR FONTES: Did I say -- what did I say, qualification? I meant quantification. Thank you, Mark, for that clarification.

Okay. So --

MEMBER GIBSON: I think that's mine as well.

CO-CHAIR FONTES: Yes, I think it is.

MEMBER GIBSON: Again, using Mark's definition of "meetings," we haven't met.

(Laughter.)

Even with Mark's definition we haven't met.

(Laughter.)

The issue has been, again, I think there is a little CSMAC fatigue going on. The other thing I think -- and I have talked to Mark, the other Mark -- well, there

is actually five Marks around this table I think -- Mark McHenry. What we are going to do is commit to getting activity done in the new year.

There is -- one of the things we wanted to wait on was the comments on the notice of inquiry and to see what that indicated. And then, we just kind of need to get focused on it. So we will have met, you know, at least one time in the new year. So I apologize. Like I said, we had CSMAC fatigue I think.

CO-CHAIR FONTES: Okay.

MEMBER GIBSON: Any comments?

MEMBER ROBERSON: Dennis Roberson. Something that I'll make you aware of, I am part of your group, but --

(Laughter.)

-- that hasn't met. But there is a forum that is being set up in the context of DISPAN. Are you aware of that?

MEMBER GIBSON: I am.

MEMBER ROBERSON: Okay. So WIZARD is providing a focus in this very area, so we will have to keep track of that. And I discovered -- or was given the opportunity to chair that particular group, so we'll have to make sure to pull that in.

MEMBER GIBSON: We will meet. I can commit to that.

(Laughter.)

CO-CHAIR FONTES: And that was Mark. That was the other Mark.

(Laughter.)

CO-CHAIR ROSSTON: Larry, are you Spectrum Management via Databases?

MEMBER ALDER: Sure. Yes. And we actually did meet, and we actually met multiple times. We kind of got off to a fast start, took a little bit of a break, and then got back together. I want to thank the -- it was a pretty active membership -- David Borth, Janice. We had three Marks -- Mark Gibson, Mark McHenry, and Mark Crosby -- Rick

Reaser and Michael Calabrese were all contributing pretty actively to the discussion.

So the topic that is on the table is, how can sensitive and government classified operations and information be included and protected using a database driven approach, especially when the database might be doing things in real time.

So to set the context for everyone here in the room, the idea is generally you have common government systems, you have commercial systems, and the commercial systems want to know when they operate. They query some kind of system, sometimes called a database or now an SAS system. That gives them information about what frequencies and what times they can work, the challenges, well, how do we do that if that information is in fact classified or sensitive.

We did prepare -- well, as we

started, we decided to take this topic on in two contexts, one in general, but also the group agreed that it would be productive to look at a specific case, and we agreed that the 3.5 gigahertz band was probably a fruitful area.

So the progress to date is we did some level setting, and the first level setting thing we did is we kind of created a diagram which is included in your materials, just to get everyone on the same page as to, what do we mean by spectrum management with a database, who the players are and what the entities are. I'm not going to really go over that diagram today, but if you have questions you can see me and we can talk about it.

We also discussed a little bit -- and Rick Reaser led this -- how is sensitive and classified information handled today, even though it might be a manual process? And this is something that I think we still

need more work to deal with.

The group agreed that our charter is not to determine what information should be sensitive and classified, but to determine how to deal with it. But the problem is, if you don't actually know what information is sensitive and classified, it's hard to design something. I think the classic example had been in the 3.5 gigahertz band ships in the port.

Well, you can see the ship is in the port, but we have heard some people say that that is sensitive information, and we couldn't -- you know, therefore, might not be able to include that information in such a database system.

So those types of details get sticky, right? We don't want to tell you that that shouldn't be classified information, but the working group kind of needs to go deeper there, and understand what is the boundaries of sensitive and classified

information. And what we kind of came to -- a conclusion -- is one of the best ways to handle that would be a case study.

So we are coming back with kind of an ask here, which is to have some help from the NTIA to engage in a case study, perhaps in the 3.5 gigahertz band, perhaps looking at the SPY radars that are on the ships, engage with the DoD, so that is kind of the ask that the working group is coming back -- instead of trying to gauge it in general, we just felt that that might be intractable, and so that -- we'll put that on the table.

We also looked at some other bands, similar problems that occurred. Mark Gibson took us through the 70 to 90 gigahertz band where they used kind of a trusted agent model for dealing with sensitive classified information. The idea there is the request comes in, some black box agency returns kind of a yes/no answer, so that's a tool in the

toolkit.

And we have developed kind of a preliminary document with some ideas on how to do this and that generated some insights. I will walk you through a few of the insights that the group has done. And none of these insights I think are revolutionary, but it is good just to share with everyone.

The first insight is really that the information required to protect the federal primary users is probably substantially less the information that needs to be shared in order to protect the new incumbent users. For example, to protect the federal primary users, you probably only have to share receiver characteristics. You don't have to share transmitter characteristics.

In the case of sensing, sensors need to know the transmitter characteristics. But in the case of a database approach, the transmitter characteristics become less relevant, and the only thing that is really

relevant is the receiver characteristics, because the database tells you what region. But in order for the database to define that region or that time, it needs to know receiver characteristics.

So there is the potential for a lot less information to perhaps need to be shared than, let's say, in the case of the DFS bands and radar signatures, and things like that.

The second is information needed for effective sharing and how to handle it will be more difficult in some cases than others, and this gets back to the case study. There is going to be some cases where the information is just so classified and sensitive that there is no way there is going to be an ability to share in that scenario.

So that is something that keeps getting thrown out as a roadblock, and we just think that, hey, let's just deal with the cases where the problem is solvable first

and not deal with the cases -- and I think we cited here in the 1755 megahertz Working Group 2, you know, video surveillance is a particularly tough case where we don't think that there is probably a sharable solution.

So very simple conclusion. Let's focus on the solvable cases.

The third insight is, for many cases, the protection can really be achieved without sharing the detailed technical parameters of the systems. We don't necessarily need to know modulation and how the receiver works. There is abstractions that can be useful in doing the sharing, such as, okay, tell me -- set up like a geo-fence, an amount of spectrum flux that could pass across a geo-fence or something like that, so you can abstract the information.

And, again, the details are to be worked out, but we do think there is a lot of opportunity for effective sharing using that. So the areas of study that we have based on

those insights are we really want to focus on these black box protection models.

We want to focus on two aspects of it. One, what is the minimum essential information that is needed to have any sharing? If you don't -- if you can't share anything and there is no effective sharing, you haven't met the minimal bar. So we want to focus on that.

But then there is also the more efficient -- if you could share more information, then you could pack denser and tighter, have smaller zones, so we also want to look at, what is the desirable information? So kind of separating the minimum needed from the desirable.

A couple of the ideas that are on the table right now is to protect in-band as this power flux idea, the idea that you protect things by saying, what is the total radiated energy? I think Dale uses a different term -- the harm thresholds across

geo-fences, that these devices need to get protected.

We have talked about filter responses, and we have talked about trusted third parties. So the next steps that we are coming forward with is, again, this idea of an NTIA interaction on the 3.5 gigahertz radar, shipborne radar.

We also -- the group -- and I'll let the other members of the group talk about this, because it's not area of expertise -- but the group felt it might be good to interact with the OSTP.

And I think the idea is there is always going to be a balance between -- this gets into the balance between the information needed to share and the quality of the sharing, and what is the escalation, how does -- the OSTP can help in this tradeoff. So the group felt like that interaction with the OSTP might be appropriate.

And then we really want to refine

the work. We have some documents. The group felt they weren't ready to share prime time yet. But we have some documents that we want to distill down into some actual recommendations.

So with that, I will turn it over first to the rest of the members of the group, and then for general comments.

CO-CHAIR ROSSTON: Does anyone --

MEMBER ALDER: Other members?

(No response.)

I guess general comments.

CO-CHAIR FONTES: Dennis, and then Karl.

MEMBER ROBERSON: Yeah. I just have a question first. I'm not sure what the role of OSTP might be. But good people -- Tom, we love Tom -- but what did you envision OSTP doing in this context?

MEMBER ALDER: If one of the other group members wants to take that, I would love it. Otherwise, I'll try and best

distill it from my memory.

MEMBER GIBSON: Well, let me take a stab at it. This is Mark Gibson. It wasn't my suggestion, so I will disclaim any responsibility.

(Laughter.)

CO-CHAIR ROSSTON: Everybody is backing away from this one.

MEMBER GIBSON: What it said was that, you know, this is under the concept of the Presidential memo, trying to find more spectrum, and the White House needing to have some role in ensuring that all actors act responsibly. I think that's more the context of it. I forget whose suggestion it was.

MEMBER ROBERSON: I think OSTP is lead on the -- getting the answer to the question of how to handle the confidential information in the second order.

MR. NEBBIA: Right. It wasn't -- I'm sorry. This is Karl Nebbia. It wasn't specifically asked in the context of

operating an accessible database, but in general they are looking at that.

MEMBER CALABRESE: Yeah. This is Michael Calabrese. I had actually suggested it.

MR. NEBBIA: Oh, okay. Sorry.

MEMBER CALABRESE: In terms of certainly an impression that -- you know, in following the PCAST recommendations, and in line with the President's executive memorandum in June, that OSTP has taken now a new and significant role in meeting the spectrum management team at the executive level.

And so somebody else is going to have to referee. You know, ultimately Commerce Department is, you know, I guess a department of equal, you know, at best with some other users of the spectrum. But the White House is going to have to -- at some point these are to some degree decisions that need to -- you know, we need to understand

better when they would come into play and try to, you know, resolve some of these conflicts that could arise.

MEMBER ALDER: I will comment. This is Larry again. Larry Alder. That this -- I think of our requests and recommendations. Meet with the OSTP is definitely there, but the real consensus of the group was it would be great to engage this case study, and that was, of the two, really where our focus was.

CO-CHAIR ROSSTON: Okay. Jennifer Warren.

MEMBER WARREN: Yes. Jennifer Warren. So I want to -- I had an original comment to make, but I want to just talk about this OSTP thing a minute, because it seems to me if we're talking about wanting to actually further work rather than politicize the discussion in a case study, it might actually be useful to talk to the DoD CIO's office since it is the Navy radar you want to

look at it.

MEMBER ALDER: That's not the OSTP. OSTP is informational; the case study is separate.

MEMBER WARREN: Okay. Because it looks like next steps are all kind of building together.

MEMBER ALDER: No, no. The case study is separate.

MEMBER WARREN: Okay.

MEMBER ALDER: It has nothing to do with OSTP.

MEMBER WARREN: Okay. So, I mean, anybody who is not here and just looks at the charts will think the increment is the case -- did it go to OSTP, and then refine and develop recommendations. So I would -- and I will participate in the group discussions going forward. I would recommend DoD CIO as a next step, not just NTIA, since you're talking about a SPY radar, and you're wanting to learn more about that. So that

would just be something off the cuff here.

I wanted to ask a question on the database itself. And as I said, I didn't participate in your meetings yet. Who or whose devices would be accessing this? And I'm building on from the question I raised in our lessons learned discussion, because if you're hosting data that is classified or sensitive, there may be different restrictions on who can access it, not just, again, the U.S. side, but from overseas, you know, companies that own the devices, or non-U.S. citizens. And I'm just trying to figure out, are you factoring that into the work process yet? Or work discussion?

MEMBER ALDER: We haven't really specifically discussed that in great detail. We did -- if you look at the diagram, it does kind of talk about -- and I won't go into it -- it's too small for me to see here in this printout. But we did talk about basically entities that would be using spectrum would

access the database or the SAS system. That system may access another kind of black box system.

So the entities such as carriers or end users might not be directly getting to the classified information. So I think we show that in one of the boxes in the small corner. But that is the general idea.

And for these database systems, we have not divided -- we have speculated that there could be all kinds of things. We could speculate these are carriers with their NMS type of systems, back offices talking directly to the SAS system, or these could be individually owned access points. We haven't really made any discussion about that, so we have assumed all comers.

MEMBER GIBSON: Let me just add to that. This is Mark. Think about that in the context of a trusted agent, because that is why we have that in there is to await -- whether it's -- the trusted agent is the big

idea. It's not -- but it's the way to safeguard the data that you are talking about. So we're aware of that.

MEMBER WARREN: Can I just ask a real quick followup question? I guess, though, I'm talking about from the protection of the network that accesses that -- you know, that black box. The level of protection for that versus the database may have to be different because of the different levels of information on it, not just who the trusted agent is.

And I just wanted to flag that because that is another cost feature, that is another security element, et cetera, to address when you are talking about safeguarding, you know, information access from a classified or sensitive --

MEMBER GIBSON: Welcome to the group.

MEMBER WARREN: Thank you.

CO-CHAIR ROSSTON: Karl and then

-- Karl.

MR. NEBBIA: Karl Nebbia. I guess one of the things that this brings up is that, is there, for instance, an opportunity to use databases where there is still an error gapping between the access and the database itself? Or is kind of real-time information absolutely critical to where we are heading in the future? That's one component here, because, once again, if you -- you can create that error gap. You really separate yourself from a lot of the problems in, you know, linking to the data.

The second thing is, when we look at these database approaches, then, are we primarily committing ourselves down a path of using them where the incumbent users are the ones who are most concerned about our fixed location? Are we really thinking of applying to systems that are mobile?

I mean, in the case of 3.5, we are dealing with mobile ship radars, that we

could in fact create the database you're talking about from the beginning by implementing the results of the fast track report and creating a zone along the edge of the country that your devices then know they have to stop operating. But that doesn't solve -- that really doesn't solve the problem.

The Commission could solve that just through licensing, where they don't license in those areas. So if we are going to use the database, are we going to apply it in places that are mobile? In that case, we are dealing with some shipborne systems versus DoD was saying in our discussion earlier any time they put their stamp on the data it becomes true. If it's reported in The Washington Post, it's not necessarily. You know, that kind of -- we hear that. Not that I have anything against The Washington Post.

But so one of the things --

questions that comes up is, could you put -- could industry put monitoring systems along the coastline that are used then to turn their equipment on and off? Once again, it is not directly DoD stating we are doing this or that, but it's something that you could say, well, if we are only monitoring as far as the eye can see, we could post people along there saying the ships are coming, the ships are coming, and so on. But you could do it with spectrum monitoring capability.

So I think those things are worth asking in terms of how you feed yourself this data. Does it have to be a direct connection with DoD or in a database?

MEMBER ALDER: I'll just respond to that. So, first of all, we are hopeful to do some of the mobile aspects, and I think your suggestion is right on. And that gets into, what is the actual sensitive information? Is it the fact that the DoD says it, but if we could sense it or visually

see it and collect it, and industry could collect it and make use of it, maybe that's an acceptable solution. So definitely a good suggestion.

Timing -- you talked about the error gap. I wasn't exactly sure if you were talking about the error gap meaning the devices going through an intermediate to a trusted agency are actually timed.

MR. NEBBIA: Yeah. Well, I think, in essence, there usually is time associated with any gap you create. In fact, with the portal in 1710, the arrangement DoD had was that you put your data in, they would take it back, do their analysis, and up the 30 days or something later they would come back and give you an answer.

And, once again, in our traditional environment, getting an answer within 30 days and you could put your system up was probably plenty soon. Today, are we looking for something significantly different

than that? I think --

MEMBER ALDER: I think 30 milliseconds is fine.

MR. NEBBIA: Thirty milliseconds? That's enough time for one guy to turn and go to the other side of the desk.

MEMBER ALDER: We did -- the group -- this is Larry Alder again. We did spend some time talking about how quick the databases themselves could react to information that came in in terms of shutdown information, so we spent some time as a group on that topic and developed some material.

So we have been considering the timing thing. So there is kind of two sides of it. There is the industry side. How quickly could industry react? And then there is the sensitive information side -- how long to take this information to get cleared? So both are important.

CO-CHAIR FONTES: David Donovan?

MEMBER DONOVAN: Yeah. Larry,

just a question, and it lends towards the enforcement issue as well. As I understand this, if I'm reading this right, the dynamic database manager could be multiple managers, and they could very well -- they would -- predominately private sector entities, correct, at this point?

MEMBER ALDER: Yeah. I mean, we haven't discussed that in a group, but --

MEMBER DONOVAN: I guess, you know, when the FCC is done -- this is very clear because the FCC has a direct responsibility over the database manager, and then the relationship between the database manager and the devices is contractual. There are services that are being provided.

If I'm mixing sensitive government data with commercial, is the database manager going to be responsible to the Commission, or to NTIA, or both?

MEMBER ALDER: So, again, that's something that we haven't discussed as a team

yet. So those are some open questions.

MEMBER DONOVAN: Yeah. And that really is a question I just --

MEMBER ALDER: Yeah. I have my personal responses, but I think that's not relevant here.

MEMBER DONOVAN: Okay.

MEMBER ALDER: So we'll take that up as a team.

MEMBER DONOVAN: And to follow up, then, the issue again says government information. The relationship, then, between the database manager and the devices is usually -- you know, it's contractual. I'm selling a service, and these are the devices, and what have you.

Again, if government information is flowing through, is that one that you can have adequate protections vis-à-vis the contractual relationships as opposed to some form of -- and I'm not arguing for this at all. It really is a question. Is there

direct oversight responsibility from the government, whether it's NTIA or others, to the devices themselves?

And I only raise it because we are mixing federal systems with commercial systems here. And I don't know whether that changes things or not.

MEMBER ALDER: I think those are good questions. We are trying to stay focused on -- the question at hand is, how to deal with the sensitive and classified. There's a lot of questions around database systems, and we could get bogged down. That's why we want to stay focused.

MEMBER GIBSON: I don't mean to speak out of turn, but this Mark Gibson. One of those points, though, might get back to enforcement. So you might have to meet more often, but --

MEMBER DONOVAN: It does. I'm trying to figure out, yes, if we're dealing with enforcement, I want to make sure that

we're dealing with the system that you guys envisioned, I guess is what it comes down to.

MEMBER ALDER: We'll talk about it.

CO-CHAIR FONTES: Dennis?

MEMBER ROBERSON: Dennis Roberson. I just wanted to really quick reinforce Jennifer Warren's point that going to DISA is going to be really valuable because, as you might imagine, this is a very important question for DISA, and they actually have done a great deal of work in this area.

MEMBER ALDER: Yes. So I think we are all in violent agreement on that point, and it's -- and the reason we bring it to this forum is to go to the DoD formally. I think it's best to go through the right channels.

CO-CHAIR FONTES: Okay. Go ahead. The other Mark. Mark, do you want to identify yourself?

MEMBER McHENRY: They can tell a ship position and the frequency using where the beam is pointing. You might get 10 spectrum, so how would that balance get -- we would decide, oh well, where the beam pointing is much too sensitive, but the frequency -- how is that all going to be decided?

MEMBER OBUCHOWSKI: I think that's one of the questions that perhaps we should have some of the perspectives on that from the case study. I mean, I don't think -- it would be good to see how this all works, and then you could draw at least some conclusions. I would submit that, you know, at a high level it's a policy call. You can't walk away from the fact that NTIA and FCC are the ultimate arbiter of this kind of thing.

MEMBER McHENRY: You have to have a value for sharing together versus the cost to DoD. We're going to say no to everything.

So --

CO-CHAIR FONTES: Those who are speaking, could you please identify yourselves?

MEMBER McHENRY: Mark McHenry.

CO-CHAIR FONTES: Thank you, Mark.

MEMBER McHENRY: So I think that was the purpose of this thing is trying to understand the balance. And people make the decision -- how will they make the decision, what analysis would need to be done to make -- help people make decisions? We look at both sides of the thing, not just DoD that it says no. What is the up sides?

MEMBER ALDER: Are there other comments or -- any other comments or questions or responses?

(No response.)

Okay.

CO-CHAIR FONTES: Okay. The next one that we have to report on is Federal

Access to Non-Federal Bands. Janice, Jennifer?

MEMBER OBUCHOWSKI: Yes. Jennifer and I co-led this group. But we had a very good and active participation. I don't know why we have overcome our CSMAC fatigue, but I have to specifically call out Carl Povelites, who has a lot of durability because he --

(Laughter.)

He just, I mean, really came through with a very good outline addressing his sub-issue, and then I'd also want to call out others, including Bryan Tramont and Steve Sharkey, and from my team Mary Gretchen, who helped with the taxonomy issue.

So, you know, we have had five meetings. And despite our relative activity, I wouldn't say we are close to the finish line yet. What happens, it seems, in every one of these working groups is that when you get down into it you automatically kind of

get into this taxonomy question, because the question of how to access commercial bands by federal users has a lot of possible answers.

I mean, Carl raised the question of cellular resale. I mean, of course that is more than the access -- the spectrum, but in fact that is probably going to be one of the viable ways that government players will access spectrum that is commercial.

There are obviously other ways -- and it depends on whether the government has a co-primary, has no -- you know, no status. I mean, a lot of that will be defined by status. And then, you know, another element of the taxonomy across all of this is, you know, would the government be looking to share a somewhat compatible technology such as government LTE in a band being used for commercial LTE, or are we talking about, you know, satellite LTE sharing?

It will depend. I mean, the answers depend on what kind of government

uses you're looking at. And, you know, the question then sort of veers off to duration. If it's a short-term, sporadic use, and a band that is not particularly utilized by the commercial folks, that is a relatively easy case, and, indeed, that is already happening.

I was thanking somebody at the FCC eighth floor for letting some like this happen, and they were utterly mystified because NTIA and, you know, OET had done a fine job with STAs making this happen. So, you know, duration is a big factor here.

Duration, though, is frankly a hang-up, because one of the sort of detours we made -- but it wasn't a detour, it just sort of emerged, is this whole issue of optionality. From a commercial player's perspective, you know, even if they are not using the spectrum, particularly if they -- you know, with spectrum bought at auction, they are thinking about, you know, yes, okay, I'm not using it right now, but I want the

optionality to have pretty wide open use going forward. And I also want the optionality to sell these licenses at some point if they're not working out for me.

And so, you know, that impacts commercial players' willingness to share even, you know, bands that they are currently not using, but that they have a license to. You know, another question about optionality is a two-way street, though. I mean, from the DoD or any large federal user perspective, great, if it's short-term episodic -- say they are doing exercises and once every four months they are going to bring in LTE-based technology. Fine. Okay. People work that through.

But if you're going to make a wholesale investment, and you are a big federal player, given federal budget cycles which are getting more and more painful, they are not getting easier, the short-term isn't going to be the only issue. They are going

to need something more definite than that.

So the whole topic of optionality really just came right out on the table whenever you talk about particularly something that is a little more than, you know, short term or episodic.

So, anyway, we have had good progress. Question 1, I think I have covered that. There were a variety of options for how to approach this. Question 2, would federal users be expected to pay for temporary spectrum access? Well, again, the answer is, it depends. You know, everyone around the table could think of areas where it would be perfectly reasonable for the government to pay.

Should the government be expected to pay? Should they become a profit center? I mean, if it's not being used by the commercial guys, and the federal government wants to use this for, you know, field exercises, or whatever, you know, is that --

is that really what we're talking about here? I would say probably not. But, anyway, should -- the payment issue of course surfaces.

Question 3, would such access only be available if the non-federal licensee does not have an immediate short-term or long-term need to operate in the spectrum and location? Again, this gets back to the whole topic of optionality. And I think there is a difference of opinion across our committee about, you know, the topic of duration.

The more carrier-centric your focus tends to be, you know, optionality becomes a larger issue on the table. I think feds, as they look particularly at the band that is most on the table now -- 1755 to 1780 -- they say, wow, that's pretty painful. You know, it was our band, we've turned it over, and now we're expected to pay even if the other guy doesn't have any rapid deployment, particularly in rural areas.

So, again, you know, God is in the details, and we haven't -- despite being active and engaged -- answered all of those questions. But we propose that we will answer them, at least in a somewhat coherent way, for the January meeting, and we will have a report, you know, in a timely fashion. And it may not be a general consensus report just because this isn't an easy answer.

We got guidance on last week's call from Dr. Nebbia that we were straying a bit far, and that we needed to focus a little more closely on the bands that are, you know, immediately on the table for auctions. The answer to this question has at least some marginal impact on revenues. So we are going to need to focus in a little more tightly.

We also asked the government essentially for I guess I'd say one briefing or dialogue. We believe that it would be very helpful to us if the thought leaders at NTIA and FCC in this whole area of sharing,

and how sharing could happen, would be willing -- I'm not even saying to bring, because I don't think they have concluded on the answers.

This is very -- but if they would be willing to, you know, share with us, you know, their thoughts of how some of this could work, what are some of their preliminary views, what tools they think they would need to do more fulsome sharing by federal users of commercial bands.

So we have asked for that briefing, Karl. And, you know, probably the next call we will schedule around perhaps somebody at FCC and somebody at NTIA's schedule.

So that basically summarizes where we have been and where we are heading. Jennifer or team members, any comments?

(No response.)

So good. Thank you so much.

MR. NEBBIA: Sorry, Janice. This

is Karl Nebbia. I'm not going to let you off the hook.

MEMBER OBUCHOWSKI: You are going to --

MR. NEBBIA: One of the things certainly we have seen in the information that has been provided to us before, there are certain locations around the country where the wireless industry has almost not deployed at all, regardless of the maps that we see, and so on.

And those areas oftentimes are directly, you know, in line with the really major training areas that the Defense Department uses, both training and experimentation centers, and so on. A lot of them out in vast areas of the west, where I know at least for a time before units went overseas they were always sent to those areas to do major training practices, and so on.

As we look ahead to, for instance, the next auction, is there any

reason to believe that there is sufficient value drawn from the wireless industry for those areas to counter the obvious value to the Defense Department for their training purposes? Is there not sufficient reason to say, "Well, when we do the auctions, we are just not going to include those EAs"? Then, DoD gets to continue to operate in those few EAs that are unlikely to produce any income, and unlikely to see any deployment.

MEMBER POVELITES: This is Carl. I don't know the answer to that -- Carl Povelites. I don't know the answer to that, but one of the things we do have to take into consideration is the fact that sometimes a base or military -- military base is not covered is because they are not able to get facilities in that base. And so we don't want to, through our activities here, to incent the government, in denying applications to actually serve in those areas, so that then they can get access to

that spectrum. If that makes sense.

So I think that the high likelihood is is that there is an opportunity to -- it would come out -- the ability to use that spectrum in a base will be reflected in the auction revenues. And, you know, if there is protection zones, or if there is other restrictions and ability to use it, then the value of the spectrum will be less, and that may provide some other opportunities to, you know, not provide service there, but at the same time I hate to say that, yeah, there is a definitive answer there, if in fact maybe you do want to serve that area, you're just not able to because the government is not giving you access to land and everything else to build facilities. Does that make --

MR. NEBBIA: I think that makes sense. I think the question is still worth asking. Are certain areas not at a market value? Are they not worth enough that it

wouldn't be better off just keeping the government operating and getting them to do their training without -- you know, I just think it's a question that's worth --

MEMBER OBUCHOWSKI: I think in that you may find that our committee is not going to come up with the perfect --

(Laughter.)

But, you know, listen, I think that's fine. That's why Carl is paid what he's paid, and that's why, you know, we have --

(Laughter.)

That's why we have, you know -- you know, that's -- I am sure that the topic of optionality is seen very differently by carriers, but I can't help but editorialize that these were the people that asked that coverage of these places be removed from the ratios of coverage in the last, you know, major auction. So nonetheless, if you're sitting there, you're going to say, "Well,

you never know what the world is going to deliver."

So I would make the case, because I'll be on the side of people that say go for some more, you know, sharing in the interest of this approach, I would make the case, having suffered badly as a bidder in the front line era, that simply removing or stating a preference for clarity, not across the whole band but in certain geographic areas, would actually potentially enhance revenues vis-à-vis saying, well, we may want to share, and we'll talk about how we do that later, because, you know, what we heard back in the front line era from, you know, everybody who is looking to invest in a public-private we'll-negotiate-it-further partnership is one thing Wall Street cannot handle is open-ended risk.

So, you know, I think we are going to argue that, and I will be -- I can't speak for Jennifer and the rest of the team,

but I would be comfortable putting forth points of view that won't be antagonistic, because I think frankly we all recognize the value of optionality, but that will be nuanced in their approach and somewhat different.

CO-CHAIR FONTES: Thank you. We'll go to Dennis, and then Harold, and then move on. Oh, Tramont, sorry. Didn't see you. That card is just --

MEMBER ROBERSON: This is Dennis Roberson from Illinois Institute of Technology, and I say that not just to be compliant with Brian and Greg in providing my name and identification. But being at Illinois Institute of Technology, therefore, a university, is a really neat position for me to be in, and particularly since in my company role, Roberson and Associates, we consult both for the DoD as well as for commercial carriers and others in the commercial space.

So it puts me in this really neat neutral zone, and I have come to really get excited about this concept, because when I look at what Carl has described, looked at the map and looked at where our major -- not all, but many of our major military installations, they are in places where there are very, very few opportunities and very few instances of Carl's cell towers, because there just isn't the opportunity out there. There isn't the need for all of the coverage that you would have in a major metropolitan area like Washington, D.C.

So this bilateral sharing opportunity is really a terrific opportunity when you're in it, as a university person, for the penultimate utilization of the spectrum, the spectrum efficiency. So I think that this is a gold mine area for us to really mine and figure out exactly how to do this and not restrict it just to the bans of interest, though we certainly should put

early focus on that.

But even some of the existent bands that are not being utilized -- and, again, this is a study that I have undertaken on behalf of somebody looking location by location around the world, and finding all of the places where there are spectrum licenses that have been there for five and 10 years that have never been deployed, and, you know, this really does provide great opportunity. So go for it. I am really tempted to join the group because --

MEMBER OBUCHOWSKI: Carl Povelites, you have met your match.

(Laughter.)

CO-CHAIR FONTES: If we can move on. Harold?

MEMBER FURCHTGOTT-ROTH: Thank you. This is Harold Furchtgott-Roth. I think some of this goes back to the point that Brian was making earlier about the importance of defining property rights very

clearly. There is a lot of not heavily used spectrum in many rural parts of the country, including areas that cover military facilities. Those are obviously opportunities for commercial transactions between the government to go to not just one but any number of carriers that have spectrum covering those geographic areas to think about ways that could be mutually beneficial.

I think to move this away from clear definition of property rights to a situation where there is a defined sharing arrangement in part of the country layered on top of clear property rights in other parts of the country, it is a slippery slope, and I think there would then be a lot of pressure on the FCC to sort of say, well, let's move it from rural Nevada to more densely populated areas. And at the end of the day you wind up with just a patchwork quilt of licenses.

And that might work, but I think

it would substantially degrade the value of the licenses themselves, and ultimately make it less possible for the carriers to engage in commercial relationships either with the federal government or with any of number of other potential commercial users in those areas.

CO-CHAIR FONTES: Okay. Brian?

MEMBER TRAMONT: And I was just -- I agree with what both Harold and Dennis have said, because I feel like the basis really presented an opportunity for what the working group is all about, which is the commercial sector and the government sector working together. And if you carve out EAs, you are basically providing that from happening.

What should happen is that there -- and I think there are good examples of this, of commercial carriers reaching agreements with the federal government for spectrum use, and then a tailoring -- you

know, people work on military bases who use commercial wireless services. When they work together and they get a lease, maybe we can continue to provide enhanced services to those consumers that are on those bases as well as serve the military needs.

And if you carve out, you just eliminate opportunity to do that. And the low value of spectrum in some of these rural areas provides real opportunity for us to test bed some of these concepts and hopefully prove them -- prove out that the federal government can work cooperatively with the commercial sector.

But by carving out vast sections or even -- sections of property rights, you eliminate that and it is -- I think that's the thinking we are trying to move away from.

CO-CHAIR FONTES: Thank you. Dennis?

MEMBER OBUCHOWSKI: We have two points of view on that coming out of the

committee I think.

CO-CHAIR FONTES: Dennis?

MEMBER OBUCHOWSKI: And they won't be totally antithetical, but, you know, that will be an important perspective.

CO-CHAIR FONTES: Now we will go to Dennis.

MEMBER ROBERSON: No. Just very quickly, when we did the PCAST report, one of the key things we built in was this three-tier structure, and there has been a lot of discussion about the military going back and securing a deal with the commercial carriers that would own the spectrum.

The notion in my mind would be to move towards this multi-tier structure where in fact the DoD would secure perhaps the second tier license, but it would be a license that they would own, they would -- whatever the arrangement is to secure that ownership, but there wouldn't be any further expenditure. So that creates a lot more

certainty for DoD's side, and actually it also puts the position on the cellular side as well. So that would certainly be my recommendation for pursuing that.

CO-CHAIR FONTES: Okay. Last comment, Jennifer?

MEMBER WARREN: Jennifer Warren. I just wanted to respond I think mainly to what Brian and a couple of the others said about the distorted effect of carving out a base from the EA. And, really, to me it just shifts when that negotiation takes place. Instead of it being the carrier's presumptive right to negotiate -- a particular carrier's presumptive right to negotiate with the military, it would seem that if the military retained that area then it could maybe, subject to statutory changes, then engage with a carrier, and that would actually be more efficient, rather than creating this alternative.

And, you know, we have certainly

made legislative changes suggestions in the past, and that would be something I think we would need to look at it.

MEMBER TRAMONT: It only works if -- if there are incentives, that might work.

CO-CHAIR FONTES: Great. Thanks, everyone, for your comments on this report.

CO-CHAIR ROSSTON: I think we are going to have a lot more debate about this issue as the committee comes forward and we talk about it.

Michael, do you have a report for the Spectrum Sharing Cost Recovery Alternatives?

MEMBER CALABRESE: Yes.

CO-CHAIR ROSSTON: Great.

MEMBER CALABRESE: So --

CO-CHAIR ROSSTON: Michael Calabrese.

MEMBER CALABRESE: Right. And, yeah, we have met twice and there were like I think at least six members active -- Harold

Furchtgott-Roth, Bryan Tramont, Jennifer Warren, Larry Alder, Janice Obuchowski, and if I'm missing anyone speak up.

And essentially our charge was to look at how to pay for the cost of spectrum sharing when there is no auction. So, specifically, the NTIA question was, how should federal agencies be resourced to develop and implement sharing with non-auctioned licensees or services such as unlicensed devices? And we also recognized this could be relevant as well, not only for a band that might be entirely open for opportunistic or unlicensed, but a band like the 3.5 gigahertz band as it is -- you know, the proposed citizens broadband service, for example, which is a hybrid of priority access and opportunistic access that will still be issued if the federal users have costs, about how you can reimburse that.

And, you know, the fundamental need for this goes back to limits on the --

limits in the Commercial Spectrum Enhancement Act of 2006 and the spectrum relocation fund that it created, because the spectrum relocation fund limits the reimbursement of costs. They have to be related to the relocation of bands that are actually auctioned. So it won't -- you know, it simply doesn't come into play if the agency is simply taking, you know, steps to facilitate sharing without actually relocating.

There have already been improvements in the -- to the CSEA. The 2012 Spectrum Reform Act expanded some of the costs that are recoverable on those auction bands, allowing more upfront planning and research costs, and that's good.

And then I'm sure most of you are aware just on Wednesday of this week the House Commerce Committee approved the Federal Spectrum Incentive Act of 2013, which, you know, makes some further -- further

expansions in the concept of the spectrum relocation fund.

So what, you know, I guess got the headlines, at least in the trade press, was that it establishes -- it would establish, if it passes, a separate federal spectrum incentive fund that would receive one percent of auction revenues and can transfer that for two purposes, either to -- you know, to agencies that relocate, either to offset sequestration cuts or to offset the costs of an incumbent federal user in a different band they will now be sharing with the relocated federal user.

So, you know, again, you know, that could improve things, but it is -- you know, it doesn't really answer the question that the NTIA put to us about bands where, you know, there is no auction at all. And yet there is great potential for harnessing underutilized spectrum.

The PCAST didn't solve this

problem for us. They did recommend a spectrum efficiency fund -- in other words, an expansion of the spectrum relocation fund that would be a revolving fund to reimburse agencies for the costs of not only facilitating commercial access, private sector access, but even for becoming more spectrum efficient, sharing with other federal entities, and so on. But there was no operational detail really in the report.

And so our committee has decided that -- you know, that we could add the most value by fleshing out what the implementation of a spectrum efficiency fund would look like, what it would take. And we did rack our brains for a half-hour or so about, well, what about other, you know, sources of -- what about other resources that could be brought to bear other than a fund of this type that might collect either some share of whether it's auction revenues or device certification fees or user fees of some

nature, and so far we haven't thought of any other independent sources. But if anybody has any, we would be happy to look at them.

With respect to fleshing out a spectrum efficiency fund, we have identified five issues that need, you know, further discussion. One is, should it be a revolving fund, you know, that would be ongoing, or a band-by-band fund which is, you know, maybe a more traditional approach? Even if it's not a band-by-band approach, should there be more than one fund?

So, for example, there may be a fund for the very -- for the upfront costs, which are more, you know, minor costs, and a separate fund for, you know, what could be very, you know, substantial costs if you're talking about equipment upgrades for federal agencies.

A third issue is potential revenue sources for such a fund, and we talked, you know, very briefly about a couple

-- you know, we want to look into some analogous examples. Certainly in the telecom field there has been the telecommunications development fund that was in the '96 Act that collects interest -- the interest earned on deposited auction revenues and uses them for various purposes. That has not been a very big fund.

There is also -- UTAM is another model used to pay some costs of clearing the PCS band. So we will look more at that.

A fourth issue is categories of costs that could or should be covered, because, you know, you could get to the point where if you're going to buy, you know, entirely new systems for somebody, that could be in the multi billions of dollars which may be impractical. So we probably want to talk about what sort of cost recovery should be prioritized.

And then, fifth is the administration and approval process for the

fund, including how applications for reimbursement are reviewed and approved. So, for example, even if OMB is going to house and ultimately make a final decision on disbursements, you know, is there some expert committee to make recommendations to OMB on the merits? That would be an example.

So we have not reached any preliminary recommendations after a little less than two hours of talk, but we have decided a way forward in terms of a work plan and timeline. And we realize that we really can't go very much further on some of these questions without understanding much better how the existing mechanisms work. So roughly January will be an investigative phase.

What we, you know, are trying to do is set up a briefing from OMB on how the spectrum relocation fund, you know, actually works and what its restrictions are from FCC in terms of their authority to -- with respect to fees. And, you know, whether it's

device certification or other types of fees, how that works with respect to the TV white spaces, for example, where the database administrators will be compensated, although indirectly. That could be an end run to certain limitations. So we need to look at that.

I think we want to learn more about these other analogous mechanisms, and if others could suggest other examples, other than the telecommunications development fund or UTAM, that we should, you know, take a look at, there may be some in the resource area, for example, I would think there would be.

And then before the next -- after that, then before the next CSMAC meeting, we would try to work through these five issues and reach preliminary recommendations.

CO-CHAIR ROSSTON: Great. Thank you. Are there comments or questions on Michael's --

MEMBER CALABRESE: Yes. Or anyone from the committee, things I have missed or --

CO-CHAIR ROSSTON: Anyone on the phone want to -- I heard some grumbling on the phone, but maybe that is just someone scratching.

MEMBER CALABRESE: Just grumbling.

(Laughter.)

CO-CHAIR ROSSTON: Shuffling. That's a better way of putting it.

Okay. This is great. And I think we are sort of recovering from CSMAC fatigue, hopefully. And Brian and I were talking at lunch, and we want to make sure that we keep -- I wish it was scratching I guess --

(Laughter.)

So we are going to try and make sure that we have regular phone calls with the committee chair to report and to make

sure that we are -- everyone is keeping on track and moving forward. So we'll try and organize that.

If you're on the phone, please hit mute if you're not talking to the group.

Okay. Now we're going to move on to the lessons learned with Peter Tenhula going to talk and lead this part of the discussion.

MR. TENHULA: Okay. Thank you. I think I can be fairly quick, since most of -- this is Peter Tenhula with NTIA. I think it can be fairly quick, since a lot of CSMAC members were at our session this morning, where we talked about lessons learned from the working group process that just -- that concluded earlier this year regarding the 1695 and the 1755 bands.

So we had a great session this morning with about -- good participation, about 18 folks here in this room, and 12 -- at least 12, probably a lot more, on the

phone. Some didn't identify themselves -- included a lot of the co-chairs that were the leaders of the working groups, the CSMAC members that serve as liaisons, and other -- the active participants, as well as the NTIA and FCC staff that were involved in those working groups.

And I think although we were not -- it was not -- it was about getting individual input from the folks there, it was not about reaching consensus. I think just to sum up from the session this morning, I think that we heard about the benefits that did come out of it, and also learned a lot of lessons about how to improve the process going forward in light of the fact that the President recognized that this -- in his June memo that this was unprecedented.

The information exchanged is a collaboration that was going on between federal and non-federal and is there -- you know, and then also directing NTIA to

consider, you know, other bands for sharing and other avenues for this kind of collaboration.

So if we have time to open it up for discussion on the next steps, in that regard, you know, that would be kind of how I would conclude. But just to summarize quickly what we talked about this morning, first, we talked about kind of how it all got started with the May 2012 framework document as kind of the marching orders, the terms of reference, the charter for the working groups.

We heard about the need for potential flexibility in that, and it was I think -- I'll dub that Dennis' "Do the Right Things" clause that would be included in such a charter, basically so we don't get stuck, you know, mired in the mandate that is in that document.

Also, thoughts of certainty, you know, especially regarding how much time is

this going to take, how much resources it is going to take, and also clarity. You know, what exactly do we expect, what are the expectations there. So that was kind of the -- some of the input on how to craft a good framework document, you know, kind of going forward.

We also did -- I should mention we did receive contributions in writing from a few parties this week. Janice couldn't be here this morning -- contributed, T-Mobile, DoD, and NASA as well. So it was not just the meeting.

And, again, we are open to other suggestions, inputs, you know, as we go forward, in how we implement the next steps. You know, whether it's another band, whether it's maybe in support of these current committees, this is kind of what we're talking about. We're going to try to incorporate, institutionalize this as far as our overall NTIA strategic plan goes as well,

so that will be worked on in the future.

So we've got -- and we've got a lot of good input. And I think the observation that I made, I guess from the positive standpoint, was that there were two types of outputs from these working groups. There were the formal reports, the tangible things that did come out, including the recommendations, but I think there was a lot of informal outputs or the intangibles, including the roadmap that came out of industry, the DoD proposal, which were not, you know, necessarily -- you know, came officially out of this but did come out of it.

Relationships and trust that was built or at least started, fostered, you know, among federal/non-federal participants. And also, you know, the lessons learned about governance oversight by NTIA, by the chairs, we are going to take back and see if we can institute them the next time.

And of course the big issue, the elephant in the room that we got up on in the middle of the circus, was the information access and management and sharing and about transparency, and the potential conflict between doing these kinds of things in a Federal Advisory Committee Act environment and the transparency required there, typically required there -- there are exceptions, of course -- and the need to protect very sensitive information, both on the government side and the industry side.

So, obviously, lots of ideas have been discussed here as well, you know, about trusted agents, NDA approaches, or bilateral discussions kind of on the side, I would call them “in the hallway” type discussions or over lunch. Those are all ways to exchange information that we are going to explore further and try to figure out more efficient ways to share information.

So that is kind of the initial

lessons learned. Again, I would just open it up for discussion on next steps and any other -- the folks that weren't there, or the folks that were there, would like to echo in, in whatever time we have left.

Thank you.

CO-CHAIR ROSSTON: Comments? Thoughts? Dennis?

MEMBER ROBERSON: I seem to be overly commentative today, if that's a word. But I actually would like to applaud Peter and the team for having the session that we had this morning, because very often we go through these processes and don't ever go back and do the after action review to see what we could do better -- when we've got something really as important as the tasks that we undertook this time, to not do this would have been a shame, but to do it is, you know, strong kudos to you, Peter, and to the team for pursuing it. And I think there is great opportunity to do it the next time

easier, more efficiently, and reduce the fatigue and --

CO-CHAIR ROSSTON: Thank you. Other thoughts? Comments?

(No response.)

Okay. I think it's now time for public comment. Is there anyone in the room who would like to make a comment? Anyone on the telephone?

MR. SNYDER: Yes. I have a comment. It's Jim Snyder. And there was a discrepancy between today's two CSMAC meetings and how they were noticed and made publicly accessible. The second meeting received much better notice and was webcast with presumably an online record accessible after the meeting.

CO-CHAIR ROSSTON: Jim?

MR. SNYDER: The first meeting was poorly noticed and was not webcast. The discrepancy is potentially related. Poor advance notice is much less of a problem if

there is an accessible record of the meeting. To the extent that that is not the case, the lack of notice reinforces the lack of a record.

So here is my question. Will there be a transcript of the morning meeting? I'd like to note that going back and approving notice of the meeting -- morning meeting on your website after the fact is not going to improve public access to the public. It would even mislead the public if there is no transcript of the meeting.

Lastly, I would like to request once again to be placed on your email list for meeting notices. Mr. Washington, on behalf of the committee, provides some non-CSMAC members, including some members of the press, with email notice of your meetings, but your committee has consistently refused to provide me with that notice. I hope you will reconsider that policy.

But my main question right now is

will there be a transcript of the morning meeting? That is --

CO-CHAIR ROSSTON: Jim?

MR. SNYDER: -- was not webcast or --

CO-CHAIR ROSSTON: Jim, thank you.

MR. SNYDER: -- available publicly.

CO-CHAIR ROSSTON: Thank you for your comment. Just a point of clarification, first of all, this is an opportunity for public comment, not questioning. But to be clear, this morning's meeting was not a CSMAC meeting. So it was not part of CSMAC.

But the other point that your question is, I believe -- and they will find out and you will find out more -- that there will be a transcript available of the meeting. So those -- I think those should answer both your questions.

Is there anyone else with public

comment?

(No response.)

All right. Thank you very much. And I think we stand adjourned.

(Whereupon, at 3:09 p.m., the proceedings in the foregoing matter were adjourned.)

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C E R T I F I C A T E

This is to certify that the foregoing transcript

In the matter of: CSMAC Meeting

Before: US DOC

Date: 12-13-13

Place: Washington, DC

was duly recorded and accurately transcribed under my direction; further, that said transcript is a true and accurate record of the proceedings.

Neal R Gross

Court Reporter