

U.S. Department of Commerce  
Commerce Spectrum Management Advisory  
Committee (CSMAC)  
Meeting  
Wednesday  
July 24, 2013

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

## Members Present:

Brian Fontes, Co-Chair  
Gregory Rosston, Co-Chair  
Larry Alder, Google Inc.  
David Borth, Independent Consultant  
Michael Calabrese, New America Foundation  
Mark Crosby, Enterprise Wireless Alliance  
Thomas Dombrowsky, Jr., Wiley Rein, LLP  
David Donovan, Association for Maximum  
Service Television  
Harold Furchtgott-Roth, Furchtgott-Roth  
Enterprises  
H. Mark Gibson, Comsearch  
Dale Hatfield, University of Colorado  
Kevin Kahn, Intel Corp.  
Mark McHenry, Shared Spectrum Company  
Janice Obuchowski, Freedom Technologies,  
Inc.  
Robert Pepper, Cisco Systems, Inc.  
Carl Povelites, AT&T  
Rick Reaser, Raytheon Company  
Dennis Roberson, Illinois Institute of  
Technology  
Charlie Rush, CMR Consulting  
Daniel Stancil, North Carolina State University  
(present by teleconference)  
Bryan Tramont, Esquire  
Jennifer Warren, Lockheed Martin Corporation  
(present by teleconference)

## Also Present:

Larry Strickling, Assistant Secretary of  
Commerce for Communications and  
Information  
Thomas Power, Deputy Chief Technology  
Officer, Telecommunications, OSTP  
Fred Moorefield, Department of Defense  
Karl Nebbia, Office of Spectrum Management,  
NTIA

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## Proceedings

(1:03 p.m.)

## Welcome and Opening Remarks

Co-Chair Rosston: So we might as well get started. So I'm Greg Rosston and welcome. We have people on the phone so I think we should just go around the room real quickly and say who's here and then we'll do the roll call of the phone and then we're going to do this out of order and then Larry will talk after that.

So just state your name as we go around and then we'll welcome our special guests.

Mr. Nebbia: Okay. Karl Nebbia from NTIA.

Mr. Moorefield: Fred Moorefield, DoD.

Hon. Obuchowski: Janice Obuchowski, Freedom Technologies.

Dr. Alder: Larry Alder with Google.

Mr. Calabrese: Michael Calabrese, New America Foundation.

Dr. Kahn: Kevin Kahn, Intel.

Mr. Povelites: Carl Povelites, AT&T.

Mr. McHenry: Mark McHenry with Shared Spectrum Company.

Mr. Donovan: David Donovan with the New York State Broadcasters.

Dr. Pepper: Robert Pepper, Cisco.

Mr. Crosby: Mark Crosby, EWA.

Dr. Furchtgott-Roth: Harold Furchtgott-Roth, Furchtgott-Roth Economics.

Mr. Dombrowsky: Tom Dombrowsky, Wiley Rein.

Mr. Roberson: Dennis Roberson, IIT.

Mr. Reaser: Rick Reaser, Raytheon.

Mr. Gibson: Mark Gibson, Comsearch.

Mr. Hatfield: Dale Hatfield, University of Colorado.

Mr. Tramont: Bryan Tramont, Wilkinson Barker.

Mr. Power: Tom Power, OSTP.

Mr. Strickling: Lawrence Strickling, NTIA.

Co-Chair Fontes: Brian Fontes, Co-chair with Greg.

Co-Chair Rosston: So on the phone is Charlie Rush on the phone? Dan Stancil?

Dr. Stancil: Yes, I'm here.

Co-Chair Rosston: Okay. And Jennifer Warren? Marty Cooper? Okay. Did I miss any committee members on the phone? Okay. Why don't we - Larry, do you want to go ahead. Do you want a microphone and everything?

Mr. Strickling: I should first check with Carl. Carl, is this the point at which I do substantive comments? Okay.

#### Opening Comments and Introductions by Co-Chairs

Well, thank you. I want to welcome everybody to this very important meeting of the Commerce Spectrum Management Advisory Committee and as always I want to start out with a thank you to all of you for your participation as well as the thanks to all of the industry and agency folks that have been participating over the last several months in the working groups from whom we're going to hear reports today on the 1755 and 1695 bands.

I think it's really important that everyone understand just how much not just NTIA but the Department of Commerce and I think all folks, certainly the White House, appreciate these efforts.

And I think at the same time all of you who have been participating in this work have now come to appreciate a lot of things on your own.

One, I think, we now all have a much better appreciation for how when we talk about efficiency in spectrum use we really can't take the industry notions of efficiency and apply them to bands like 1755 where you have a couple dozen agencies and a couple thousand assignments involved. We have to really think about efficiency in a different way.

I think all of you probably also better appreciate the - now the concept of clearing bands of federal users is really a very difficult concept to continue with given the complexity and the cost of some of the systems that you all have been focused on over the last several months.

And I hope everyone has now gotten a better appreciation that we're only going to solve the spectrum needs of this country if we can solve these sharing issues.

And while we've made an excellent first step here with the working groups on 1755 I think everyone hopefully has come to appreciate the fact that this is going to be the way we're going to need to be conducting our business going forward as we look at other bands to consider for repurposing.

So again, it's been an excellent first effort. One of the things we're going to want to do is really sit down with all the participants and understand what's worked in this process, what hasn't worked, what we need to be improving on because we see this as kind of the first step of a new process, a new way of doing things that's going to guide us going forward and we want to make sure we have an opportunity sometime over the next couple of months to sit down with all of you and with as many of the participants who want to participate to really give us that feedback in terms of how to improve and smooth this process and turn it into something that we can really institutionalize to move forward

in a more efficient and rapid fashion as we consider other bands for reallocation.

So with that I want to welcome you. I'm looking forward to hearing today's reports and I know that while the working groups have pretty well wrapped up their work there are still going to be some carryover work for folks to do and we will support you in that effort as best as we can.

So with that, I'll turn it back to our chairs to proceed with the meeting.

Co-Chair Rosston: Great. Thank you, Larry. Pass it to Tom Power. This is Tom Power for those of you on the phone.

Mr. Power: Thanks, Greg. Yes, I just wanted to say echo everything Larry just said. The efforts of this group and the working groups has just been fantastic.

From the White House's perspective, you know, we view everything first I think through the prism of the economy and jobs and productivity and the developments in the spectrum world over the last few years has just been extraordinary and through the worst of times through the economy this has been a really bright area and it needs to continue to be that way.

At the same time, the uses that the federal agencies can put spectrum to continues to grow as well and you're all familiar with the challenges here.

So it - I just want to say thanks to the folks in this room and on the working groups and on the phone who contribute to this and I know, you know, we had some news late last week, early this week involving the Defense Department and their latest proposal. I know we're not here to vet that.

But I can't help but mention it and thank the work of this group because it's that kind of interagency and agency industry collaboration that is making

things like that happen and the response to the DoD proposal has been very good from all stakeholders and from throughout the White House as well.

There is a lot of excitement around that. I know there's some challenges around that still. We haven't refined it to perfection yet.

We've got a little bit of time I guess to still do that and I'm looking forward to working with the team at DoD and NTIA and any other agencies.

But it's a great step forward and it really is based on the type of collaborative work that's going on in here. So congratulations to Larry and to all of you.

Co-Chair Rosston: Great. Thanks, Tom. So we also have Fred Moorefield here from the Department of Defense in addition to the CSMAC in case of questions, I guess. They're here for that.

So why don't we move on to the CSMAC working group reports? So we start with Working Group 3. Is that going to be you, Rick?

Mr. Reaser: Yes, sir. Okay.

#### Reports – CSMAC Working Groups' Liaisons

Co-Chair Rosston: Okay. I just have a little small report here from you guys.

Mr. Reaser: A little small report. Okay. So the little small. Sorry I didn't have the slides. I have notes I can send - email these in.

I'll get around but I just didn't have time. I have like a day job that sometimes gets in the way of life plus two twin daughters that are starting college again.

So basically we started the meeting about - almost a year ago and the first meeting was on July 17th of last year is when we started the journey and our group focused on three specific areas.



The first had to do with accommodation of electronic warfare in the band and we looked at interference from satellite uplink stations to the 4G LTE base stations.

Then we also looked at interference from the 4G LTE handsets into the - on orbit satellite receivers. Those are the three areas that we looked at.

When you go through the attendance rosters we had about 90 participants in our group. Forty-nine were government employees, 14 were government support contractors, 12 were wireless and carrier - wireless, carrier and equipment guys and there were four CSMAC reps and assorted other people, some of who - I was walking around trying to figure out who they represented because a lot of people didn't identify themselves.

But I actually kept a list. We had 90 people participate over the course of it, probably more when you look at the email list but I didn't go through that.

So we had a large participation - mostly, you know, federal government employees. The report was 257 pages for those of you who happened to try to download that puppy.

It turns out only the first 12 are of interest to most people. You'll probably fall asleep in the other part. There's some pretty pictures in there and the next 245 pages are technical appendices with pictures.

We submitted this thing last Friday so we weren't quite as last minute as Working Group 5 but we did get it in - we did get it in on Friday and thanks to Rob Kubic and all that.

Now, there are still some typos, editorials, administrative fixes and I believe I am the only person who's identified a typo because I was making up a summary of it and I ran across it as I was making my little summary.

But we still have some little polishing things. Everything else I think is substantive and has been agreed to and we're kind of there. There were some things that could be done we're probably not going to get into the - we could probably combine some recommendations anyway. But that's not what we're doing. Even when I looked at it that didn't seem worthwhile.

So we do have some editorials and administrative fixes that has to be done but those aren't - I don't believe those are too distracting would you say, Rob?

Mr. Kubic: No. They're editorial.

Mr. Reaser: They're not - they don't distract. My point is they're not major editorials. They're like missing paragraphs and stuff.

Okay. So here are the conclusions. Basically, we came up - there's three basic conclusions that came out of the group.

The first one is that EW operations and commercial wireless operations can coexist in the band and so that was the first conclusion and I'll talk a little bit what our recommendation is regarding that.

The next thing is that 4G LTE base station sharing with satellite uplinks is - appears to be feasible so we looked at a lot of that. So that appears to be a feasible thing, something that can be done.

And last, that the interference from the handsets into the on-orbit satellite receivers appears to be acceptable given what we know today. So that seems to be good.

So I think those are all fairly good conclusions. Of course, everyone knows the devil is in the details. We have 15 recommendations in the group and they're organized into four sections but I didn't quite understand that.

I think I know why we did it in four sections but after a while you kind of lose the recipe - what the recipe was.

But essentially I'm going to sort of summarize them in sort of the three areas that we studied and sort of give you the - sort of the Readers's Digest version of our basically 12 pages of recommendations.

The first recommendation was that we were - you know, we say you should continue to allow EW operations in the band on a noninterference basis. We actually do, you know, EW operations today in this band on a noninterference basis.

And so the - we're going to add some more things to the band and we think that that's something that should be allowed to be continued.

However, what we do need to do and this is something that I really personally wanted to do but we weren't really allowed to, the federal government needs to assess and we recommend that you assess the robustness of your current analysis tools, processes and procedures to accommodate the increased workload of doing this because when you have commercial wireless in the band that's a little more complicated than just dealing federal to federal.

So you need to go take a look at your modeling and simulation capability and your ability to ensure that you can operate on a noninterference basis.

And if you're looking for some people to help you look at that I'm sure there's lots of people around this table that would love to look at your processes, procedures and modeling tools. But that's something we recommend you do.

The other thing we recommended was to evaluate and take a look at whether there's some local coordination concepts that might be employed when you do electronic warfare operations at certain bases and so forth and take a look at that.

That might provide some better ways of doing this and so we recommend that you - that the Feds take a look at that kind of stuff.

The next section was about the satellite uplink stations into the - into the LTE base stations and our recommendations kind of centered around these particular five areas.

The first thing is that we recommended that the federal SAT OPS remains primary in the band as the current existing regulatory structure is set up and that 4G LTE base stations can use the band but they have to accept the interference that is created by the person that's primary in the band today. So that was the first, you know, recommendation.

The next thing is that there's a series of recommendations, and I've sort of lumped them together in this thing, and that is that the federal SAT OPS, you know, people need to provide additional data to the licensees to enhance their sharing potential in the bands for - so that they can understand a little bit what they're getting into.

So there's a whole bunch of stuff about data disclosures and providing additional information to potential licensees and actual licensees once the - once they're in the band about how that works.

Also, if you're going to add a new - and this is, I thought, very promising and a very good thing that got added very late in the game - but then the idea that if the federal government wanted to put in a new satellite uplink station it would have - it would go coordinate that with potential people that would be affected by that and I thought that was a really good thing that came in at the end. So that was - I thought that was good.

So basically the kinds of things - information that will be provided in this data exchange or data sharing would be contours, transition plans.

When you have extended abnormal operations and

things like that those somehow would be - so the types and classes of information that would be provided to potential licensees and actual licensees in the band.

And then the whole business about the new satellite uplink stations would be coordinated. If you want to put one in the middle of Central Park you'd probably want to talk to a couple people about that first rather than just popping that in the gorilla cage or wherever you're going to put that thing.

So that's the second sort of area. Next thing is that - this is a fear and this - that I think that the incumbents have on this and this was another concept that was introduced within the last week and that was that licensees must demonstrate they can handle the satellite uplink interference.

What they don't want - you don't have a situation where some guy goes in there and he absolutely just gets beat to death by the satellite uplink station and then somehow that turns into a giant problem for the guy who's causing the interference.

And so one of the ideas that we recommend is that there has to be some kind of a way to make sure that you don't get, you know, Burt and Fred's, you know, cell phone company that just got incorporated last week in the state of, you know, Delaware, buying a - auction off the license for like 50 cents and then trying to put together, you know - we don't want that to happen. So it has to be legit.

You got to demonstrate you can handle the interference. Another recommendation we made was that when you're kind of doing all these things a lot of the work that goes on is work that you don't really have a budget for in the federal side.

So we recommended that we would use the spectrum - look at using the spectrum relocation fund to pay for some of these efforts to promote and enhance sharing because a lot of the up front

work is very difficult to say I'm going to do that after you had the - you have to do the up front work before you have the auction.

So this is one of the concerns I think that the - and it seems like a legitimate concern. There needs to be some way to do this.

Of course, my last cycle was like spectrum enhancement fund which got voted down but I had my own idea about how to pay for this and nobody liked it. But we at least said maybe you can use a relocation fund to go do that.

Last one in this section is that we - that we should evaluate if some of the existing techniques that are used for sharing in the band today federal to federal whether any of those are transferrable to the federal-nonfederal case.

And so that was something that we recommended people to take a look at, whether there are any of the techniques that allow the current sharing scenario - in fact, as mentioned earlier there's a lot of disparate things that go on in the band and are there - and it seems to be working. Is there - any of that transferable to the federal-nonfederal case.

So that was - that was the last in that section. The last area, you know, was the issue of the interference from the handsets to the satellite receivers.

Our first recommendation was that we recommended an actual aggregate power flux density limit at the satellite receiver and we backed out the antenna. We kind of went through this whole thing.

But the number is in the report. But we recommended a number for that and that would be the number that we would - that we would try to protect the satellites at GEO and that would also - that would take into account the lower earth orbit satellites. That was one.

And then the other thing we made some recommendations, several different kinds of things about some approaches that we would ensure that that limit was not exceeded and what ends up happening in that world is that the burden to sort of enforce that the interference protection level is met is kind of going to fall on FCC to go do that in some way and they - because they would be the ones managing the licensees and all the aggregates.

So this is kind of a complicated thing to kind of implement but the issue was - the concern is if it looks like we're going to exceed this number what's the mechanism to make sure that it doesn't get exceeded or if it does get exceeded what do you do if that happens. And so those are the - those are the recommendations.

So anyway our work is essentially done except for fixing typos and if everybody wants to go dig into that. I fixed my one typo, and then so the report is basically done and the work is essentially complete and I don't see any kind of follow-on things to make the report more complete. There might be some other things we could do but that's essentially it.

I make one personal observation. This is a long process and it's kind of interesting how it all kind of came together at the very end of one meeting and actually going into the last meeting I was not confident we were going to reach closure.

But then all of a sudden it happened so I guess I'm happy that we're done for now except the typos and so that was a good thing.

The other comment I'll make and as you know I worked on these studies. I was talking to the young lady who picked me up and she was on my group back in '98.

The other thing that you need to look at in this last area about the satellite - the interference to satellite receivers, people are going to really have to look at what goes on on the other side of the world.

I know I was very concerned about that because at the time when we were doing this for IMT 2000 we didn't have this situation where only certain things were going to be in the band like handsets.

It was basically base stations and handsets. And so we did a lot of work back, you know, over a decade ago worried about what happens in Europe.

I would say that you probably still need to worry about what's happening in Europe on this particular thing and it's great to have a number here that we will have that our satellites will work over the CONUS and US&P.

Maybe over Guam it'll work or something. But you need to look at the whole world picture here about what that's going to do and if that's going to be a problem that could actually dominate, you know, this thing that we put together with respect to our interference from our own industry that might have a - might have caused interference to satellites.

So with that, we submit the report with our typos and recommend that you take that - that the committee take that in consideration. If you have any questions I'd be happy to answer them at this time.

Co-Chair Rosston: Are there questions from people around the table? Yes, Michael.

Mr. Calabrese: Yes. My -

Co-Chair Rosston: Pull the microphone towards you so that they can hear you on the -

Mr. Calabrese: Yes, Michael Calabrese. Is there - Rick, I just ask the satellite uplink stations, are there just a few of those in remote areas or quite a - quite a few?

I mean, what kind of geography - what kind of numbers and geography are we talking about? I just don't know how extensive some of these -



Mr. Reaser: Yes, there is -

Mr. Calabrese: Look at all the appendices.

Mr. Reaser: There's a table in the back that shows them and I would say there's probably over 20 or so but they're all different - 25.

There's a - there are different classes of these things and then there was this sort of debate about did some of them actually exist. We had that side of things, people looking on Google map can't find the antenna kind of stuff.

So some of these things are fairly small antennas and some of them are really big antennas. You really have to go look and there's a - maybe - Page 14 there's a table that shows them all. So that's what - and it gives the locations.

We have the lat long. All this stuff took a while to go dig up and I believe - I don't know. Did Buzz ever give his technical errata on a couple of them?

So we have - so DoD - oh, he did? Did in the last meeting? Okay. So there was an errata sheet to that and I guess he got that in.

I didn't see the emails. So but yes, there is a list of 25. It said 25 or so on there on Page 14. Most of them are on military bases, obviously, so -

Co-Chair Rosston: Any - Dale, did you have a question?

Mr. Hatfield: Just a real quick comment. I'm sorry. When you talk about demonstrating you can handle an interference environment, as you know in the FCC's TAC we're talking about this notion of harm claim threshold and it seems to me that fits that sort of notion pretty well.

So we may want to have some further conversations about what we're - what we're doing there and what the results of the reports are here.

Co-Chair Rosston: Are there comments from the phone? So I had a question and comment that doesn't just go to Working Group 3 but goes sort of across, I think.

So when I was reading this I looked at Page 3. I got that far at least. Mr. Reaser: But you have a big red mark on your forehead so I -

Co-Chair Rosston: So this is - this is almost a - this is more of a process question comment which says - the recommendations say the CSMAC recommends as opposed to CSMAC Working Group 3 recommends, and we have some issues as well in Working Group 5 about whether it's the CSMAC recommending this or adopting this report to transmit it on to NTIA.

And so I thought we should try to discuss that a little bit.

Mr. Reaser: And by the way, we were inconsistent in that wording in our report and I was going to go through and edit - we weren't sure what we're supposed to say. But we did - we were inconsistent in our recommendations as well so -

Co-Chair Rosston: So I think we want to say at least in this report - one of the typos I think at least for here for sure should say CSMAC Working Group 3 recommends at this point. But then the question is -

Mr. Reaser: Once you adopt the report what happens here.

Co-Chair Rosston: What are we doing as adopting this report for transmittal or not and we've had some discussion about that as well.

But so at the very least I'd like - I'd like to suggest that as an editorial change to this report. Did you want to talk more about that?

Mr. Tramont: I wanted to mention Jennifer is on

the line and -

Co-Chair Rosston: She is?

Mr. Tramont: - she's joined us since we had - so I'm sorry. Bryan Tramont from Working Group 5 and I should just say that there is a strong view among the members of the working group that edits at the CSMAC level would be - seems problematic, that the role of the CSMAC is to transmit the report to Larry and to NTIA to work under advice from the - what's in the draft report but that actual edits from the members of the CSMAC to the draft document would be problematic in terms of reopening a lot of issues that we spent a lot of time resolving - that if there was a CSMAC view that was contrary to what's in the report or elaborate on what's in the report that that could be done through some sort of CSMAC supplement but that there is a concern about line editing what has been extensively negotiated over the course of the last few months I think is a fair -

Co-Chair Fontes: Let me add to that. This is Brian Fontes. Early on when we began CSMAC we talked about how we would do things a little bit differently in terms of providing questions and then answer those questions throughout the process, and rather than trying to edit a document to include those with differing opinions to try to reach that least common denominator, if there were a majority of individuals who supported the document prepared by the working group then that should be moved forward to the CSMAC for consideration.

If there are those who disagree or have a differing opinion and that can articulate the specifics of that differing opinion, then it may be best to include that solely as a separate statement or as a separate position rather than trying to go back and force edits to a document that results in the least common denominator.

Mr. Tramont: Now, I'll say for Working Group 5 - this is Bryan Tramont again - we did do the least

common denominator. We did all have to agree on what was in there.

So it was not a - it was not a majority move. In fact, that was - it was a consensus driven process by design for the reports, which is why it is so potentially disruptive if we were now in a position where the CSMAC is editing individual -

I just think it just - I think our role - under this regime our role as a CSMAC is slightly different than it has traditionally been. To Greg's edit we are not per se recommending CSMAC.

We are transmitting what the working groups are recommending I would propose would be our role.

Co-Chair Rosston: Good. Dave Donovan, Harold and then Rick.

Mr. Donovan: Yes. Just so I can clarify that, Bryan, if the position is that the document then would go forward as a working group document with - because any edits from us would be problematic, first question is then why are we here.

The second question is then what is the status of the document. I mean, obviously the document then moves forward.

Larry, presumably you would take the document and then do - have some policy implications from it and so now we have a working group then essentially effectively creating a document that may have national implications even though it is a sub-working group. Am I reading that correctly?

Mr. Tramont: It is ironic that I am in the position of talking about this. Leave that aside for a moment. I think you've correctly pointed out a few of the problems with this approach.

I would note that in our conversations as part of the working group it was noted that the working groups were open to anyone who wanted to participate

throughout the last year-long process and that it is in some level a purely operational question which is to say the stakeholders who came into the working group process and had been working here for the last year have worked very hard to get to a consensus-based solution and there is a sense that if we were now to reopen it that it would push us back to that process again.

So at some level it's a purely functional matter because if we do reopen it then I think it's only fair that all the stakeholders would have to be a part of that process again and we are going to end up in - not having anything functional to move forward with.

So I think presumably NTIA can give the report whatever weight they deem appropriate in light of the process that it went through and we - the CSMAC's role in this context is as a convener and as potential participants but we are not - under this view we are not per se recommending what's in each individual document but we could supplement it with our -

Mr. Donovan: Just a further point of clarification, at the time then was it known to the rest of the committee that one would have to participate in the working groups and that the committee as a whole would not have an opportunity to review? Was that made clear on these?

Co-Chair Rosston: So let me - I should have started this out with - so the working groups - I think at least at the start we made sure the working groups were open to everybody and that was part of the process was to ensure they were not only open to everybody on CSMAC but open to the public and this was - these were wide open working groups and you could participate as much or as little as you wanted on the working groups.

The second part of your question about did we know that this was going to be the process, I think the fact that we're having this discussion here to me

says we didn't exactly know what the process was.

But the openness was clear at the start.

Mr. Donovan: Sure, and I appreciate that. Would we be able - just one final thought.

Given that you don't want to reopen the document for I guess any of us in terms of any edits or what have you, would the subcommittee still be willing to accept separate statements from members of the full committee to attach to it?

Mr. Strickling: Could I jump in?

Mr. Donovan: Sure.

Mr. Strickling: What I say may affect the answer to that question so I didn't want to leave Bryan on a limb.

So I haven't been privy to all this discussion, so I may be rolling a hand grenade down the middle of the room here but I did want to try to be clear in terms of my understanding of how this had to work.

We are doing this through the CSMAC construct as a way to have recommendations transmitted to NTIA.

These need to be the recommendations of the CSMAC. So this is a different question than whether you all edit these reports or not but I do think that we are going to need action by CSMAC on each of these reports, an up or down vote, and you can say take the report as it is.

We're not accepting edits so if you don't like it the way it's written presumably you'd vote against it.

But I think at that process the idea of entertaining separate statements, dissenting statements, whatever you want at this level entirely appropriate to be then attached as part of the CSMAC deliberations as opposed to feeling like you've got to go back in and try to convince the working group of making changes in their documents.

So I guess is that construct consistent with the way you all have been thinking about this?

Mr. Tramont: So essentially the vote becomes do we transmit or do we not transmit.

Co-Chair Fontes: That's not quite - I think that's not quite what he was saying.

Mr. Strickling: Yes, let me just - so the - but understand that the interpretation is that if you vote to transmit we will view that as a vote - that this is now the recommendation of the CSMAC, of a majority of the CSMAC that this is the recommendation to us.

Otherwise, because we are not in a position to accept recommendations from just a group of people even if where we had the rules we did of open participation and such under the FACA process these have to be transmitted as recommendations of the CSMAC.

Co-Chair Rosston: Harold?

Mr. Hatfield: Let me just check with my lawyer and make sure I didn't make a mistake. He says that's good.

Dr. Furchtgott-Roth: Thank you for that clarification, Larry. I think that helps a lot and I do want to thank and commend all of the work that's been done on each of the working groups.

It's really quite impressive to receive these documents. Obviously, an enormous amount of work has gone into them and it's taking - it's taking a bit of time to read these documents as well.

So I do have a question just about process today. I mean, we've received many of these documents just in the past 24 hours or so.

Are we taking a vote on these today or are we having the presentation of the reports to the committee and then we'll have some time to reflect

on them before having to issue a vote?

And to the extent we do decide to write a separate statement on some of them what is the timing of that?

Co-Chair Rosston: I think our quick discussion here was that we think it's the latter where we don't think we can expect people to vote on something they received 257 pages in the last three days today but that we'll discuss it and then have a vote on it at the next meeting.

And I think that that would be - just sort of trying to circulate in advance a - you know, if you have objections to the December statement it would be good to circulate that around as well, especially if you would like to get other people to sign on to it and add on to it. So Karl in front - I'm sorry.

Mr. Nebbia: One thing I wanted to mention that we had talked about in advance that I think definitely needs to be considered by the group because, of course, we don't just want unnecessary meetings if we don't need them and that is the possibility of giving you a period of time to look over the documents and provide any real concerns, comments and so on which could go in terms of you voicing - you know, we'd like the voice of dissenting opinion on certain things or whatever, and based on those comments that we might, for instance, take a week to get together we would then go back out to the committee via email and ask for a vote on the documents.

So if the comments came in all over the place, lots of substantial problems with them, then we'd obviously have to go back to the group to try to resolve them.

But if the comments are minimal we would go back for a vote via email and that way we would not have to pull everybody back in for an August meeting.

Mr. Crosby: Would you be circulating those



comments to the full CSMAC?

Mr. Nebbia: Yes.

Mr. Crosby: Okay.

Co-Chair Rosston: Dale?

Mr. Hatfield: That was my comment. I did a valiant effort last night to try to get through some of them. The best I could do was scan them.

I wouldn't feel comfortable today having my name associated with something that I had not had a chance to read in a little bit more detail.

So I think what you're proposing - also do our governance documents provide for abstaining?

Co-Chair Rosston: Yes. Especially if you're not here. So Rick and then Michael.

Mr. Reaser: My comment was I think that we at least have to write a cover letter with our thoughts on the reports.

I mean, you can't just vote up or down. I think that's a little - that's not going to be productive.

But then the question is how do we - we're going to have to figure out whether any of these comments require further discussion.

Maybe we want to have a telecon or something about that. But I think we need to all take a look at these things. Then provide what our assessment is of these reports, and they may be all just hunky dory.

But there may be some issues and some concern that would have to be, you know, transmitted along with the report. I think that would be appropriate.

Co-Chair Rosston: Michael?

Mr. Calabrese: Yes. And I think I would - if we just - yes, second what Dale and Rick said that, you

know, I don't think I'd be comfortable voting on the substance of these reports today.

I would like some time to look over it and also thanks to Larry for that clarification because my recollection from what Karl described about this process at the beginning was that these working groups were very much like our normal committees, that they were going to get together and bring recommendations to the CSMAC but we would be making a decision about what to recommend.

And although, you know, I think the - you know, a consensus that's reached by these stakeholders is valuable in and - in and of itself and if we are going to be associated with the recommendation then we may decide to change it or add on whatever we want to add on to it.

Co-Chair Fontes: This is Brian Fontes, not to be confused with Tramont. The importance of this discussion I think is critical and it's obviously necessary and rightfully so that we have an opportunity to thoroughly review the document, and early on when we started this CSMAC process, this go round, we talked about the idea and I mentioned just a few minutes ago about separate statements.

The separate statements don't have to be statements of disagreement or I don't approve or I don't accept. It may be statements that say that while you're considering X you may also want to examine Y.

So it's a way of enabling decision makers, policy makers to understand where the majority of the consensus is to produce the document and then also any type of additional information that may be beneficial to those who are reviewing the document from a policy perspective to understand where some things may need to be addressed, et cetera.

So don't look at it solely as a dissenting statement.

Co-Chair Rosston: Let me - Jennifer, did you - and

I know it's been hard to get through on the phone. Did you want to try and say something or should we go on to Kevin?

Ms. Warren: No. Thank you very much, Greg. I appreciate that. I think that if there are separate letters - cover letters, that's appropriate.

But if there's - as I think someone has already indicated, if there is anything that would be proposed to actually change in the report we would have to go back down to the working group and deal with it at that context given that all stakeholders aren't represented at the table.

But I think the path forward that I think I heard through my kind of bad connection here sounds fine, which is allowing everybody - all the reports that were distributed, take the next step on them at the next meeting. Or excuse me, by email.

Co-Chair Rosston: Okay. Kevin?

Dr. Kahn: Just a clarification. If there are other statements that want to get attached I assume that those statements have to be voted on or accepted by - this is not a - I mean, this is actually a question I guess to Larry and Legal.

I mean, under the guise - under the mechanism under which this operates as, you know, as a back-up it's not just sort of random attached statements from members of CSMAC, right? I mean, if they're coming -

Mr. Strickling: You wanted Janice to vote that you actually believe what you believe when you dissent? I don't know that -

Dr. Kahn: No. I'm just - I'm just - in the same sense that you said you can only accept reports from CSMAC - these reports from CSMAC - if there are some other dissent or whatever, I assume those would also come from CSMAC, not from individuals on CSMAC. I'm just asking or I'm not sure how to

take -

Mr. Strickling: No, I think -

Dr. Kahn: That could be any individual here can -

Mr. Strickling: But it would have to be a member of CSMAC but yes so -

Dr. Kahn: Okay. And I'm -

Mr. Strickling: I'm not quite sure if the charter specifically lays out the standard for decision making. I think the FACA rules are majority vote.

But in any case, we have a majority vote. If somebody who voted against wants to make their views known we would accept those views in the form of a separate statement that would not have to be vetted by -

Dr. Kahn: Okay. I just was trying to understand how that worked.

Mr. Strickling: Okay.

Co-Chair Rosston: And I would hope that we would also vote to move forward on the, you know, the other opinions as well just to forward it on and say this - a minority. Again, some other people had different opinions. I think we could -

Dr. Kahn: Well, that was kind of actually my question was could we vote -

Mr. Strickling: If there was a - if there was a minority opinion on any of these reports is that itself a minority opinion forwarded by CSMAC or is it kind of a random collection of individual statements by people on CSMAC.

Co-Chair Rosston: I think the answer is yes.

Mr. Strickling: I guess, Kevin, what's the difference in your mind?

Dr. Kahn: Whether CSMAC has to worry about

voting on these dissent letters or not if there are any. The answer is no, they don't.

Mr. Strickling: They'd have to be - I'm having a hard time wrapping my brain around it because it seems like the vote is on whether to forward the report and making the recommendation of CSMAC.

Dr. Kahn: Yes, I have no problem with that. I was just trying to understand the process. That's all.

Mr. Strickling: So I think all we're suggesting is that we would entertain anybody who was not in the - maybe put somebody in the majority who wants to add separate views. The idea is I think those are individual to the member and come along.

They don't take the form of a recommendation at that point because they didn't get a majority vote by the CSMAC.

If what you're saying is if to the extent that the document as exists is silent on a point and you want to bring forward an additional recommendation for consideration by this group, I think that's within your ambit to do it at which point if it got a majority vote does this become an additional recommendation.

Dr. Kahn: Okay. I was just trying to get clarification on my confusion.

Co-Chair Rosston: Karl and then Brian and then Pepper.

Mr. Nebbia: Let me just make one point here. If after looking at the document, you are - have a dissenting view or you're concerned about it, the only thing I ask is that before you file that dissenting or concerned view that you contact the co-chairs and the liaison that have been hard at work on this and at least get some understanding as to why they came out where they did.

So the thing would not be very helpful to get a lot of

dissenting views that were essentially missing the point because you hadn't engaged in a discussion and I know there's been a lot of work here and not everybody can attend all this stuff and in fact in some cases you may not have even felt qualified to be in the middle of that discussion.

So I just ask that you do that. If you're going to make a comment or an input that's contrary to the outcome document please contact the co-chairs and the liaison and have some discussion about why it came out the way it did.

There's been lots of back and forth, a lot of bloodshed and I appreciate that.

But also it might help you in the end to decide whether you really want to dissent on that point or not. So please do that.

Co-Chair Rosston: Bryan?

Mr. Tramont: I was just going to propose - sorry. Bryan Tramont. We probably need - maybe Greg and Bryan can sit down with you after this with the working group co-chairs liaison to get some sort of schedule together so we can figure out because there may be things that Kevin recommends that the majority of the CSMAC will support but that would require that everyone see it well in advance and we figure all that out and that there's a conversation about those things.

So maybe we have a schedule that we work out for each working group so that we can still get this done by - to board August meeting, by the end of August.

Mr. Nebbia: So I mean, we'd really like the comments back within a week or so and then to go out for a formal vote up or down on yes or no. That would be - that would be very helpful. Okay.

Mr. Reaser: So I think what might be useful - Rick Reaser - we might want to make some observations

about the reports and those might be good to put in a transmittal letter - some observations about, you know, about that.

So because Mr. Chairman, I am from a very small country with a very small delegation. I was unable to attend all the -

Mr. Nebbia: Also certainly to this point we've dealt in the realm of the hypothetical - what if I have a comment, what if I want to say something.

So it would be helpful in our dialogue today if you've already, you know, some of you have been engaged in the work and maybe something came out a way you didn't like.

If you want to at least let us know what your concerns are that would be - that would be helpful.

So, but otherwise, I mean, once, you know, we are having a hypothetical discussion about, you know, whether we're going to need to file these side comments. But if we don't need to go there obviously we'd prefer not to.

But if you do have a concern I'd be - you know, we'd certainly be happy to hear it today while we're here.

Co-Chair Rosston: Okay. So I think - well, I'm pretty sure right now we do not have to call for a vote on the report from Working Group 3 at this point in time. So moving on to Working Group 4. Is that Mark?

Mr. Gibson: That's me. All righty then. You know, like Rick our working group had a lot of involvement. I don't know the head count but it was somewhere between 70 and 80.

The real work was done by a handful but there were a lot of people that were involved in the working group. And by the way, our report is final and I believe I checked our report. It says the

recommendations are from the working group.

We got lucky that way I guess. The report was 84 pages so I think it's better than Rick's report at least in terms of brevity.

So I get an A. But 18 pages of report, you know, so he had, I think, a dozen so we kind of went over on that one. We made 11 recommendations and like I said, we said the working group recommends.

And so I came before you guys back in June and we had a list of recommendations and so in the ensuing time between June and yesterday afternoon we refined those recommendations to the list that I'll go over real quick.

And in the report they're broken down by virtue of the equities. Here I'm just sort of lumping them together so I don't have to repeat everything.

First recommendation is because they can relocate microwave systems and because we felt if CSMAC said not to they wouldn't. The other recommendation is to now with respect to TRRs - these are the tactical radio relay systems - because they can relocate or those that can relocate from 1755 to 1780 and can compress up into 1780 to 1850 should do so, an alternate spectrum needs to be found to accommodate anything that has to relocate out of that.

The term vacate was used in terms of compress because DoD preferred the term vacate so that was fairly easy to use. It was a thing of semantics at some points.

We also suggested that - or recommended that the transition plans be developed for this vacation so to speak or vacating to consider the list of economic areas ordered according to industry geographic implementation priorities with some other language.

But basically to the extent that the TRRs and - well, JTRS aren't relocating - actually point to point



systems as well that as transition plans are developed if they can be ordered consistent with the economic area recommendation or analysis that was provided that would be an industry requirement or an industry ask.

We included in our report the full list of economic areas and the distance and impact to each base for TRRs and for JTRS. That's why this report is 84 pages.

In consideration of the fact that some of these will stay for a period of time into which the carriers would want to deploy systems, there will be some I think - still some notion of protection zones and so there was agreement that the - we should continue to study the protection zone analysis methodologies for both JTRS and for TRR systems with a goal of improving the assumptions.

There was agreement in the group that the assumptions were - I won't use the word worst case but because I've just said worst case you can infer what you want in that.

But nonetheless, they were not as good as they possibly could be and so they would lend themselves to additional revision in terms of some specific points that we make within the report.

Then, in addition to doing that, the recommendation is go back and apply those changes and then recalculate the protection zones so that when the carriers actually want to deploy that they have refined protection zones that reflect the updated methodologies.

The impacted agencies should also develop transition plans in consideration of the systems to address relocation of assignments, the compression of 1780 - there's that compression word - and then comparable spectrum.

So maybe now I need to go back and find where we say compression and use vacate but -

Mr. Reaser: I found that one too.

Mr. Gibson: Oh, okay. I could expect you to do that. All right. Well, as I said before I thought this was the final report so maybe it's open to some typo at least.

The other thing we wanted to say was to develop a sharing approach to permit commercial wireless deployment in the protection zones.

And so there is the protection zones that indicate when the carriers will need to engage. We want to restudy them with improved criteria.

Then there is when the carrier is willing to deploy within the protection zones we need to address how that will happen in terms of both the interference analysis methodologies and a coordination process, and that's what that recommendation says.

And then we also wanted - recommended that there are areas where there are TRR systems that are either located or that would wish to deploy where there may be little or no commercial interest and that is described in the report what commercial interest means yet it still needs further definition.

And so there needs to be an approach developed to accommodate this type of TRR continuing work or continuing operation in areas where - I said in the last meeting there would be sharing and somebody noticed that if they're not operating why are they sharing.

So we had that metaphysical conversation and we determined that it wouldn't necessarily be sharing if there's nobody there but, you know, we didn't know what to call it so we called it a sharing approach.

Nonetheless, you can see in more detail what's in the report. The other thing that happened, as I mentioned in the last meeting, was that in the middle of the process we got clarification on a set of systems that would be statewide assignments that

operate actually at point locations within the states and we have not addressed them whatsoever.

So that has to be addressed and that's addressed in future work. And then finally, there needs to be a method to include a testing program to demonstrate the viability and effectiveness of any protection and mitigation methods proposed by the licensees.

So those are the recommendations. Now, unfortunately, and we may be able to fix this in the future, but right now we have two sets of differing positions.

One was on the interference protection criteria and that was - differing positions are that DoD believes and it's detailed in the report that interference protection criteria, as they were in the report, which was an I over N approach and I think for the most of ours they were -60B, that it is the correct approach to take by virtue of ITU and international approaches. And again, you can read the details in the reports. That was the DoD position.

Industry believes that - they respect that but they also believe that there is room to study the systems as to their interference susceptibility specific to a domestic issue or domestic deployment and that that should happen.

We could not get that one over the transom, so to speak, so we'll have to decide how to handle that, you know, in the future.

And then the other differing position was with respect to commercial licensee operation within the protection zones and this is what took us up to the brink yesterday.

Basically, there had been some discussion of the carriers of the DoD wanting the carriers not only to accept any interference into them for operation within protection zones, but to demonstrate that they can do it and there was arguments about that in the report. I can detail that if anybody's

interested.

Industry feels that it's sufficient to accept interference and there is really no precedent for having to demonstrate that your equipment can accept interference or can operate without interference and that it would impact longstanding practices that industry uses for spectrum management.

And so both positions, unfortunately for this one and the former one, are represented in the report. Again, we just couldn't get that one over the transom without a concurrence or consensus and so that's what we have. Questions? Rick.

Mr. Reaser: I find that interesting because our group adopted that last thing okay.

So maybe this is something the CSMAC ought to talk about because in one case - now, it might be the issue of, you know, we have 25 sites and they're in locations that may not be a problem.

But that is - to me that's fascinating because this was a last minute sort of discussion in our group.

We were able to sort of put our head around that. But it may be that the circumstances are different for what's going on with our deployment.

Mr. Gibson: What did you adopt?

Mr. Reaser: We adopted the - we adopted the DoD position. So and it's interesting, the industry didn't have a strong feeling but it could be that that's because that it's a different scenario. But the same proposal was made to our group.

Mr. Gibson: This is Mark. Let me comment on that a little bit. The bulk of the work in this working group was really done over the last six weeks starting back in May when we got updated information, which is not to say there hadn't been substantive work done.

As you know, there were lots of analysis work done. The DoD, as Fred has said many times, took out of hide and everybody in the working group including industry respect that.

But this specific issue - this and the interference protection criteria issue - well, let me talk about interference protection criteria and I'll deal with the other one in a moment.

Interference protection criteria has - was a topic of discussion - was supposed to be a topic of discussion in the technical working group that was supposed to straddle 4 and 5 and any other working group that was interested.

It was agreed in the working group - in that technical working group it was really never discussed other than that we would try to deal with it.

As the work in our working group moved along, again, over these past six weeks when we realized there was more data shared on these systems than we'd gotten initially, it just became a bone of contention on ITC.

The same is true for the operation within the zones. We never really had the chance to get into that discussion up until really last week just because we were focused on what the zones looked like, where the zones are, and any other information.

I think if we had additional time and maybe Rick, you know, commented on this a moment ago, we could probably get a consensus position on it.

It's just that, one, we study it well enough to be able to present a consensus position on. So that's kind of where we are right now with it.

Co-Chair Rosston: Kevin?

Dr. Kahn: So - it's Kevin Kahn - that's great out of the working group. CSMAC, however, based on the

previous conversation, is the organization that is supposed to be making a recommendation.

It is not at all clear to me that CSMAC shouldn't take a position on those open questions. Independent of what the working group - the working group said hey, we have a disagreement but this body is the one making the recommendation and, you know, we may not be able to but it seems to me it's valid question to ask this body do we have a consensus on that disagreement.

Certainly in the case of some of the interference criteria I would think that this body might well have a position on it. I'm a little less clear about the second.

Co-Chair Rosston: David?

Mr. Donovan: Just some factual questions, Mark. I don't want to take away from Kevin. I didn't know - did you want to discuss it now, Kevin, or -

Dr. Kahn: No. You know, I -

Mr. Calabrese: I have a quick follow up on Kevin's point.

Dr. Kahn: Okay.

Mr. Donovan: Just - no, absolutely. Go ahead.

Mr. Calabrese: Yes, Michael Calabrese. Just yes, I think Kevin makes a great point because really that issue is something that cuts across not only, you know, this band - all the working groups in 1755 - but even other bands we might talk about in the future and in some ways we might want to address this notion of is a garage - you know, it's sort of a fear of a garage door opener scenario which the FCC will tell you is an urban myth to begin with.

Is that something that should really derive substance, you know, and so we may want to - you may want to, you know, address that.

Mr. Nebbia: And I think certainly the discussion in general about the interference protection criteria is certainly one that I think even outside of this item is open for the future.

I mean, that certainly would be something and in fact it's one of the parts of one of the items I think have been suggested for future work.

Certainly that can be taken on in that discussion because in fact in this case most of the tools that have been used have been in fact the tools that have been used for a long time and so on and they're certainly well accepted.

And so I think - I think that discussion is certainly one that's valid for the future but I think it's also an important point in this case, regardless of how you feel about the myth of the garage doors and so on, is the fact that I think for all the talk about the struggle to get DoD data in this discussion one of the things that DoD has regularly come back to is we've asked or they've asked numerous times can you tell us how you're going to live with this just to give us some feeling of confidence that this just isn't going to backfire on us.

Can you just give us some sense of how you're going to do it, and I think aside from having a very detailed, here's where we've proven it all out and so on, if industry over the next couple months, in supplementing our work here whatever, is able to come back and say these are how our systems work that would in fact accommodate these kinds of interference, I think the fears would certainly be tamped down a lot from where they are.

But there just hasn't been that kind of, I think, feedback that was certainly expressed. Coming from their expression to us we're just not hearing those answers.

Mr. Gibson: Well, let me comment on that. This is Mark Gibson again. That might well be where we end up but that was not DoD's position in this.

It was in the context of coordination of systems in protection zones and the desire for carriers under each instance to prove that they could accept any interference that they said they would accept.

And that might have been a fall back but, you know, this occurred literally yesterday or the day before yesterday and we just did not have the time to run it to ground.

So it could be future work. But, you know, it may be a point we get to in the future on that issue and I think the IPC we can kick to the - well, we can kick to some other working group because it does cross at least 4 and 5 if not others as well.

Co-Chair Rosston: David and then Janice.

Mr. Donovan: Mark, thank you. This is - this really is a phenomenal group report. Thank you. Just some factual questions on it, if I might.

In the analysis that we're looking at, particularly with respect to TRR and others, this report focuses on the interference issues with respect to these systems and LTE, correct?

Mr. Gibson: Right.

Mr. Donovan: Was any analysis done that - because some of the recommendations are to move to comparable spectrum.

Mr. Gibson: Right.

Mr. Donovan: Was any analysis done of the potential ability to share between the DoD systems that would be moved and the incumbents on the comparable spectrum where they may be moved to?

Mr. Gibson: No, I don't - I don't believe that was in the guidance. We were only really to look at the 1755 to 1850 meg band and not where they could relocate to.



Mr. Donovan: Okay. So at that point then there were no recommendations then out of this subgroup as to what band these systems should be moved to. Is that -

Mr. Gibson: No. That was another point that was not in our guidance was to recommend where they should go beyond what was in the NTIA report. So no.

Mr. Donovan: Okay. So if I look down at the NTIA report which lists in, I think it's Chart 3.3, a number of alternative bands one can go to, there was also some analysis in that report that indicated that there's a possibility of sharing.

I mean, that was part of the NTIA report, that these bands may be able to share with -

Mr. Gibson: The relocation bands?

Mr. Donovan: Yes.

Mr. Gibson: Yes.

Mr. Donovan: With DoD systems. But based on this analysis that was done by you or by your working group, excuse me, there's no indication that the DoD systems that you examined could in fact share on the bands they may be moved to.

Mr. Gibson: No, that's right. We didn't analyze that.

Mr. Donovan: Thank you.

Mr. Gibson: Sure.

Co-Chair Rosston: Janice?

Hon. Obuchowski: Just a brief observation. I was - you know, I'm happy enough with the approach taken in the preceding item.

Co-Chair Rosston: Pull the microphone please.

Hon. Obuchowski: Oh, I'm sorry. I'm happy

enough with the approach taken in the preceding item, but recognizing it's an open question here, it's certainly an issue that's tightly connected to the enforcement question that's going to be discussed in the next round of CSMAC.

One of the reasons for this idea of predetermination of no interference or no negative interference has to do with the fact what happens if it arises, and my experience with garage door openers is it's not an urban myth.

Furthermore, as we go in to a world with a lot more sharing, it's inevitable.

So, you know, assuming we come up with iron clad enforcement that gives people comfort that it's not going to be a nine-year rebanding proceeding, it's not going to be runs to the Hill, it's not going to be, you know, run through the press before it ever gets brought to the parties, this is going to work out in the long run.

But in the short run, people have every right to be concerned and perhaps some of this will have to be worked out in the context of the next round.

Co-Chair Rosston: Are there comments or questions on this? So I think, at least my sense is that we are going to not vote on this at this point but given that we've got the reporting end is that -

Mr. Gibson: Well, I'm not going to call for a vote because I think I only got it to you guys probably this morning. So I probably beat the clock on that one. Mea culpa.

Co-Chair Rosston: So we'll follow the same procedure as with the others. Okay.

Mr. Gibson: Yes, and frankly, you know, speaking as the - as a liaison not only on behalf of the co-chairs, while I'm not interested in inviting any more work to the working group because we need to take a little bit of a break, if there are thoughts on these

two areas of differing position, you know, let me know or let us know and, you know, we can cogitate on it.

But whoever said it - maybe it was Kevin - that the issue of - both these issues sort of transcend all the working groups that we have here. So thanks.

Co-Chair Rosston: Okay. Great. Thank you very much, and I think we're up to Working Group 5, Bryan.

Mr. Tramont: Great. So I'm going to give a brief overview. I will note for the record that our report is the shortest unless you count the attachments. It's a summary - they're summary.

It was a long and arduous process and we're happy to be able to present a draft of the final summary. I will note that the sub-working group reports are in draft.

We spent the last few weeks ramping up to today resolving word disputes around what's in the final summary of the report, not in the sub-working group reports. So the sub-working group reports are now subject to conforming edits.

That process hopefully will be done in the next week to ten days and then we will be able to resend around the sub-working group reports with new language that makes them consistent with the working group draft final report.

So I hope that is somewhat clear. So you have in front of you the final report of the summary and then in four sub-working group reports that cover air combat training, small unmanned aircraft systems, precision guide munitions, and aeronautical medical telemetry.

As you said, no votes on these today, as we've discussed, and as the confirmation process - conforming process rather is underway.

So obviously our charge was to look at LG systems sharing with the government. There were a variety of assumptions made in order to simplify and expedite this process.

Those assumptions were not always without dispute and that has been a big source of conflict as we've been trying to edit as sort of how to characterize those assumptions.

One set of assumptions, for example, is about the commercial network. The PGM sub-working group used a grid approach for the commercial network. All other sub-working groups used that randomized real network lay down that we had discussed I think at the last CSMAC meeting.

At a macro level, the sub-working groups concluded that based on the information available, separation distances in the hundreds of kilometers would be necessary to prevent harmful interference.

You'll see in the charts - you'll see in the report a series of charts that show the separation distance for the rest - separation distances for each of the relevant systems based on the information available.

And the ultimate conclusion was that sharing would be indeed problematic. I will note that the recent progress on NDAs hold the promise of additional information disclosure and exchange between the federal government users and the commercial users and that some of these results could be refined as a result of that process.

But based on the information available, this is where we are. So we are hopeful about what the NDA process would mean to additional work in this area.

We do have a series of additional work areas that we detail in a moment and we also note that to the extent relocation to other bands may be necessary, that was not part of the scope here.

So I can preempt the David Donovan series of questions about 2025 to 2110.

In terms of next steps, the things that would have warranted additional consideration and possible effects of clutter and terrain first - second time-based sharing, specifically licensed shared access technology to facilitate sharing, the effects of frequency off tuning, possible notches in wireless system use.

Number five is actually one that Mark just referenced - consideration of different interference thresholds. Number six, user equipment, antenna height and network loading alternative assumptions consistent with the problems I said earlier about assumptions and disagreements about that.

And then finally, a government assignment information and possible market prioritization based on the commercial need for various markets.

So that's the overview in exhausting detail you can see in the sub-working group reports to the extent the information was available, the work that was done, and we submit this for consideration and then ultimately hopefully for a vote at the next meeting. With that -

Co-Chair Rosston: So I regret to inform you that you have not avoided the David Donovan series of questions.

Mr. Tramont: I saw his technical update. The question is whether you're able to answer them or not. Well, okay. Good.

Mr. Donovan: Anyone else before - rather than a deployment sayeth not, is there?

Mr. Tramont: Yes Chairman Dingell. I'm sorry.

Mr. Donovan: Thank you, Bryan. And look, thank you. I know this was a ton of work that you did but I think certain events, frankly, compel me to kind of

at least ask sort of the basic questions.

So like Mark's committee, your committee did not study the potential interference between any government systems or DoD systems and the incumbents on where they may ultimately end up if they go forward.

Co-Chair Rosston: Correct.

Mr. Donovan: Correct. And no specific recommendations were made as well other than what was in the initial NTIA report.

Co-Chair Rosston: Correct.

Mr. Donovan: Your cross - I mean, because there's cross references in both. I guess the issue I have there is in the initial NTIA report on this band there are - there was - in that report itself there was no analysis of potential effect on where these systems may end up in terms of finding comparable spectrum.

But what we now know at least based on the good work that was done by both these committees is that the interference, certainly protection zones for some of these systems, is fairly substantial and indeed some of them may range from 100 kilometers to even up to 400 kilometers based on some of the data that's occurred here.

So I guess what I'm trying to get a sense of then is I noticed, for example, even in the department - our friends over at the Department of Defense when they sent their proposal compromise that they indicated that at least some of this analysis was based on the CSMAC working group's analysis.

But as I understand it here now, that CSMAC did not do any analysis of potential interference of comparable spectrum in systems that may be there.

I'll lay it out this way, and I don't know whether NTIA or CSMAC as we march down this process, and

it's not just for broadcast spectrum, and though I'll admit my electronic news gathering spectrum seems to be sort of center stage here, is whether or not we should begin to examine it because whether or not one can move systems in part depends on where they may end up and what the potential impact of that is.

Certainly, while we all want to facilitate broadband and we all want to facilitate new services that can be made in the federal bands that will be vacated, you certainly don't want to undermine or destroy something that's existing as well.

I will make a special case for electronic news gathering and just indulge me for one moment as I go forward, which really means three minutes.

We just moved - we just moved ENG spectrum a couple of years ago. It was part of the mobile satellite service. We gave up 35 megahertz of spectrum and so those systems that now occupy that band are relatively new.

They're digital and we compressed. It was an in-band compression. Now, at this point unlike your LTE systems you're looking at essentially remote systems that can go anywhere within a market. Their signals can go 50 or 60 miles, because what you're trying to do is to get a remote location back to a receiving antenna.

You're looking at masts that may be 30 feet high and the truth is you don't know where these folks are going to be because you don't know where God forbid the next Boston bomber is going to be.

You don't know whether the Rockaways are going to catch on fire or have problems like they did during Hurricane Sandy.

Now, at this point that coverage system is the only truly effective system particularly during emergencies, and in fact, I know in New York for example, the governor has made arrangements to

access every television newscast throughout the state so he can get it in Albany.

My understanding is the White House has similar capability and the reason is because what you want to do is to use the newscasters, the remote newscasters, as the eyes and ears of policy makers, particularly public safety policy makers.

When Craig Fugate gets out there and says turn on a TV or a radio during an emergency that's what he's talking about and it's that spectrum that's used and it is packed and it is crowded during - it's heavily coordinated and during large events, whether it's 9/11, whether it's the Republican or Democratic conventions, whether it's the Super Bowl, whether it's the Boston Marathon, all that spectrum is being used. It is packed.

Now, the alternatives that are available at this stage right now, one of the things that my industry is looking at is bonded cellular. Now, bonded cellular systems are essentially using the cellular network. It's a form of cellular network.

The problems that we found during Superstorm Sandy was that like the traditional cellular systems that had problems during Sandy - they also had some problems during the Boston Marathon problem - is that those bonded cellular systems are also susceptible to the same problems, which is either over usage and they got - or when power goes out being connected to the grid.

So the ability to use electronic news gathering is absolutely critical to getting vital lifesaving information out to folks.

So it seems to me, at least in this case, that perhaps, you know, given the fact that we now know that some of these systems that are being perhaps maybe moving on these systems that have protection zones of hundreds of kilometers - 400 kilometers for a TTNT system - that may take up the entire East Coast.



Some of the systems that are looked at Camp Pendleton may cause or have problems with half the Los Angeles market. So I think we have to be very, very careful.

Mr. Chairman, I don't know whether it is, you know, within the scope of CSMAC to look at those issues or not.

I know these reports do not, and it may be getting too far too much. Maybe it's an issue with the Federal Communications Commission.

But I would ask that before we move down the path to say yes, these are some of the alternatives that at least some consideration ought to be given. And with that, I will respectfully be quiet.

Mr. Nebbia: Just wanted to make a couple points. First of all, on the form of the recommendations and their annexes, as Bryan had mentioned, there's some editing that needs to be done in the annexes.

However, from what we understand from them, they're certainly fully in a place where you can read them and get the understanding of what the annexes are.

So there's no - there's no need to wait for an updated edited version of that document. The second point I wanted to make, at least as we understand it as laid out in the DoD roadmap, they're viewing this spectrum as an opportunity after having for the most part limited themselves to their existing operations, after having limited them to above 1780. This band essentially becomes an opportunity where they have some overflow requirements and, for instance, if they're doing a, you know, large-scale training exercise in Nevada, they may need some extra frequencies for that - for that event.

It's not to make this essentially the first or go-to, you know, immediate band but it's a way of supplementing the other activity which, of course, in

many discussions recognize that the use levels can be sporadic and - but there are times when they got major units out or something that they need the extra spectrum.

So at least as they have posed it, it is something that they believe that they can try to minimize the impact in the band. But it does point to possibly an improvement in the future in terms of the coordination tools that would be used.

There are existing coordination efforts that go on between particularly NASA, for instance, and the Society of Broadcast Engineers that kind of organize this band.

So in order to make this work, we may have to make that a more workable scenario or situation. So there may be some improvements there I think the DoD's pointing to but once again, I think they've given a lot of consideration to minimizing the impact on the band.

But certainly, on the government side, as they look to ENG operations they say boy, they sure look a whole lot like us. So you're one of their favorite people.

Mr. Donovan: And Karl, I appreciate that and I certainly welcome and I think the industry welcomes the opportunity for those discussions.

I think it wasn't until the work that was done in these subcommittees where we realized for example, if you're using one of these systems at Pawtuxet and you were using the entire or significantly the entire band you would actually be limiting all the ability of all the stations.

And it's not just television stations. It's CNN. It's cable networks. It's the entire news gathering operations in this country. Start with those - with those frequencies and if you're doing something at Pawtuxet you may very well preclude the ability to use any ENG throughout Washington, D.C. into

West Virginia and perhaps to the southern part of Philadelphia.

So we welcome the ability to have these discussions. I think and it certainly is the beginning to have those discussions. But I just wanted to just sort of lay down that - the issue that this spectrum is heavily coordinated through the SPE. It is heavily used and we welcome good coordination but it's - the interference protection zones here are rather significant.

Co-Chair Rosston: So I didn't see who came first so I'm going to go with Kevin and then Harold unless the other way around.

Dr. Kahn: This is -

Co-Chair Rosston: You want to pull up the microphone? Yes.

Dr. Kahn: Kevin Kahn. So this is the committee I sat in on for much of its deliberation and I, you know, have the greatest respect for the fact that Bryan and Jennifer were able to pull a report together at all out of that.

But I have to - I actually - I have to express some real concern with the notion of voting for this recommendation because there were a lot of things in there where I am not technically expert enough to judge what was going on.

But let me give you my unedited and only slightly over the top view of what occurs here.

Essentially, the DoD came in and put on the table protection zones, of which a subset I could understand and simply did not pass even a sniff test, quite honestly.

They were in many cases absurdly large. They were - to say worst case is, you know, not even coming close to matters.

Nevertheless, they were put on the table. There

were lots of industry push backs attempting to make some inroads in that I think and by and large very little inroads were actually made in those protection zones that were stated.

When I look at the limited amount of places where I could actually apply some judgment to what went into the protection zones and they simply are not credible, and now I have a report that I'm asked to vote to recommend based on data that I simply can't believe personally, I have a real difficulty with that.

And it's not for lack of trying and it's not for lack of the effort that went into it. It's for, you know, lack of enough information to justify the numbers that are in the report coupled with some ones where you can see the justification and the justification simply is absurd.

And yet now this filters off to CSMAC as a thoughtful deliberative body which is supposed to put a stamp of approval on this that says this group of people have looked at this work which was up until now primarily done in secret for understandable reasons.

I mean, I'm not getting into the security issues and all of that. But it's really hard to sit there with a straight face and believe.

And I just, you know, if that's what's going on here we don't need CSMAC to say that to NTIA, quite honestly. You know, I mean, if these are the numbers that DoD is going to go with and the government is going to go with they're going to go with them.

But I'm not sure I see the purpose, quite honestly, in having a unbiased group of primarily industry people look at this and say yea verily, this is good analysis and we as industry believe it.

And I'm sorry if that upsets people and I don't know if it will or won't. But, you know, I just don't feel like I can sit here in good conscience at the end of

the day and say yes, this is really good analysis done well and justifiable.

Co-Chair Rosston: Harold?

Dr. Kahn: Whoa, did I get a bunch of people -

Mr. Donovan: Kevin, I thought I was going to be the heavy.

Dr. Kahn: Hey, I - you know me.

Dr. Furchtgott-Roth: I have a different set of questions or clarifications. I don't know - should there be follow-up on Kevin's point or -

Co-Chair Rosston: Follow-up on Kevin's point first? Yes.

Mr. Reaser: Since it was the shortest report I actually did read the whole thing and I have to agree on a couple areas.

On some of these numbers in there I had a hard time believing them because if those numbers are really true they must be having incredible amounts of interference today, and then the question you get into and I worry a lot.

I'm having meetings at FAA right now on some things about IFS and I'm trying to get Fred excited about but I'm not getting much reaction.

But the dilemma is - you know, on the unmanned aeronautical vehicles, if that is the protection zone for those things I don't think that's a real safe place to be, to be honest with you.

So and maybe these are worst case, corner case analysis stuff like that. But if indeed these systems - some of these have such huge protection radiuses - we have a serious problem today with interference and then you kind of wonder about things like safety and other kinds of things.

So and maybe these are negotiation positions and

all that kind of stuff but I had a - I had a tough time with the UAV numbers. I mean, a really tough time.

Mr. Calabrese: I just had a factual question I guess for Bryan that may be related. You know, I read this - I didn't see where - I was wondering are these - will these separation distances or protection zones only be in effect during the training mission or at all times?

In other words, are these just - because they can't be doing these things very often so -

Mr. Gibson: That's the time component. Still got a time component.

Mr. Calabrese: Yes. In other words, how much - are these just that there will be - there will be a notification or a database or a beaconing system or -

Mr. Gibson: It's - you want to go? It's Mark Gibson. Because I was on the working group as well as a CSMAC person and that was - if you go back and I'll use this as an opportunity to make my comment.

You need to take the report as a whole because one of the things that Bryan said when he did the presentation on it is that the group determines if protection zones were - what was the word you used?

Mr. Tramont: Problematic.

Mr. Gibson: Problematic. You know, and so I think that talks to Kevin's point out because I think if you boil what Kevin said it was problematic. Not that Kevin said it but what -

Dr. Kahn: It might be both.

Mr. Gibson: Yes. I won't comment on that but the other thing that you need to look at in the report is the list of future work because there was agreement on the future work and one of the - a lot of the

future work goes to your point, Kevin, which is to revisit the whole analysis methodology.

One of those points is time component of operation and while it wasn't included in the results there were measurement work - measurement done to show that there is some time component of operation that could be exploited and Bryan referred to the technologies that are used for that sort of thing. He used LSA and ASA as examples.

So if you read the report in a whole it does discuss the issue with the size of the protection zones and the need to further study and, again, that's kind of consistent with what ours did as well.

Mr. Calabrese: But what should we assume based on the report and his recommendations, that these would be 24/7 exclusion zones?

Mr. Gibson: No.

Hon. Obuchowski: No.

Mr. Gibson: Again, you can comment, Bryan, maybe on the future work.

Mr. Tramont: Well, I just don't - I don't feel that you can treat them as recommendations of a path forward.

I think it's a recommendation for additional work. I don't think we got to the point where you can take any operational comfort from what is actually in the - what we've done so far.

Between what hasn't been able to be disclosed to the NDA process wasn't done and based on some of the assumption issues I think we just aren't there yet.

Mr. Gibson: Yes. There was a -

Mr. Tramont: I don't think you disagree with that.

Mr. Gibson: No, I don't. I agree totally. There was

a lack of -

Co-Chair Rosston: It's an open issue.

Mr. Gibson: It's an open issue, yes. Because again, like I said, the report in total talks about the size of the exclusion zones and the analysis used to generate the exclusion zones and the reason for - which drives the reason for the future work which would talk about making the exclusion zones - protection zones, I'm sorry - smaller.

So, you know, that's - Bryan said it. You know, it really is a recommendation for future work.

Mr. Tramont: And one threshold question is we might - the assessment based on the tentative work might be that it's not worth trying to figure out sharing.

We just need to compress or relocate and that the inquiry to get to the granular level of what sharing is like isn't worth it because we know we're doing something else. So I think that was part of the threshold conversation.

Co-Chair Rosston: Janice?

Hon. Obuchowski: I'd just like to make an observation. I didn't sit through every last meeting but I did try to pay particular attention to this committee and its working groups and I strongly disagree with Dr. Kahn's characterization of the type of discussion that was had.

I was very impressed on both sides of the table and I will say this for the commercial folks as well as the military folks for the amount of effort that was put in, the attempt to work through conclusions and I don't think it's terribly productive to use what I would characterize as over the top language in criticizing it because if we're going to move forward in this area we've got to get past that, and the fact is in some of these meetings where I sat I think the industry was, frankly, shocked.



You can quarrel about the size of the protection zone. I'm sure those can be changed. Nobody said it had to happen across the entire band or that there weren't time parameters or future study.

But the fact is we came - people from the commercial side came into that working group using the same assumptions that, frankly, underlie the BRADL group, that the real problem was something very minimal.

The problem isn't minimal. The whole country, indeed largely the world is moving towards these kinds of aerial platforms and the problem can't be minimized and shouldn't be ridiculed.

So I'm comfortable with studying this a lot further. I think DoD in its proposal, which isn't on the table today but sort of recognized some of the wisdom coming out of this group.

I just want to say for the record that as far as what I could see happening in that group was a lot of people trying to operate in good faith and, frankly, trying to understand across two very different worlds some very changed circumstances on the part of federal users.

Co-Chair Rosston: Mark?

Ms. Warren: Well, I think - could I go, Bryan? Could I say something inappropriate?

Co-Chair Rosston: Jennifer?

Ms. Warren: Thank you. I want to pick up on what Janice said because I did as a liaison attend almost every single Working Group 5 meeting at the sub-working group meetings because they got into a level of technicality that I think would have challenged most of us in the room there.

But the - I think everybody was struggling with the new model to try to have a conversation to try to share information, putting aside what could and

couldn't be shared, just the facts of having a dialogue.

I think we're quickly forgetting that and I think we need to remind ourselves of that a little bit here.

I have to disagree with Kevin as well. There were certainly moments of frustration as a liaison with a lot of, you know, different viewpoints.

But I don't think there was any frustration in the sense that the process wasn't trying to move forward and that people weren't trying to move it forward.

So I just wanted to offer that because I'm a little troubled by how that might be perceived in the larger loop and as having attended almost all of them that's my perception. Thank you.

Mr. McHenry: I sat through this -

Co-Chair Rosston: Microphone.

Mr. McHenry: I sat through this in Working Group 1 and these - the zones are really huge and the reason is they're like the five sigma case and when you start trying to apply analysis to the five sigma case I agree with Kevin - it's very shaky.

And so I kind of just gave up. It wasn't worth trying to actually predict the five sigma case but the plan was to come back later and have to start sharing.

It was setting the zone where you would never share outside that. So because the definition was like that I agree with Kevin, it was weak analysis but it was okay and the best you could do because it was five sigma case.

Mr. Povelites: Carl Povelites. Just a question on - I didn't see it as far as a going forward study but when I look at the various systems you've studied and the protection zones that are put forward there is there any contemplation that a net aggregate effect of protection zones would be looked at?

Because if you have one here and you have HDMG EMT here how do we get to an aggregate number? As a potential licensee we'd like to know what all the protection zones -

Mr. Gibson: Bryan shifted the tent to me. We're tag teaming this and Jennifer is tag teaming from the phone because we're all three sort of in this together.

The answer to your question, Carl, is no. Each of these zones was looked at separately on its own. I mean, there's many areas where they overlap but we were trying to look at the contributions to each of these from their own - from their own.

You know, given the set of future work that's recommended to address the analysis methodology in terms of everything that we talked - that's talked about in the report, you know, maybe it's worthwhile to go back and do what you're asking but that was not done.

Mr. Tramont: And just to be - step back a bit, I think this is very far removed from anything that would be remotely operational for a commercial operator coming into this band, right.

We're just very far removed from anything that you would need in order to bid in good conscience about what's going to happen here.

So I think everyone recognizes that and it's a limitation of what - as I said, between the timing and the information available as part of this process.

So ultimately you obviously have to look at that. I just don't know that we're even at a stage where we could do that based on what we have.

MR. POVELITIES: That's why I was asking if this should be future work.

Co-Chair Rosston: Harold, you should never have

been gentlemanly and yielded.

Dr. Furchtgott-Roth: Yes, I was looking for kind of a point of clarification in the context of some other things that are going on around town.

And Bryan, it struck me when you mentioned well, at some point in your overview you were saying well, sharing would be problematic.

There have been a couple developments in the past - certainly the past week. One is the letter from DoD to NTIA that was transferred to the FCC.

The other was the FCC adopted an NPRM in the past 24 hours and there's a little bit of a difference of the nuance of language, if you will, between the DoD letter and sort of what I interpret as the direction of the FCC's NPRM.

And a lot of it, frankly, has to do with the 1755 to 1780 band within the larger 1755 to 1850 band.

And in my just very quick look at the summaries of the working group papers, it somehow - it's difficult at least for me as a reader to - for each of these to get some sense of well, how much of this can actually be cleared out of 1755 to 1780 without sharing and how much will require sharing.

The sharing caveat seems to be implicit in the DoD letter. It doesn't seem to be the first choice of where the FCC is going with its NPRM.

And so I was just going to ask you if there was any way of getting some clarification from the working groups. I know it's been an extraordinary kind of work that's been done to date.

But I think it would help the readers to have some context of specifically what this means for 1755 to 1780 and I don't know - Working Group 5 may not be the right place to begin with on this.

But when you start sort of saying well, it doesn't look like we can do any sharing with this it did jump

out at me.

Mr. Tramont: I would be curious if Jennifer and Mark have a different view. But I think the answer for Working Group 5 is we don't know.

Mr. Gibson: I would agree.

Co-Chair Rosston: David?

Ms. Warren: I was going to say there's lots but I don't think more work should be sent to Working Group 5.

Mr. Gibson: Or 4.

Mr. Reaser: So I'm a little - This is Rick Reaser. I'm a little encouraged that there is future work because I just read - I didn't go to all these meetings.

I just read these tables and so it was kind of scary because we actually build these systems in my company and part of my job as a spectrum guy is to figure out how - I don't have a protection zone that's that big because the whole thing has to fit on some small military base and I have to worry about interference in the design of all these command and control links for small UAVs because we make those things and put sensors on them.

So to me I think if you actually went and tried to engineer this thing, because that's what we are - a bunch of engineers in my company - we could probably get it to work, to be honest with you because we run into these problems all the time. Co-site, things on the ranges, things outside - because that's just the way it is.

And so I honestly - if there is going to be - I'm encouraged by that because to be honest with you I've had to go fix a whole bunch of problems on these systems as we test them on the ranges.

So I think there's hope there.

Co-Chair Rosston: David?

Mr. Donovan: Yes. Let me just close with, you know, if you begin to look at the reports and Karl, you had talked about sharing and not having to use this all the time or what have you in either time or spatial sharing, but if you look at, for example, the TRR systems that, you know, in the appendices of Working Group 4, one of the benefits that's argued here is that it is important to use, by either the National Guard or other entities, during times of emergencies.

So if you move that onto a band that is also critical during times of emergencies, such as reporting to the American public what's happened, we're going to run into some issues.

And I get the sense, just from looking at the report and the discussions here, that sharing for a lot of these systems is certainly problematic and then the question becomes that means when you move them to other bands, whether it's my band or the other bands that are in NTIA, you're taking the problematic problem and moving it someplace else.

And, again, I guess I'll ask the question if that's where we're running with this or that's what we think is happening, which I think is a dramatically different fact situation, Larry, than when you had in 2012 when you wrote the initial - when NTIA wrote its initial report, should we not look at that? And I'll leave that as the question.

Co-Chair Rosston: Karl?

Mr. Nebbia: Well, I think as we look at the various outcomes that we've seen in these reports certainly one of the things to take into consideration with the unmanned aerial vehicles is not only DoD is using them or will use them in the future, and while DoD uses them at training facilities to prepare to go overseas other agencies are needing to use them. I think Interior, for instance, had bought a number of them or picked up a number of them from DoD

when we were writing the first report. They didn't have actually assignments at that point but I think they're on the way to them now.

Mr. Reaser: DHS, CBP.

Mr. Nebbia: At DHS, a number of other agencies that are not going to be location limited. So those approaches - and that's one of the reasons why I think coming out of the report it's pretty clear that that's one of the systems that we've got to find other places for one way or the other.

And to be honest some of the - some of the ongoing work that they would do is still going to be in 1780 to 1850. So it's not as if during, you know, when the National Guard comes out that they all have to go to 2025 to 2110.

They're still going to have that other area of, you know, to operate in. So I think there's still a lot of flexibility there.

But I think also when you look at the results of these - this work, there are probably ways that you can improve upon and I don't - to be honest with you I don't buy the five sigma issue. I don't think we're - we've been anywhere near there.

I think the analysis in many ways - there's a lot of acceptance in the approaches that have been taken by people that feel that they could be improved and I think that's probably something that we could do over time.

But part of the question is Bryan said is, is it worth trying to improve a 400-mile distance and trying to work at it and can we get it down to 300 miles.

Is that a significant improvement, something that we want to spend our time on and this - I think these reports kind of get us in a place of being able to look at a couple of those systems and say well, maybe it's not - it's not worth pursuing that. We got to come up with a different approach.

So I think we need to take those things into consideration. There are probably areas that you could improve them and maybe we'll take that approach and put Jennifer back to work before she gets back from Geneva but not give Mark his day off.

But I still think there's some, I think, fairly clear direction on many of these systems that they're going to be a problem and once again, I think there's a mass - a huge difference between trying to share spectrum between a system that itself is flexible and moving and widespread commercial, terrestrial, you know, wireless. I think there's a big difference there and I think that's what we're trying to implement.

Mr. Donovan: Karl, except for the fact that the systems that you're thinking about sharing with, during emergencies all that spectrum is used and you do not know where the electronic news trucks are going to be.

So if you're going to share systems that are designed for emergencies on spectrum where folks are already using it to get news it won't be there. It becomes incredibly difficult to do that if not impossible.

Co-Chair Rosston: Dennis?

Mr. Roberson: Yes, I want to come back to Harold's point because I think it's a very good one. Our study was done with a context that's now changed with some of the back and forth that seems to be focused around the smaller end.

Steve, last meeting introduced this more localized area of focus, the 1755 to 1780.

It seems that we should be putting some amount of our focus in the - in the working groups on the implications of that impact into the studies and how that might change the outcomes of the studies. Does that seem like a reasonable thing?



I know it's very late in the cycle of the working groups to do that but it seems like their value would be enormously enhanced if we did have that output from the working groups.

Mr. Tramont: Just my quick reaction is that might be further work but I don't think that's going to be for what we're voting on on the -

Mr. Roberson: No, no. But I think it needs to be built in as part of the further work that each of the groups that does not have a statement around that.

So that needs to be blended in as part of the statement of this outcome of these working groups that that would be further work that would be appropriate to pursue. Is that -

Mr. Tramont: So what - I guess what we could do is if you think about this and not trying to change the working group report is if we could put that as part of our CSMAC statement that goes on top of it or something like that.

Mr. Roberson: Yes, that's a way to do it too.

Mr. Tramont: Yes. Tom?

Mr. Dombrowski: Yes. I mean, that's kind of - I want to echo what Dennis just said because from my perspective what each of these working groups did was very siloed and what I had expected at our side - what we would do is take those silos and put it together into something and I'm thinking in terms of a table.

So we have the DOJ use in the Working Group 2 that's going to be relocated so that's the path for that. The fixed microwave goes here. The TRR up to a point moves, JTRS stays, et cetera, and sort of come through with a recommendation from this entire CSMAC that takes into account all the inputs from all the different groups.

And then, for example, Working Group 5, which I

sat through all of those meetings as well, the idea of whether we should expend any more resources as Karl indicated before to drive down some of those zones or whether it's just best to say okay, we took this preliminary look at the analysis. It looks pretty bad - is it worthwhile to do more resources towards that or is it better to sort of start to look and say okay, we need to move them out of the way for commercial use at that point and have relocation be more the focus rather than sharing analysis.

So that's kind of where I thought we were headed which was taking all those working group reports and the full CSMAC, sort of put it all together as a full picture instead of a piecemeal picture, which is what we have right now.

Mr. Nebbia: Just I think to be clear there certainly we are - it was necessary to analyze the pieces.

We had to go through that path. At this point, however, we have two different roadmaps that have been placed on the table.

So whether we might want to go through that exercise separately or not I think is a good question, but two paths forward have been placed on the table and it seems like that's what we're going to be - we're going to be looking at.

So whether at this point CSMAC can add something over the conclusions that have been reached in one case by a lot of industry folks and on the other case by DoD as their way forward I don't know if we can add more to that.

I think we can certainly, with the experts in these groups, potentially fine tune some of the work that's been done because ultimately that will go into any of the transition activities. So that would be - that would certainly be helpful.

I mean, as we move forward on either of the two roadmaps there's going to be that transition work and I think each of these things comes into play

there.

Co-Chair Rosston: Okay. Any more comments on Working Group 5 or should we - let's start back at number one again and go through the whole thing again. Dennis or Mark?

Mr. McHenry: How about Working Group 1? Working Group 1 has two recommendations. This is to protect the weather satellite downlinks. One of the recommendations is these protection zones and there's a table in the back with a bunch of numbers and in the last month or so more have been added.

The other recommendation was to only have uplinks as entrants and the third one is consider moving the station.

None of those recommendations have changed for months and months and months. The report really hasn't changed and it was brought to my attention that there's some extra frequencies, the 1680, that are pretty far out of band. The FCC had questions about that.

But overall I think we're done. There have been no changes for months and months and months. It is what it is.

Mr. Roberson: Other than the additional sites there are ones we reported on last time that have now been incorporated in the report.

Mr. McHenry: But I mean we could add three more sites. It doesn't - I don't think we should be worrying about two sites or seven sites. It is what it is.

Co-Chair Rosston: So I think we've adopted this report already, right? This is just changes to the report?

Mr. McHenry: This is just changes to the report.

Mr. Roberson: This is an amendment so this is the one report that has been adopted, yes.

Co-Chair Rosston: Okay. So we could - we could vote on this one today because you gave it to us in time. I think -

Mr. McHenry: I propose we vote on it. I mean, it's over.

Co-Chair Rosston: That's what I wanted to hear. Second?

Dr. Pepper: Second.

Mr. Crosby: The only change was additional sites.

Dr. McHenry: And in this frequency, the 1680, it looks new but that's so low down there I would just note it as a issue.

Mr. Crosby: And the accompanying analysis that went with it.

Co-Chair Rosston: Other comments, questions? Should we - okay. All those in favor of adopting - readopting this or adopting this as amended.

(Chorus of ayes)

Anyone opposed? We won't ask for abstentions. Okay. We have to deliberate now.

So we're going to go through these next two items on the agenda really quickly. I did the call for a motion.

Why don't we take like a quick break and then I think we - pressed as to time I think we can just stand up for a minute.

I think so. So come back in five minutes or less.

Break

(Whereupon, the above-entitled meeting went off the record at 2:51 p.m. and resumed at 2:58 p.m.)

## Federal Activity Status Update

Mr. Nebbia: Okay. We're going to start back up with the federal activity status update.

So first of all, I wanted to mention related to the Hill activity that a new bill has been put on the table by Congresswoman Matsui and Mr. Guthrie, Smith and I think the fourth name was Hunter, I believe, and there's a combination there of interest between the folks that do energy and commerce and communications and so on and the House Armed Services. So there's some agreement to put that forward.

So and that bill particularly looks at specifying that the 1755 to 1780 band would be put on the table with the 2155 to 2180 band. So that's what it deals with.

Lots of caveats, lots of details in there but that's essentially the point that it makes. So I just wanted to mention that.

I think it came out yesterday or two days ago and so if you can please take a look at that. Also, and stop me anywhere along the line if you'd like to, on the trusted agent concept as Fred had mentioned earlier - I think Bryan made reference to it - an agreement has come about between DoD and the 12 nominees that have been put up through the working group discussions to enter into these more detailed discussions where sensitive information would be passed back and forth, both government sensitive and potentially proprietary type sensitive information.

And at this point, it's being done through a series of nondisclosure agreements between DoD and those groups and people. I think they've got ten out of 12 signed but they're proceeding ahead with sharing of data between those ten and DoD.

So that's moving forward.

Co-Chair Rosston: Can I ask you a question about that, which is this is not going to be something that then is going to come up through CSMAC? This is a separate process, right?

Mr. Nebbia: So I think the important thing to recognize here is that these discussions are going to go on and we will see as they go on whether they might in fact inform the CSMAC working groups in particular areas, probably Working Groups 4 and 5, so that if there's further work to be done, that potentially those groups might be able to update the protection areas or something else related to that.

But so it doesn't necessarily have to work out that way but it's at least our view that after these discussions, which are beginning right now, they might be able to come back and report to their own working groups that they do see some improvements to outcomes that potentially could be brought back into the discussion there.

But that's specifically on the topic that we have - you know, the topics that we have in front of us.

The concept of a trusted agent, however, I think needs to be looked at as more of a long-term possibility to facilitate more of these discussions because had we had that in place earlier in the process, potentially some of these more difficult points could have been dealt with earlier, though I have to admit we've got a lot of experience through coming through this process that might help us if we get back to this in other bands or other situations.

Maybe we can skip some of the steps along the way because we've proven that certain things work and other things maybe don't work.

But nonetheless the concept of the trusted agent, in addition to this idea that individual participant companies would be able to form these direct relationships with DoD or whoever the federal agency happens to be - the idea whether we could

come up with a more permanent construct is kind of being batted around.

Is there a way to create a structure where we don't have to constantly go back through company to DoD individual NDAs? Can you, for instance, envision a contract or a contract facility of some sort that would - that could act as the go-between in some of these debates. That would be more of a standing arrangement whether it might be an FFRDC or something else that might be found to be more acceptable.

So there's been a, you know, quite a bit of discussion about that. Certainly, if you have thoughts on it we would - we would love to hear how that could be worked out.

I think in this particular case we initially batted around a couple of those ideas and at least the companies involved said, we think it would be more beneficial for us to have our people who are directly knowledgeable of our systems and technologies to be engaged in this discussion as opposed to turning it over to somebody we would kind of consider a neutral body.

On the other hand, there may be approaches like that that we find, you know, workable in the future. So there are - there are certainly consultants in the business for instance that may not be attached to either side and they may be a credible resource, that sort of thing. So yes?

Dr. Alder: This is Larry Alder. How does - the agents right now the way they work is they're actually agents. They do this work under NDA and then they report to working groups.

They report to their own companies. They report to you. They report to the FCC. Who are they an agent for?

Mr. Nebbia: Well, the people that are in the group were essentially nominated through the working

group discussions.

They are representatives from service providers. They're representatives from equipment providers. There are a few others in the mix. There's a total of 12.

They are being informed by having the more detailed information but ultimately if they were to provide input back to the working group or toward their companies or whatever, and I think from our context we would hope they would provide an updated informed view maybe back to the working groups, that obviously they can't then be conveying the sensitive information that they were given.

They are going to be conveying something in terms of an updated viewpoint or summary viewpoint that they've come to by having seen that information.

So that's I think how that group's going to work.

Mr. Roberson: This has obviously been a very protracted process as establishing the trusted agents and given where we are in the cycle, it won't have very much effect on the working groups that we have.

The challenge is that it's unclear how this is actually going to work. You described it almost as though it were operational today, which it is not yet.

But even as it becomes operational, how it is applied given where we are in the cycle of the working groups is, I think, very unclear. I don't know whether there's more to be said about that or -

Mr. Nebbia: Well, I think for instance if the group - right now we've got TRR protection areas on the order of 100 miles or something along that line.

If they're able through their discussions and analysis to come back and say, well, we can - just like we did in Working Group 1 we can essentially



cut that in half then it would be really great to then kind of inform the working group and then provide, you know, some feedback through here that says we can actually, you know, reduce that.

Obviously, in the discussions with DoD and the preparations of transition plans, it's that kind of outcome will be informing them.

But certainly from our standpoint it would be helpful to keep all of you informed and certainly based on the processes that we've had.

So we would - we would hope that that additional information could help move toward, you know, better information for the group as a whole and be brought back and, you know, kind of updated viewpoint.

May just be a short couple page report saying, you know, the general concepts are still the same but we believe that the protection areas can be cut in half or something based on these improved analysis techniques that we've seen used.

Mr. Roberson: Second question that is related is we have the trusted agents themselves and I think we're just about through whatever the process - final process is.

But there is the requirement that the trusted agents actually be informed. The fact that they're able to be informed is one step but that they are actually connected to people that possess the knowledge to inform them is a second step and how do we foresee that occurring?

Mr. Nebbia: The transfer of documents has already begun between DoD and the people who have signed the NDAs. That's my understanding.

So if you happen to be one of them and you've not been contacted then we need to straighten that out.

Mr. Roberson: Correct. There is a personal side to

this. You're right.

Mr. Nebbia: Okay. So but the documents have begun to flow to people so we just need to make sure that's not happening -

Mr. Roberson: I have not seen any evidence of that.

Mr. Moorefield: So we've only transmitted those documents to Steve and Steve's going to be the one who transmit it to everybody else.

Mr. Nebbia: So it's going through - it's going through.

Mr. Roberson: So the trusted agents themselves have not yet seen what you're talking about. Now I understand the disconnect.

Participant: I got it last night so -

Mr. Roberson: Oh, last night. Okay.

Mr. Nebbia: They beat the reports coming in.

Mr. Roberson: Okay. Yes.

Mr. Reaser: At 11:59, yes.

Mr. Roberson: Yes. Yes. Okay. I got it last night. I understand. Thank you for clarifying this.

Mr. Nebbia: Okay. The last thing I wanted to mention just a little follow-up on the presidential memo, certainly the work is beginning on, you know, all points of that effort.

We've certainly been meeting with the new spectrum policy team and appreciate their input. We've had some discussions on the issues of quantification and so on.

So I think the work is moving forward there as quickly as we can. I should probably note in here, and I appreciate the work that all of you have done but certainly with DoD and others, the federal

agencies.

As many of you know, many of these agencies are actually now falling under furlough situations so their participation and input has been a particular strain and as we go forward under the new memo that's - you know, it's going to, you know, keep the heat on and so on.

So there's a lot of - there's a lot of work to be done and, you know, we're pressing ahead.

Okay. Didn't want to speak for the president until I'd asked Tom and he put a stop on it.

So that's all I have before we move on to future work.

#### New CSMAC Work on the Horizon

Co-Chair Fontes: This is Brian Fontes. I just want to move to the next item on the agenda and this is the new CSMAC work on the horizon.

I think everybody who's a member of CSMAC should have received, as part of today's packet of information, the proposed future of CSMAC work.

Is there anyone that's part of

CSMAC that has not received this? Great. So we're going to use that as our starting point, if you will, for future work.

Even in today's discussion and previous CSMAC meetings, there's been issues raised about enforcement, particularly as we move into highly intensified use of spectrum and spectrum that is shared and how do we deal with enforcement of possible interference issues.

And I know that Janice has raised this on multiple occasions. Dale has raised it as well.

So and I think, Mark, you've agreed to serve as a vice chair on this. First off, I'd just like to ask in the

description of this - and we don't need to get into details now - in fact, we'd probably like to have the details filled out within the working group itself.

But just in general areas of interest are there other things that should be included in the enforcement description here and then to find out if there's general acceptance of having this as a new working group.

Dr. Alder: If there's time I wouldn't mind hearing from Dale how he envisions - a little-voice over would be helpful.

Mr. Hatfield: How I envision what?

Dr. Alder: The enforcement path going forward.

Mr. Hatfield: I thought somebody else was chairing this.

Co-Chair Fontes: You did a great job of that but you're the submitter. You're the inspiration.

Mr. Hatfield: Be prepared. I'm happy to - not sure I can answer. I've been giving it an awful lot of thought.

I have an awful lot of notes, anecdotes and so forth, but I candidly of myself I'm at the stage of trying to organize. I was trying to absorb even what was said here today because I see where there's enforcement things that are implicated by that.

So give me a little bit more time. I'm not ducking entirely your question but give me little bit more - give me a little bit more time, and we are making some pretty good progress both - and Desmond addressed this - on the tax side of this as well and so I'm trying to get my hands on what's going on within the commission and so forth.

And I would say - one additional comment is that the way I envisioned it, it goes beyond just the sort of normal co-channel, adjacent channel interference.

It also goes to issues like, at least we were setting at the commission, issues like jamming incidental radiation, all kinds of other forms of interference as well and not just the sort of things, as important as they are, that we're talking about there.

So I envisioned a little bit more holistic - a little bit more holistic approach.

Co-Chair Rosston: Thanks. Dennis?

Mr. Crosby: This is Mark Crosby. In my world, onslaught of new technologies, sharing among disparate type of users, mission critical, operational, more congestion, more technologies.

Enforcement actually is one of the legs on the spectrum management tool and if you don't have enforcement, don't have ground rules, don't have places for licensees that have invested in solutions - communications solutions, the whole system can sort of come down without an effective enforcement program and - at least in my view.

So when Dale asked me my opinion what do I think of enforcement I go, I'm all for it because if you don't have it, you don't have discipline, you don't have and your spectrum management strategies and your spectrum efficient strategies will fall by the wayside if you don't have effective enforcement.

And so I'm - I certainly don't need to be the chair by any stretch of the imagination but I'm happy to assist to the extent I can.

Co-Chair Fontes: Dennis?

Mr. Roberson: Yes. There are sort of two points around this as well. There are people that are actively out there today, and Dennis made this point last time with us with all of the renegade FM stations in New York City that he's catalogued that - where they're absolutely illegal and they're out there in large numbers today and we are not able to enforce existing rules for well known systems.

So there's a component of just pure historic rules, laws being enforced and how we get at them.

There's the other component that is the newer technologies and newer approaches. We do have the ability to develop systems and will have to, in my mind, as we move to a sharing regime where the systems are embedded in the cloud, if you will, where we will be able to detect the interference that occurs whether it's traditional co-channel, adjacent channel or whether it's simply the rise of noise that is occurring because of the proliferation of other devices.

But the way we will see these things has got to be a system either of externally observing the environment or observing it directly through the lens of the devices themselves where they have a channel that reports out what they are seeing.

So I think that's a little bit of the meat behind this and it's an enormously challenging topic and, again, it is the only way that all of the other things we've been talking about will really be effective, is if we have this in place as a guarantee so that the people who are sharing know that they're going to be able to share and not be impacted by all the other things that are going on.

Co-Chair Rosston: Dale, do you want to add to that?

Mr. Hatfield: I'll just add one thought to that. I've made the comment for Julie - Matt made the comment too - is too often we've developed rules and stuff, done some really great engineering stuff and developed rules and then just hand them to the enforcement bureau saying okay, now, enforce this.

I'm probably exaggerating a little bit but not too far and I strongly believe that going forward we have to build enforcement in - right from the very beginning.

Enforcement has to be thought about including

things like the possibility of including in the devices the sort of thing that Janice, I think, you've talked about - you know, crowd sourcing ideas, and that goes back with the devices we have today we have so much power to be able to do some of these things I think we can actually implement things that we could not have thought of before.

But the basic point is, and I see that in the documents that were talked about here today, people were beginning to think about enforcement and now is the time to do it. And so I'm - well, that's basically my point.

We need to - we need to do an earlier job of including the enforcement and I thank you.

Co-Chair Fontes: Great. Michael?

Mr. Calabrese: Yes. I'd just like to, you know, kind of second Dale in suggesting that, you know, that if we have - if we have this committee that we pay particular attention to what can we - what can we do to build this enforcement into the device certification in advance because you get - you know, this is, you know, so I'm kind of keenly aware today's reply comment submission date on the 5 gigahertz band, you know, expanding the unlicensed, and a big issue there has been these interference with the terminal Doppler weather radars which occurred because mainly imported base stations were easily capable of being modified to operate on frequencies that they weren't certified in this country to operate on.

But there were things that could have been done in advance so that, you know, those devices wouldn't have been certified at all for sale in this country if they weren't - you know, unless they were kind of - I don't know, you know, jimmy-proofed or something.

So a lot of this can be baked into the device certification to begin with so that you - you know, we don't have to rely on the cop on the beat or, you

know, staff we don't have chasing people around.

Co-Chair Fontes: Dave? David?

Mr. Donovan: Thank you. I just want to support Dale's efforts and agree with Michael and everyone here.

In my new position I've actually had to deal with this right on a ground level and what I've learned over the years - through my last couple of years doing this is that the Communications Act's enforcement provisions were really designed for people who want to play by the rules.

They weren't designed for the person who doesn't and for the bad guy, for the truly bad guy, because the enforcement process is exceedingly cumbersome.

So if we're going to get into complex sharing arrangements I think this is probably one of the most important things we really need to do and it requires to get very, very granular because it boils down to your ability to search and seize.

It boils down to how do you find people and that's a lot more difficult than you think.

Co-Chair Fontes: Very good. Go ahead, Kevin.

Dr. Kahn: Yes. You know, I think this is a hugely important area. Clearly, we need to divide between the bad guys, right, and the stupid guys.

I mean, I make this up - stupid guy, right. And no, and what I mean by that is what Michael was addressing, I think, really more.

I mean, there's people who will take equipment and do things with it consciously because they are expert that it was not supposed to do - it is not legal to do and that - I put that in the bad guy camp.

But there's also a lot of folks who - and I think this



is really the important thing we have to recognize is more and more equipment is being sold at retail to people who are just consumers who turn it on and use it and who are fully capable of essentially accidentally putting it in modes that are problematic in the geography in which they are.

And I don't think we are good enough about getting industry to - and it's jimmy-proofing. It's not - you can't - you know, I mean, anybody is going to be capable ultimately of modifying equipment.

That puts them in the bad guy category from my perspective and, you know, that's a law issue of going after them legally. But I think we need to do a lot better job as well on the making the equipment, you know, tamper proof or tamper resistant for people who didn't intend to be tampering with it but, you know, who today can very easily go into a wi-fi base station and essentially put it in a mode where it's using channels that are not U.S. channels, not because they were trying to be difficult but because they were having trouble at their house and somebody said well, go change the channel - it'll probably work better and they go in, they start mucking with the channel and next thing we know they're on a channel they shouldn't be on in the U.S.

And that's the kind of stuff where I think, you know, forethought as Dale puts and putting it into the equipment - building stuff into the equipment in a more sensible way would help a lot.

Co-Chair Fontes: Thank you.

Mr. Crosby: Real quick. But I don't want to operate - Mark Crosby - under the illusion because there are bad guys and there are stupid guys that having it embedded in the devices is the solution.

Dr. Kahn: No. I said - no, no.

Mr. Crosby: There has to be a lot more than that.

Dr. Kahn: No, no, no. I'm simply saying I think you have two different enforcement regimes that have to complement one another but embedding it in the device isn't going to stop the bad guy.

Mr. Crosby: That's right.

Dr. Kahn: Right. But the full force of the FBI showing up on your doorstep isn't going to stop the guy who did it by accident.

Mr. Crosby: You would be surprised how their response went out the door for those broadcast stations down in Miami, you know, so -

Dr. Kahn: Yes. So I'm just saying there's these two regimes and you have to address both. That's all.

Co-Chair Fontes: Thank you, and Karl?

Mr. Nebbia: Just a quick statement with respect to the organization. If the group that gets involved please go back and look at the last set of recommendations on enforcement that the CSMAC provided so please go back and reference that document and NTIA response to what were given on that.

But I think in this case trying to work on all the issues related to sharing I think are a critical part of this. But please as you get started just do look back at that document so we're not repeating some of what's been talked about before.

Mr. Hatfield: Could I have just one point of clarification?

Co-Chair Fontes: Yes.

Mr. Hatfield: On the write-up here since this will probably be an important ingredient as we design a study program it says how to update the FCC's enforcement tools and I assume that's also NTIA's as well.

I assume that that's a - this is not just focusing on what the FCC needs to do but what you may need to do as well.

Hon. Obuchowski: I think -

Co-Chair Fontes: Janice?

Mr. Hatfield: Right? Do you want to make sure? Whoops, I'm sorry.

Hon. Obuchowski: Well, I just -

Mr. Hatfield: I haven't heard confirmation that that is - okay.

Co-Chair Fontes: Yes.

Hon. Obuchowski: You know, to follow on - a follow-on thought to Dale's, I also think what's going to happen - whoops, whoops.

A follow-on thought to Dale's one thing that is going to have to be new ground may well be and some of it already happens informally is collaborative tools.

You know, Rick has talked about some cases that seem to be easier to handle with drones but those were not situations that were in bands that had become commercial. Those were in federal bands.

And so a lot of things can be done when there's a commercial player and a commercial player or a lot of things can happen in the IRAC when ultimately everybody's going to lose a job from the president that - you know, president can can anybody if they really screw up.

But the collaborative piece is what we're missing here and we're really going to need to break new ground on, I think, along with the other groundbreaking.

Co-Chair Fontes: Thank you, Janice. Karl? I thought you had your - okay, great.

So I assume now after everybody has vetted their opinion on this that enforcement is the - we should have had the working group dealing with enforcement and that's the consensus agreement of CSMAC. Any objections?

Yes, and that's right. If you want to sign up for this group and I assume those of you who voiced an opinion will probably want to sign up for that group what's the best approach? Notify Bruce, yes. You're going to be a popular guy.

Mr. Roberson: Probably better for Bruce to email us to - so we send it to you in a consistent format.

Co-Chair Fontes: Is that fair? So what you can say is all parties interested in working in -

Mr. Roberson: Yes. Just send out a list to the working groups and have us respond.

Co-Chair Fontes: Great. Okay. Next on the potential list of future working groups is transitional sharing and this was by Mark. Do you want to explain exactly what this is about?

Mr. Gibson: Sure, Brian. Well, this seemed to me to follow on logically from the work that we've done to talk about now we've looked at the sharing zones, the protection zones, how do we look at the time frame between when carriers want to deploy and do deploy and when systems are relocated.

And we dealt with this in AWS 1 so the term that was used is transitional sharing and you see it through both the CSMAC 5 and 4 Working Groups as well as some others where these equities will stay put for some time, notwithstanding the memo that came out from DoD which didn't really talk about that.

So, you know, it seemed to make sense as follow-on work that something needs to be done to study that effort insofar as it relates to, you know, these items here. Interference protection criteria

announces methodologies and coordination processes and procedures.

Now, the NPRM the commission issued the day before yesterday or yesterday addresses some of these things in the abstract and in fact in one regard it reports back or points back to a working group recommendation that calls it out as a TBD.

So my thought on this was, you know, we had some momentum going, such as it was, in the working groups to discuss this. Momentum may be the wrong word but - yes, it could be.

We had efforts - put it that way - in the working groups to talk about sharing and so it would seem to reason that the next step would be transitional sharing so that was my thought behind that.

You know, and you'll note my name is with the next several and I'm not a CSMAC groupie per se so I'm happy to discuss these.

But, you know, the other thing I want to ask I guess while I have the mike is I think that there's some - I heard Karl allude to and Fred as well additional work that we're going to be doing.

I heard 4 called out and maybe 5 as well. So I see this as a big - an either or. Now, some of this follows logically within some of the work that we were doing anyhow and so it makes sense. But some of this other stuff may or may not so just -

Mr. Dombrowsky: Tom Dombrowsky. I just - I wouldn't want to limit the scope because you have Working Group 4 and 5 at least in there.

I think we should strike that because Working Group 2 is going to have transitional sharing and even though the satellite uplink we have sort of an agreement we also have an agreement to sort of discuss if we can get more, closer to the uplinks too.

So I would like to have it broad in terms of transitional sharing for all the services in the 1755 to 1780 rather than limiting it to just two of the working groups.

Mr. Gibson: And then Tom can co-chair with me.

Co-Chair Fontes: Michael?

Mr. Calabrese: Yes, Michael Calabrese. There's kind of a flip side to this - to the logic of this which is - and this may be a separate - possibly a separate bit of ongoing CSMAC work so if so we can talk about it at the end or something.

But that is that, you know, we've done all this work obviously and through the working groups in dissecting these bands up to 1850 and this is something.

I didn't submit this - something just occurred to me really, you know, and that I've spoke to a few people today about is that the implication of the DoD letter and the transmittal - well, from Karl actually to FCC is that now the 1780 to 1850 is off the table for probably at least ten years.

And so all this work's been done to kind of look at, you know, what's operating there or what are the opportunities and so perhaps we also want to have some ongoing activity to look at not just the transitional sharing, say, on 1755 to 1780 but also whether there isn't, you know, perhaps following the PCAST sort of approach, whether there isn't some opportunities for unlicensed sharing or some small cell use of the, you know, of the rest of the band.

So even though there will be no - you know, there would not be any disturbance of federal operations there may still be, you know, a lot of capacity that's available in certain bands, certain places where the federal operations can be worked around and, you know, and productive things can be done. And so it may be, you know, worthwhile to look at that in

light of the presidential memorandum.

Mr. Nebbia: I think the challenge there is that all the systems that can be packed above 1780 and that includes all the law enforcement surveillance activities that are going on nationwide that we have in past discussions I think leads to conclusion that they could not share with widespread terrestrial mobile.

I think that would be a problem. I think you're going to have difficulty proving to that community who will not let you know where they're operating that - that that's a risk that's beyond what we can get into here.

So I think that's why there is a general look that it's going to be some time before that upper portion has some real opportunities because we have to make decision actually to relocate them and if you're talking about an approach to using it that doesn't produce funds to relocate them then we're kind of at a loss.

So I'm not sure at this point we can go down that path and I think certainly in the description if we go the DoD route there's going to have to be at least some breather there for those operations other than just throwing them back into another upheaval. So I think that's going to be a problem.

Co-Chair Fontes: So David?

Mr. Donovan: Mark, would you envision the scope of the transitional sharing to be essentially limited to the 1755 - 1780 segment or would you also consider as part of the transition, potential relocation bands?

Mr. Gibson: Well, it's not my call. I mean, I had this - thinking about 1755 to 1850 but if it makes sense to study the bands that are of interest to you, sure.

I mean, one thing that hasn't been studied in detail

in terms of I think just to give you some current level is exactly what you're talking about is the bands where these things would be moving into, especially of the shared bands.

So it could be part of the thing. I would suggest - I think Karl addressed this as well as with respect to what you were saying, Michael.

The goal in this effort is really to describe rules of engagement so to speak for the transitional sharing specifically within either the 1755 to 1780 or the bands that David's talking about.

It really wasn't thought about to deal with the 3.5 or unlicensed, you know, because that's a broader discussion that might take a lot more - a lot more time, which is not to say that transitional in sharing bands like that are of interest but this really was focused on just more work within the groups that we were doing already so -

Mr. Nebbia: Okay. Thank you.

Co-Chair Fontes: Hang on for a second. Larry?

Mr. Strickling: Yes, I just - I wanted to make just a general comment both to Michael's point and to David's point in terms of looking at other bands through CSMAC.

I mean, obviously CSMAC is organized to provide advice to NTIA so the starting point is us asking for the help. But I think related to that we have talked about the fact that we need to go back and review how the process worked for 1755.

We want to understand how the working groups operated. We want to do a review of the pros and cons of the approach. We use CSMAC because it was the avenue available to us in terms of getting advice where we could get involvement of a widespread selection and cross section of the industry to participate and so we want to go back and look at that.



I expect that we'll want to come back and have to use that framework for additional bands but I don't know what the next bands would be and whether we create a wholly separate infrastructure within which to do that or if we have to continue to do it through CSMAC.

These are all questions we're going to go back and have to evaluate. So I guess I would - well, I'd certainly appreciate everybody wanting to jump into the next band.

That'll give us a chance to go back and take a look at how all this can play out and we do want to do the scrub of the work that's been done so far to understand how well it worked and how we can improve that before we launch into another set of bands.

I mean, I think another one candidate would be the 3550 to 3650 might be another one to be looking at in addition to the ones people have mentioned but give us a chance to look at that and we'll come back to you.

Mr. Gibson: Thank you.

Co-Chair Fontes: Okay. So hearing no other comment I assume this is a working group that folks would like to see established.

Hearing no opposition, then we need to do this. We'll include that on the list of working groups for folks to sign up for.

Okay. The next one or two, depending on how you want to deal with it, deal with use of general occupancy measurements recommended in this possibility of combining it with the next one - the quantification of federal spectrum use.

And, again, Mark and Mark - Mark Crosby at the other end. So do you want to give a little presentation?

Mr. Crosby: Mark, I want to -

Mr. Gibson: Go ahead, Mark. Second Mark.

Mr. Crosby: Listen, I may have expressed an interest in this because I'm not a really big fan of deploying people out there to go listen because you usually hear 1 percent of what you're supposed to be hearing because it would be the wrong time, it's the wrong season, not operated - they're not there.

So, you know, global efforts to figure out who's there by doing monitoring I will tell you, you don't have enough money. You don't have enough people in the street and at the end of the day - this is just my humble view - it's not an effective way to determine spectrum utilization.

And I think you got - to get there you got to all, like, do the second one quantification which is a lot of blocking and tackling.

NTIA - the agency's got to be willing to forth come with data and stuff and you got to - there's a lot of research to get at to figure that out and you got to trust that.

But I don't - this is my view - I don't think you can go out there and listen as a - as a way to get to where you want to go. But that's why I sort of - I'm interested in this because of these things.

Dale Hatfield, remember the old Chicago task force? I did monitoring work out to figure out who was using what and stuff.

Dating ourselves - 1975 was - there was an effort to do that in Chicago. I don't know if you remember that and so forth.

Co-Chair Fontes: There was interference then? No, just kidding.

Mr. Gibson: Well, it's funny. If we co-chair this it'll be an interesting marriage because I totally disagree. Not totally.

I would argue, you know, we - you know, it's all about how you do it and what your expectations are. You know, if you're expecting to characterize all spectrum use all the time for all bands, yes, you're right.

If you're expecting to characterize, you know, some sigma, to use Mark's analysis - five or whatever, or at least some standard deviation in terms of sigma, in terms of spectrum use you can come up with a program that will get you there compared to the data that you already have which is why they combine the both of these.

And so - and we learn a little bit of that in the work we're already done do monitor the spectrum for the Working Group 5 airborne equities and we're getting ready to do some additional analysis to do some of the same thing.

I wouldn't call it monitoring but it's not dissimilar. So, you know, we do a lot of that in the work we do and I would suggest that, you know, marrying Mark's position and my position we might have something.

Co-Chair Fontes: That's great. Dale?

Mr. Hatfield: Well, I just wanted to add that we should probably think about measuring what's in there that's other than the signals you're looking for too.

I mean, this is an opportunity to find some of the - find some of the issues regarding the whole background noise level and signals, of course, that are bad guys saying whatever.

I think not just looking for the desired signal but while you're doing it you might as well look for some of the others as well.

Mr. Gibson: Yes, and before Dennis goes I would add that there - DARPA has initiated some work in this area.

You know, if anybody's familiar with the SPAARC approach and the radio map that move in this direction a little bit they're a little bit different. They're database controlled systems but they do use ground-based information compared with databases to get a sense of a snapshot in time of spectrum usage that's supposed to be usable in fact for the radio map by spectrum managers to develop a spectrum usage map, which we never understood what that meant but somebody got awarded it and so they're moving forward with it.

So there is the ability to use existing work done out there. I mean, and the fact that DARPA's got it means something I guess. So but I think we can take a lot of this work and make sense out of it - try to make sense out of it and, again, with me and Mark working on it we'll get somewhere.

Mr. Crosby: Yes, but is the objective to determine methodologies to maximize sharing or is it - is the effort to identify bands that might be available for sharing?

Mr. Gibson: I would say yes.

Mr. Crosby: Because those objectives are different.

Co-Chair Fontes: Dennis?

Mr. Roberson: Yes. Just with all due respect to Mark Crosby, but there is a little bit that's happened since 1975 and in particular since he referenced Chicago, as many of you likely know we've been watching the city of Chicago for the last six years with the spectrum observatory system and we've purposefully driven down the cost for the system starting out with a system that cost \$100,000 or so just for the equipment down to now a few thousand dollars, particularly for specific bands.

And there is that ability to actually see things in a very systematic way and it can be deployed in a fairly widespread way at relatively low cost at this point and, again, particularly if you're looking at a

specific band and you want to see it and you can put up multiple observation points around the city and add a mobile one as well, you know, to take snapshots in between.

But the technology has really, really moved in this space from a cost effectiveness standpoint and there's a lot more to look at than there was in 1975 as well.

So it's a - to me, this is a very important area for us to pursue and I'm glad it's already been raised.

The radio map fits in and fits in with - and the SPAARCs as well fit in to this whole notion of being able to even deploy this further so that the cost is a piece of software embedded in an existing device and then use a big database to pursue it.

But I think there are ways to get at this and I think it's really a worthwhile thing for this body to explore so that we take the right approach given the array of technologies and capabilities and programs that are going on right now to move forward in this space.

Mr. Reaser: So I move that we merge the two - Rick Reaser - I move we merge the two and have a group. Thank you.

Co-Chair Fontes: That's exactly where I was going. Is there any objection to merging the two groups? Great. It's done and I'm sure, Dennis, you'll be actively involved in that.

Mr. Roberson: I'm sure as well.

Co-Chair Fontes: Thank you very much. The next one is the spectrum management via databases and this is - Larry, do you want to talk about this for a little while since the other ones have been talking about a number of other issues?

Dr. Alder: Sure. This is Larry. Yes, I mean, I think the NTIA originally proposed this on their list so I

just responded as someone who's interested.

I think that our company's been working in the white spaces with real time databases so I kind of draw a distinction between databases that are static and are used just to map things versus real time databases where devices are checking in and managing.

So my particular interest is more in the real time aspect of this and what I'd like to see here is to get a specific question.

I like the work we were doing earlier where this is a broad topic and we could do a lot of stuff but it would be I think more productive if we honed in on a specific question, maybe a dialogue with the NTIA that we refine the question for the group, took that on productively.

I think there's talk, Larry Strickling mentioned, of like the 3.5 band has some aspects of where database could be. There's other bands or maybe there's just a specific question around one of the topics be it enforcement or something. But definitely an area that's of interest and I'd be willing to contribute.

Co-Chair Fontes: Great. Mark and Mark, do you have any additional comments?

Mr. Gibson: Well, I just would argue here - not argue but suggest that just like Larry, Comsearch is a database administrator for white space and has an interest in it as well.

And so we've worked together on some other areas and so it seems to be the next - the next way these systems are going when you consider what's being proposed for the 5 gig band or what's being thought about for some of the 5 gig band and just unlicensed sharing.

So the whole concept of database enabled technology is cool, I guess, and so it's - you know, I

think Larry's got - said the right thing and, you know, it'd be good to work with Mark again.

Mr. Crosby: Like you said, this'll go to our funding, Mark. EWA contemplated being a data - white space database provider too until I read that you were - somebody was going to do it for free and then I go, spectrum - you know, Business 101, you can't compete with free. That's why we're not a whitespace database provider. But that's all I wanted to add.

Co-Chair Fontes: Okay. Dennis?

Mr. Roberson: Yes, just a quick comment. There's a lot talked about that this whole notion of database-based spectrum management as a brand new thing. To a large extent that's actually how cellular systems work. So it's always interesting to see how this emerges.

Clearly, there are a lot of challenges moving from homogeneous environment to heterogeneous environment - huge challenges. But the technology itself is well proven and I think that should be part of the basis for doing this work.

Co-Chair Fontes: Right. Dale?

Mr. Hatfield: Sound like a broken record here but here again there is a - there is a relationship to enforcement because one of the issues is if you've got a device that's acting badly it's causing interference to one of the government - how do you shut them down.

I'm not a lawyer enough - I'm not a lawyer - to figure out under what conditions you can shut it down and what you have - when do you have to go through some due processing things and stuff like that to shut somebody down.

So anyway there is a - there is a relationship between that activity and the enforcement side.

Co-Chair Fontes: Right. Thanks. Karl?

Mr. Nebbia: Ultimately, certainly from the government standpoint some of the critical parts of this are going to be how do you deal with government information that we probably cannot make directly accessible from the outside or has to be covered in some way or, you know, that type of thing.

And the other aspect of it is is that particularly for the government mobile operations, the chance that you're going to get the government willing to provide you real time updating of where they are is a pretty far reach from where we are today.

So I think in that context if you're going to look down those paths we have to at least keep those things in mind. So we're looking for answers to the real life government environment, how these methods - you know, they're talking about a 3.5 and we may talk about other places - how these methods can be used to set up regulatory methods that enable us to get better use of the spectrum.

Mr. Roberson: I just want to address the point that Karl raised because it's been something of a red herring, the mobile environment and the government not going to tell where they are and shouldn't.

But government can tell people lots of places where they are that they might not be. So it's a perfect way to mask this sort of thing. You know, you put out that you're in 23 places. You're really in one and, you know, good luck trying to figure out which one.

But you still, even if you've indicated you're in 23 places there may be 147 that you're not that can still be used by other parties. So I think that that one is a pretty easy one to resolve.

Co-Chair Fontes: Mark?



Mr. Gibson: The only think I'd add Larry was looking for a specific question and I think there's a good question here but what I'd add to the questions is what spectrum - and you're talking about federal spectrum obviously - lends itself to this type of an application.

So it may be that, you know, you'd add the 23 gig to this whole thing and you'd add other spectrum to the whole thing and maybe you wouldn't add spectrum where there's land mobile type operations.

But, you know, something - one of the things that would be the first order of business perhaps from the group would be identify the spectrum to look into and then tear it apart that way.

Co-Chair Fontes: Via the process. Yes. Are there any other comments? Any objections to creating this as a working group? Hearing none, let's move on.

The last - our next to the last one is providing government greater flexibility and options to access to non-federal bands and, Karl, I'll let you lead this brief discussion.

Mr. Nebbia: Certainly one of the things that the government is looking toward as we get in more and more situation where we're yielding spectrum or giving access to spectrum to the commercial community is we still have high volume times that we have to account for and we're looking for ways to - you know, for that access to come about.

Much of that, certainly on the DoD side, is for high major training activities where that would be required and certainly we've looked over some of the non-federal bands over the years that provide little service into those areas where DoD is doing that training.

So I think we need to look at ways that we can begin to make this a road where people are seeing

advantages on both sides and access for these kind of critical temporary periods, that sort of thing.

Co-Chair Fontes: Okay. Let's go to the last one and the last - well - yes, I thought we had addressed the issue that we should in fact have a working group on this issue.

Is there any objection to that? No, we didn't, did we? So I correct that. Wishful thinking. So is there any objection to formulating a working group addressing the issue of providing government greater flexibility and options to access to non-federal bands?

And the last one on this list is paying for costs of spectrum sharing when there is no auction. And again, this was raised by NTIA so it's basically where is the money.

Mr. Nebbia: So this is certainly an issue that came up in the outcome of the Tax Relief Act in that as we looked toward on license sharing there is no auction revenue to support that.

So it's something we think is worth talking about and, once again, looking at the full range, the full scope here, one of my concerns and maybe we can determine this through this process of providing input to Bruce as to who wants to be involved, I'm a little bit concerned about the total number of these efforts being a little bit more than maybe you all can chew on right now, particularly since some of this trusted agent work is still going on may result in some inputs on the Working Groups' 4 and 5 effort.

But also we have a challenge in the end if you come back in six months and say here's another set of, you know, covering all these areas for us to - for us to accommodate it.

So I do think one of the things we'll have to do as we look at who wants to be involved and whether we can narrow it down to task statements is do we

really want to do all these at the same time. It's just a lot of - a lot of work.

Hon. Obuchowski: Well, I definitely subscribe to the overworked category but, you know, that last point if we don't - I'm not sure CSMAC has as much expertise as is necessary but it's obviously a topic that has to be covered for all the sharing to go forward.

I mean, it's - every one of these topics has to do with database management, you know, analysis going forward and I'm not sure where the money is going to come from.

You know, legislatively it comes through auctions and I think there have been modifications so that they're going to be sort of a loan of some of the funds before the auction begins. But that doesn't touch some of the issues.

Can we ask for - can we ask for feedback? I mean, I'd be interested in OMB's thinking on this. I mean, every time we hear about, you know, this moves forward and it's happened legislatively over a long period of years would this be useful to the government? Would they not want to hear this? I just don't know.

Mr. Reaser: We have the -

Co-Chair Fontes: Oh, excuse me. Jennifer?

Ms. Warren: If this is an appropriate moment, I just wanted to suggest that perhaps - I agree with what Janice said but I also wanted to pick up on the fact that this is I think six different topics. Did I count it correctly?

Could we ask NTIA to prioritize what they would like us to work on because as Larry indicated we are there to provide advice requested and perhaps we could get that sort of prioritization from Karl instead of trying to do assisted parallel and we just did five and that was pretty tough.

Co-Chair Fontes: Okay.

Mr. Reaser: So I was just going to mention that we had this meeting and with the last co-chair - I think Brian was there - the restaurant in Stanford we talked about this whole issue about what could be the role of the CSMAC in terms of being somewhat kind of an advocate for these kind of things.

I think that the NTIA needs to think about that again. If you want to have, you know, us go in and help you with some of these issues the real issue is going to be money.

You're not going to be able to do all that stuff without new money and so - but that's hard to advocate for yourself but if you had an independent body go look at that.

We talked about that. It was kind of voted down as maybe a bad idea but you might want to relook at that.

Co-Chair Fontes: Thank you. Okay. To the point that there are a number of different new working groups that we've all agreed are important, let's just take a second here and prioritize what we would do in the time that we have remaining in this CSMAC to figure out what is realistically feasible to accomplish.

Do we go ahead and move forward with all these working groups with the exception perhaps of the last one as we need additional information so that'd actually be five I guess working groups? Did I count them correctly? Any problems with that? Okay. Harold?

Dr. Furchtgott-Roth: Since the last one I thought was the most interesting but -

Co-Chair Fontes: Yes, well sure.

Dr. Furchtgott-Roth: I guess everyone has a different view.

Co-Chair Fontes: Yes. But I honestly do think we perhaps need some more information on that and whether it's having conversations with OMB and or whatever.

Mr. Nebbia: Well, certainly our goal at the last meeting was getting people to provide a couple line statement of what the tasks were going to be.

We ended up getting up more than that so I think we do need to narrow the topics down as was talked about.

So I think, once again, if we put out the ideas here I think we need to get an idea of who's interested and I think we need to come back to a future meeting with them narrowed down so everybody knows specifically what they're working on. Right.

So I do have one bit of information I need to bring everybody up to date on but we've got - we have - still have the public comment. But sorry.

Mr. Calabrese: Oh, yes. No, I was trying to still get in on this one. So yes, I agree we want to - definitely want to do them justice so I like this proposal to see what interests you have for which working groups and then you all can decide what's most important although we kind of got off on - I just want to put a plug in for the - this last one though about paying the costs for spectrum sharing because I'm thinking that it seems that that's just really a lynchpin for moving ahead with this in a very strong way as the, you know, the president's memorandum suggests.

I'm thinking back probably two years when I chaired the incentive subcommittee and we were beating our head against the wall and really decided that there was nothing but disincentives for sharing it and what we - and, you know, and one of the biggest obstacles of all was, you know, the agencies can't be expected to cannibalize their own missions to facilitate spectrum efficiency and spectrum sharing with the private sector.

And so PCAST made that a pretty, you know, central recommendation and it was the only recommendation that would require congressional action but didn't fill in a lot of the details that might help convince Congress to take a more serious look at creating a spectrum efficiency fund or revolving spectrum innovation fund.

So I think it'd be really helpful if we could fill in those details about how this would actually work as a kind of a rolling or revolving fund to reimburse agencies for the cost of band sharing, band efficiency and so on. So it's a good one to do.

Co-Chair Fontes: It sounds like you and Harold have a keen interest in this and may be willing to co-chair a working group or at least come back with some recommended specific questions that we could focus on and try to get this rolling. Okay. Karl, do you have an administrative issue?

Mr. Nebbia: Yes. Just going back to where we were earlier, it looks like we are going to need to have an August meeting based on the fact that with the working group recommendations it appears from our legal counsel that email ballots are not permitted under FACA rules.

So we're - looks like we're going to need to actually have - it might only be by teleconference but we're going to have to have some method for doing this.

So here is a suggestion and that is that we're going to - we've circulated the recommendations that you will by, let's say, the 31st, a week from now, provide major concerns or comments or draft statements about those recommendations.

And then based on that, we will then provide the meeting notice for it looks like the August 22nd date is the one that we've got set aside and that it potentially could be by a phone call as opposed to being in person and that we would then resolve the voting through that process so through that meeting.

So that looks like what I understand of the requirements so as opposed to being able to do an email ballot. Okay. That's all I got.

#### Opportunity for Public Comment

Co-Chair Fontes: Appreciate the thought. Okay. We're at that point now where we can open up for any public comment.

Looking around the room - we usually keep these to a couple minutes. Looking around the room to see if there's any public comment.

Any comment from individuals on the phone? Okay. Hearing none, so hearing no additional business any motion to adjourn?

#### Adjournment

Mr. Gibson: Motion to adjourn.

Co-Chair Fontes: Second?

Participant: Second.

Co-Chair Fontes: All in favor?

(Chorus of ayes)

Co-Chair Fontes: Thank you. Thank you for all the work you're doing.

(Whereupon, the above-entitled meeting concluded at 3:58 p.m.)