United States Department of Commerce

National Telecommunications & Information
Administration Office of Spectrum Management

Commerce Spectrum Management Advisory
Committee (CSMAC)

Meeting

Wednesday, August 26, 2015

The Advisory Committee met in the Martha
Washington Conference Room, Boeing Regional
Headquarters, 929 Long Bridge Drive, Arlington,
Virginia, at 1:00 p.m., Larry Alder and H. Mark
Gibson, Co-Chairs, presiding.

Present:

      Larry Alder, Co-Chair (by telephone)
      H. Mark Gibson, Co-Chair
      Audrey Allison, Member
      Michael A. Calabrese, Member
      Michael S. Chartier, Member
      Mark E. Crosby, Member
      Thomas S. Dombrowsky, Jr., Member (by telephone)
      David L. Donovan, Member
      Harold Furchtgott-Roth, Member
      Dale N. Hatfield, Member
      Paul J. Kolodzy, Member
      Robert Kubik, Member
      Giulia McHenry, Member
      Mark A. McHenry, Member
      Janice Obuchowski, Member
      Carl Povelites, Member
      Charla Rath, Member
      Richard L. Reaser, Jr., Member
      Jeffrey H. Reed, Member (by telephone)
      Dennis A. Roberson, Member (by telephone)
      Kurt Schaubach, Member
      Steve Sharkey, Member
      Mariam Sorond, Member
      Bryan Tramont, Member (by telephone)
      Jennifer Warren, Member

Also Present:

      Larry Strickling, Assistant Secretary for Communications and Information and Administrator, National Telecommunications and Information Administration, U.S. Department of Commerce
      Paige Atkins, Deputy Associate Administrator for Spectrum Planning and Policy, National Telecommunications and Information Administration, U.S. Department of Commerce

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Proceedings

(12:59 p.m.)

Welcome and Opening Remarks

H. Mark Gibson, Co-Chair

Co-Chair Gibson: So welcome everyone to the August CSMAC meeting, Commerce Spectrum Management Advisory Committee, for those that don't know what CSMAC means.

If you don't, you probably shouldn't be here. I'd like to start off by thanking Audrey and Boeing for this wonderful facility. If you were lucky enough to park underneath, good luck.

If you had to park outside, too bad. I also notice that Larry Alder, who was supposed to be here, is here in absentia. His table tent isn't among the requiem line there.

Larry couldn't, his plane broke, and in spite of his best efforts to try to fix it, they canceled the flight. So Larry will be on the phone. I'm sure he'll participate as much as he can on the phone as he would here.

But that's sort of the welcome and introductions. The agenda says that I turn it over to Larry Strickling, which is what I'm about to do.

Larry Strickling, NTIA

Asst. Sec. Strickling: Thank you, Mark. Thanks very much, Mark. And I want to add my thanks to Audrey. Audrey, this is an amazing facility. You said you've been here less than a year, I think.

And of course, in addition to the NTIA water service that you've grown accustomed to, we actually have coffee, tea and soft drinks. So thanks even more for that.

I want to welcome everybody here today. At the

outset I'd like to introduce a new member of our team at the Department of Commerce, one of our new, well, a new deputy for Paige to join Peter Tenhula is Steve Molina.

Steve, why don't you stand you and say hi? I think a lot of you may have worked with Steve in the past, and we just had him join our team as of Monday.

So this is day three for Steve, and we're very grateful that he's joined us. So more from him later, I hope. As folks know, we're operating under the new charter.

This is our second meeting under the new charter. Folks, I think also know that our membership is now aligned to be one year off from the charter year. So we'll be moving next year to ask people to re-up if they're interested to be reappointed as members.

But because of the work that we've got underway, we've decided that to recommend to the Secretary, and I have no reason to believe she won't accept the recommendation, to basically offer all of you a six month extension.

So we will be proceeding to do that so that we can extend everybody's membership six months mainly to squeeze that last ounce of working committee reports out of all of you before we move on to the new items on the agenda.

Later on in the meeting you will hear from Paige in terms of the recommendations that have been made to date and the NTIA response to those, as well as the work that's been done in terms of sketching out the questions for future CSMAC work. So we'll have a good discussion on that.

Looking forward to the discussion today from the various committees, and I think we're doing this in the context of a lot of discussion that's emerging on Capitol Hill, which we expect to see continue on through the fall in terms of whether or not there

might be some area in which Congress might legislate and to help with the issue of spectrum availability.

And so we will be looking forward to working with Congress on those issues, and I'm sure many of you and your companies will be part of that discussion as well.

I do think it's important as we enter into that discussion that we not get caught up in debating the accomplishments to date.

I think we've put forward the fact that at this point in time, the President's goal of 500 MHz of new spectrum has been, we feel we've accomplished about 245 MHz of that goal.

And I've seen some quibbling in the press from folks about that, and I really don't think there should be any dispute about that. There's only one official scorekeeper.

You go to a baseball game, there's one official scorekeeper, and that is us. And the fact of the matter is that from the start, we have looked at this as a question of how to make spectrum available in whatever way we can make it available, whether it's cleared in auction, whether it's made available in a sharing basis, whether it's made available on an unlicensed basis.

And I think this discussion will be advanced to the extent to which we can get folks that continue to focus on the fact that we have to look at all of these options in order to meet the spectrum needs of all of the industries in this country as well as the needs of our federal agencies.

So I would just like to clarify that for anybody listening. It's 245 MHz. Plus, there's another silliness that's out there, which is this idea that federal agencies control 70 percent of the prime beachfront spectrum, which again, is just not true.

Exclusive federal use of that key spectrum is at around 17 percent. It's under 20 percent, so maybe it's just a question of people being a little dyslexic and switching the one and the seven around.

I don't know, but the fact of the matter is most of the spectrum in this country is shared, not just by federal agencies but the federal agencies sharing it with commercial and non-government interest.

And again, I think the debate will be advanced by people using the right numbers here instead of using numbers that are just not correct and leave an incorrect impression with folks in terms of exactly where spectrum is that's being used today.

So I will get off my soapbox so that we can get on with the rest of the meeting, but I look forward to a very active discussion today and hearing the recommendations of the committees. So back to you, Mark.

Opening Comments and Introductions

H. Mark Gibson, Co-Chair

Co-Chair Gibson: Thanks, Larry. Okay. So the agenda says that I will start with a few comments, and so just a few opening comments I'd like to make.

One is that I'd like to thank everybody for all the work that's been done. Since, it's probably been for about a year now. We came out of the AWS-3 CSMAC work into a brand new set of questions.

And we've really dug into them. There were seven working groups that were associated with that, and some of us got working group fatigue. But it doesn't really show in the work product.

And so that's good work. But Larry and I have had to, Larry Alder and I have talked and been really talking with Paige and the team at NTIA about moving forward on new questions.

We could sit and work on these questions and niggle at them for a long time, but we want to move ahead. Some of the questions, and Paige will address the questions, a new set of questions in her comments at the end.

But we felt like we wanted to just kind of cast a new sort of vision so to speak, for CSMAC and set a new set of questions. And so you'll see that at the end when Paige talks about it.

We've got co-chairs lined up for each of the questions, so thanks to those that are co-chairing those. And also thanks to those that co-chaired the seven working groups.

They're subcommittees that we've had so far. And I think all of you all know who you are. We're also hoping to do is that we have a set of questions that we can really get into and drive toward some answers.

We think we'll have, when all is said and done, between five and six subcommittees, which seems like the same as before, but Larry and I are going to, with Paige, we're going to really try to push to get a shortened work product so we can get it done in the next six months.

And so that's really all I want to say at the start. I'd also, just on the logistical side, the restrooms I think are out the door to the left. You'll note where they are by virtue of where you're going.

If you have any questions, turn your table tents up. I'll try to call on you in order. This is videotaped, right? I'll try to call you in the order that I see them.

Larry is going to be on the phone today, Larry Alder. He will be as capable on the phone, as I said, as he is in person. But I won't be able to see him turn his table tent up.

Having said all that, if there are, unless there are

questions, I'll go with the roll call. And what I'd like to do is start with folks in the room, going clockwise, starting with Steve.

Member Sharkey: Steve Sharkey, T-Mobile.

Member Povelites: Carl, Povelites, AT&T.

Member Kolodzy: Paul Kolodzy, independent.

Member Furchgott-Roth: Harold Furchgott-Roth, Furchgott-Roth Economics.

Co-Chair Gibson: And just remember one other logistic, push the button that Bruce said. It's the second from the right, the one that I just turned off. It has a hair trigger. There you go. You'll know it's on by the red light.

Member Sorond: Got it. Mariam Sorond, DISH Network.

Member Schaubach: Kurt Schaubach, Federated Wireless.

Member Crosby: Mark Crosby, Enterprise Wireless Alliance.

Member M. McHenry: I'm Mark, McHenry with Shared Spectrum Company.

Member G. McHenry: Guilia McHenry, the Brattle Group.

Asst. Sec. Strickling: Larry Strickling.

Co-Chair Gibson: Mark Gibson, Comsearch.

Ms. Atkins: Paige Atkins, NTIA.

Member Allison: I know, but I've never spoken here, Audrey Allison, Boeing.

Co-Chair Gibson: This is not only roll call, but a test of the microphone.

Member Hatfield: Dale Hatfield, University of

Colorado.

Member Rath: Charla Rath, Verizon.

Member Calabrese: Michael Calabrese, New America.

Member Warren: Jennifer Warren, Lockheed Martin.

Member Donovan: Dave Donovan, New York Broadcasters.

Member Reaser: Rick Reaser, Raytheon.

Member Chartier: Mike Chartier, Intel.

Member Kubik: Rob Kubik, Samsung.

Member Obuchowski: Janice Obuchowski, FTI.

(Off microphone comments)

Co-Chair Gibson: OK, that's it for everyone in the room. For those on the phone, could we start with CSMAC members? You know who you are, so Larry Alder.

(Off microphone comments)

Co-Chair Gibson: So folks on the phone, could you all check in starting with the folks that are CSMAC people.

Co-Chair Alder: Sure, this is Larry Alder here on the phone.

Co-Chair Gibson: Larry Alder, are you there?

Co-Chair Alder: I am here. Can you hear me? I don't think you guys can hear me. The other people on the phone, I know, can hear me.

Member Tramont: Mark, can you hear me? It's Bryan Tramont. The bridge is obviously really bad, so we're having real trouble on the phone.

Co-Chair Gibson: Okay. I can hear. I heard Bryan

Tramont. I heard Larry Alder.

Co-Chair Alder: This is Larry Alder. I'm here on the phone.

Member Roberson: This is Dennis Roberson. I'm here.

Member Reed: This is Jeff Reed. I'm here.

Co-Chair Gibson: Okay.

Member Dombrowsky: And Tom Dombrowsky's here.

Co-Chair Gibson: Hi Tom. Harold is on vacation. Is, Marty, are you on? Harold's on holiday. How about Pepper? Are you on? I think that's it. Hello? Okay.

Okay. Where are we? That was interesting. Yes, we're at Boeing. So roll call. Is there anybody on the phone who's not CSMAC that didn't speak up?

Okay. So those on the phone, if you could mute when you're not talking, the mic tech says that it's hot, and it's blowing his ears out. He didn't quite say that, but I discerned that from what he said.

Okay, getting off to a good start here. I think that was the roll call. Now, any special visitors? Are there any special visitors? Okay, good.

Okay. I'll move on to the report, except for all the members, which, who everybody is special.

Reports by CSMAC Subcommittees

Okay. So now what we have is we're going to move into the presentations and discussions from the subcommittees.

Report: Industry and Government Collaboration

At the top is Industry and Government Collaboration. And Steve I don't, do you have a brief?

Steve Sharkey, Subcommittee Co-Chair

Member Sharkey: We don't have a brief, and I'm not sure how you want to handle it. I think we had completed a report and voted to approve a report at the last meeting.

I think we had one outstanding area that we were going to spend a little bit more time on, on how to potentially do some small collaboration, really I think focusing on some of the work that we had done with the National Spectrum Consortium and see if we can get some more information on that.

And we have not gotten any additional information on that potential process, so we don't have a report here.

I'm not sure how, I mean it does, I think one of your, the new questions covers a lot of the area that we would be working in, that I think that work in the previous group would fit into.

So if we want to continue that work under the new question, may be a potential way forward.

Co-Chair Gibson: Okay. So I have a question then. I know what you said because I actually put the content in the report right after the meeting in Boulder, but that's not the report that's the live report. So I --

Member Sharkey: There really is no --

Co-Chair Gibson: Yes.

Member Sharkey: I mean we voted that was a closed report, right --

Co-Chair Gibson: Yes.

Member Sharkey: -- that we voted. So we had no additional information on that right now.

Co-Chair Gibson: So I think for all intents and purposes,   unless   we   hear   otherwise,   this

subcommittee is sunset. Do we need to vote on anything? Bruce? No? Okay, cool.

Report: General Occupancy Measurements / Quantification of Federal Spectrum Use

Now the general items. I believe that's Mark and Mark, right? Mark? No, it's Mark. Go for it, Mark.

Mark A. McHenry, Subcommittee Co-Chair

Member M. McHenry: So we were given two questions, I don't know, six months or a year ago. The first question I thought we answered. We briefed in detail.

It's good to make measurements. We gave reasons why. I think that, I don't think we need to go over that again.

Co-Chair Gibson: No.

Member M. McHenry: Nothing's really changed.

Co-Chair Gibson: No.

Member M. McHenry: But we kind of got sent back to the bench on the second question. So the second question is, how do you quantify spectrum use, which is a very tricky question.

It isn't just the amount of power you put out. It's not the amount of bandwidth you put out. It's much more complicated than that. So we kind of threw away all we had before and started over again.

And you all saw this two or three page write up. It kind of came down to, first there's always the thing measurements aren't the answer to end all. Measurements alone don't solve the issues.

So the first recommendation is to find a list of parameters. This is what NTIA would do this. It would impact spectrum sharing, and some of these are parameters are in assignments, but some of

them are not in assignments.

Assignments are all based on worst case, antenna pointing angles and usage and so forth. If you were trying to share with someone, the other parameters you'd want to know.

So there's a whole paragraph here about what those parameters are. And then the second recommendation is well, if you started to share, you'd have to give those parameters to the entrant.

And you might not want to give those parameters to the entrant, so you need to figure out what you would give and not give. And then the second recommendation --

Co-Chair Gibson: Can you move the speaker or microphone a little closer?

Member M. McHenry: Okay.

Co-Chair Gibson: There you go.

Member M. McHenry: The third recommendation is to, once you had this list of parameters you think were interesting for sharing, you need to give that to all the users.

So you would give them the assignment data and these list of parameters, kind of fill in the blank, like do you point your antenna u or down, or do you fly airplanes high or low, whatever the list is.

And you would send that out to the people that have assignments and ask them to fill that in. Then, really the big idea in all this though is how to define usage.

And the way we come up with defining usage is that if you have an entrant that would like to use the spectrum, and you have an incumbent, if there was no incumbent you would get a certain amount of use.

Then the incumbent's there. Your use goes down,

and so the difference between what the entrant would get alone and what the entrant would get alone with the incumbent would be valued as spectrum use because that's the cost of having the incumbent there, is the penalty you have on the entrance.

And then we had another dimension to this. If the incumbent uses it very little and flies an airplane all around but won't tell you where he is or what frequency, he's really using an enormous amount because he's not able to provide you this information.

He might not want to give his position or his frequencies and so forth. So that would be kind of, I wouldn't say against them, but you do one calculation with perfect sharing.

He uses this much or causes this much entrant loss, and then they only provide a certain amount of information. Maybe it's a larger amount of entrant reduction in use.

Then another part of this, since you're now basing this all on entrant use, you have to develop models for entrants. You might have a 5G model or an LTE model or a licensed model, whatever.

The models for the entrant would impact the incumbent use, and so NTIA would work with industry and come up with models. So they'd get a range of answers about usage, depending on what the entrant was going to do, how much information he would provide.

So in a nutshell, those are the recommendations.

Co-Chair Gibson: All right. Thanks, Mark. Any comments or questions on the recommendations? Janice. And say who you are.

Member Obuchowski: Janice Obuchowski, FTI. First off, compliments to the work. The observation I would want to make is that there's a great deal of

granularity in this approach.

And that's a good thing, but it may not be a good thing if some of the data weren't adequately protected. So the protection issue, I just wanted to highlight.

The second issue that, at least sort of that's apparent, is I think NTIA would probably have to be staffed vastly more financially and HR-wise, if you were to apply recommendations across the board to all different uses.

So at least from my vantage point, this is very good work, almost as a recipe book or as a set of possible approaches, which could be deployed given the pursuit in any given band.

Any effort to apply it across the board would seem to me to be sort of dying of its own weight. But that doesn't take away from all the different aspects here that are important.

The one question I have, which is more for NTIA, is that the President's Executive, Order requires you to do a qualitative assessment and how does this sort of interrelate with that particular pursuit and where does that pursuit stand. Thanks.

Ms. Atkins: Good question, Janice. Thank you. Paige Atkins, NTIA. So the quantitative assessment, which was directed out of the last Presidential memo, has been undertaken.

It was, the plan for the quantitative assessment was documented in the in-progress review for the ten year plan back in June of 2014. And we're at the tail end of the process, though we're still working the assessments since it's a little bit different than what we've done before.

And, in fact, as interesting as Mark was talking, the process that we've used has mirrors to some extent, what you laid out, not to the level of detail in terms of the parameters perhaps.

But the quantitative assessments, the purpose was to get a better handle in terms of percentage of use over geographic area for individual users and then, as well, to aggregate that information.

To get a picture of percentage of use over geographic area across all federal users. And we've developed some new tools that we're exercising in that capacity as well.

Again, we're still working through the final assessment. So again, it mirrors the high level process that you laid out in terms of requesting certain additional information, elevating that information, understanding how that applies, in our case, looking at geographic areas as well as population impacts to help us make decisions more from a policy standpoint of what sharing potential may be available and then what more detailed analysis needs to be done.

And we're hoping to wrap that up in the next couple of months.

Co-Chair Gibson: Mark?

Member M. McHenry: Well, I kind of disagree. I don't think, they already have the tools to do this. For AWS auction, they built these models for LTE and Monaco simulations and calculators.

They have all the mechanism to do this. They might well replace it with a 5G model or some other, but they already have the tools to do this. They're already doing it.

Member Obuchowski: I don't quarrel with having the tools. That was a very band-specific exercise. And my only observation is if this recommendation applies across all the bands for which NTIA has responsibility, they're shared or on an exclusive use basis, that is an enormous task.

And I would sort of say in some cases that would seem somewhat unnecessary and classic, I guess,

statement here. It remains to be seen why that is so important.

And if it is that important, we should also be looking at recommending through the TAC or whatever, that the commercial users produce the same information, for policy reasons.

Ms. Atkins: And just to clarify, this is Paige again, for the quantitative assessment, it was focused on five specific bands. So again, it wasn't across the board, and it was five specific bands. And we've been working it for a little over a year.

Co-Chair Gibson: Yes, Harold?

(Off microphone comments)

Ms. Atkins: I don't have it with me, 1300 to 1390 is one, 2700 to 29, 31 to 35, is it? Okay. And then there's another one in there, but it's, if you look at the last, the in-progress report that's posted for, I think it was published in June of 2014, it has the process as well as the specific bands.

Co-Chair Gibson: And Steve?

Member Sharkey: Yes. I mean I agree. It totally makes sense to focus on larger scale measurement bands that are identified for study.

But NTIA periodically used to publish some broader survey measurements that kind of went across all the spectrum bands, including commercial and government.

I always thought that those were good, just kind of general reference. And they were generating more of a snapshot in an area, but were at least provided an interesting overview of spectrum use in general.

And I'm not sure what the status of that program is, if that's ongoing or not.

Ms. Atkins: I personally am not sure, so I can't answer that question explicitly. I will say that as we

talked about, for instance in the last CSMAC meeting out in Boulder, we are also pursuing other monitoring capabilities, particularly, initially focused on 3.5 Ghz and looking at methods where we can take measurements, and I'll say aggregate or centralize that monitoring, that data for use for various reasons.

And initially, controlled access and looking at what else we might be able to do with that information to help the stakeholders at large, but we'll follow up on that and see where we are with the capabilities that you remember in terms of the broad brush measurements.

Co-Chair Gibson: Were you going to say something, John? Okay. Any other questions or comments in the room? Anybody on the phone have anything? I'll take that as a no.

Okay. Then I think we're good to vote this in, so can I get a motion to approve and a second.

(Off microphone motion and second)

Co-Chair Gibson: Okay. Any further discussion?

Co-Chair Alder: Hey. This is Larry on the phone. I just had some further discussion. Can you hear me?

Co-Chair Gibson: Yes. Go ahead.

Co-Chair Alder: Yes. As we vote on this, I'm trying to understand. It wasn't totally clear to me if this was just, what is actually being recommended in the second question.

Is the list a lot of things you could do? And I'm fine with that as kind of questions, but it seems like a lot of the specifics, especially in the last day, they seem more conceptual to me than specific.

Like I'm not sure how you would do this calculation, the theoretical calculation versus, people weren't able to share information, how you'd actually do

that calculation.

It seems like more of a statement of intent rather than a statement of how you would actually accomplish it.

Co-Chair Gibson: That's a good point. You want to address that, Mark?

Member M. McHenry: Well, last time I got not enough details. I'm not sure. He wants more detail.

Co-Chair Gibson: Well I think Larry's point is that the, what, some of the recommendations are a little nebulous in terms of what actually should be done.

I think he's looking, for example, at the last page where it says consider the utility of a metric based on the amount of spectrum available.

And that's a recommendation, so I, and Larry, I don't want to put words in your mouth. But is that the kind of thing you're talking about?

Co-Chair Alder: Well, I actually think that, I'm happy to vote to approve this as a set up, things to consider. That doesn't seem like it's a specific, necessarily act.

It's more like guidance, and maybe I'm splitting hairs here because I do think there's some interesting content, specifically in the last bullet about how to think about metrics and how to think about quantifying them.

I just, I think it's not quite super specific. I guess it's just a comment from me. I don't know. I'd be happy to vote to approve these for consideration by the NTIA just with that note.

Co-Chair Gibson: Okay. Well, your comment put two table tents up. So Jennifer and then Dr. Paul. You're not on, Jennifer.

Member Warren: There we go. I pushed two

buttons, not three. The idea here was to provide an approach, not to list detail by detail, but figuring that an implementation would be in the hands of NTIA to figure out what made sense versus a line by line, A, B, C, D.

So hopefully some of the conceptual approach is valid, and folks are comfortable with that. Thank you.

Co-Chair Gibson: And that's a good point. I think Janice made a pretty good point that said the weight of the thing is pretty heavy insofar as some of the recommendations and implementing them.

So take that for what it's worth, because I was part of these discussions as well. It was meant for some high level guidance. I mean it's a pretty weighty question. How do you quantify spectrum use, with or without measurements?

(Off microphone comments)

Co-Chair Gibson: I know. How many spectrum managers can dance on the head of a pin is kind of the same thing, but it's an important question. Paul?

Member Kolodzy: I'm a little confused by your statement, with or without measurements. It actually says with or without supplementary, supplemental measurements.

And so what I'm trying to understand is the question that always comes up, and it comes up with all spectrum sharing issues, which is how much is the band being used.

And I thought this question was going to try to say, is listen, you have to use some baseline interference measure or some kind of, where's the bar, and how would you develop the bar to determine if something is occupied or not with respect to other possible supplemental users.

And what I see here is a, doesn't go into some of those basic questions that we tend to have to wrestle with every single time we ask is this band being used.

Somebody puts the threshold at the noise floor. Some people put the threshold below the noise floor. Okay, and so therefore you're trying to actually ask the question, how much is it being used.

I don't think we've actually gotten to it. And I hate doing this at the last moment, but I don't see any way of addressing the real fundamental question that we're all trying to address, which is, at what point do you actually say something is actually being occupied.

And I have been dealing with this since 2001, and the argument still comes up. And I don't know if you pick this or you publish it, if you've given anybody any tools to actually determine if it's been occupied or not.

And if you've given the government an ability to say, this band is underutilized. It has an opportunity under these certain constraints to be shared.

I think that's what the goal of this question might have been from NTIA, and I'm trying to figure out how this gets us to that goal in the end.

Co-Chair Gibson: Good question, good point. It steps us a little further. Whether it gets us over the line is a question. Mark, do you want to address Paul's, and by the way, before you do that, hold on just a second, Mark.

Just some housekeeping. I'm getting, reports are coming in that people are having a hard time hearing on the phone. So please remember to use your microphone and make sure the red light's on.

And we'll all help everybody with that. And for the

folks on the phone, please remember to mute if you're not speaking, and maybe that will help. If not, we'll figure something else out. Go ahead, Mark. I'm sorry.

Member M. McHenry: I think you're looking for an I&R criteria, 1 percent use or 20 percent use as occupied.

Co-Chair Gibson: Mark, talk in the --

Member M. McHenry: Oh, well I think NTIA has these I&R characteristics when they did an AWS-3. They were able to say what would work and what would not work.

They were able to draw exclusions on sizes, so we're just saying the size of the zone is really what occupancy is. If you had no incumbent, they'd have no zones.

With the incumbent, you have a zone, so that represents the, that lack of use that the entrant has, represents the use of the incumbent. I don't understand what's lacking.

Co-Chair Gibson: Go ahead, Paul.

Member Kolodzy: Okay. Where I'm trying to get to is when you were doing the spectrum sharing for AWS-3, the determination was we are going to do sharing, and we're going to do it with this system.

That doesn't measure occupancy. What that does is it measures the ability to co-exist. Okay. Those are, one comes after the other, so I'm always wondering.

I would think that the federal agencies would want to know, hey, are we really using this band enough? Is there a possibility that we might want to do it?

And then yes, we want to do it. Now what can we share it with, and how far can we take it? So I look at it as a two-step process. And this answers more of the second step, which is if I know I want to

share it with LTE consider LTE is going to be evidently for everybody, it's going to be here forever or something.

I mean there's lots of other ways it can be measured against different systems. And so that's why I think occupancy can't be measured against a particular system because it's so brittle that we could always come up with a case where it's either no occupancy because it's very interference tolerant versus you take it to a system where it's completely occupied because you're comparing it to a system that is exceptionally brittle.

And so I get into this where how does the federal government understand when it has spectrum to be able to be used. And that's where I think that maybe we vote this in and say this is a good starting point.

But I think that eventually, the federal government is going to need to find some of those metrics. We have argued about these metrics for years, and it would be a great thing to try to actually start hashing some of that stuff out.

We hash out the FCC all the time. We hash it out in Commerce, but we don't really get to any numerical or logical methodology to get there.

Co-Chair Gibson: All right, thanks, Paul. Jennifer?

Member Warren: Just to address a minor point in Paul's comment, not the main thrust of his comment, this is very much not LTE-specific. And it was intended not to be.

We have a lot of discussion about that that this is not to presuppose sharing only as relevant with respect to LTE, is there's a lot of other commercial use out there, whether it be unlicensed or any other satellite.

It could be a lot of different things, so I just want to make sure that if it did come across as LTE-centric,

it shouldn't have.

Co-Chair Gibson: Okay. All right, you guys were at the same time, so I'm going to go Mariam first.

Member Sorond: Mariam from DISH. I think Paul raises good points, but if I'm understanding correctly, it sounds almost like a new question to me that's being raised.

I think for the contents of this question, the approach or framework as Jennifer put it, was put forward. And what you're raising is very interesting, but it really does sound like a new question. I mean maybe we could consider that.

Co-Chair Gibson: And Mark?

(Off microphone comments)

Member M. McHenry: -- has a number, like if you use oil, you use so many gallons of oil, but spectrum's not like that. It's more, I hate the word blockage, but it's a shared resource.

And if my use blocks your use, then you're using it. If your use doesn't block me, you could use all you want. So I think trying to define occupancy turn would be endless. Maybe that's the truth, that it is endless.

Co-Chair Gibson: It's endless.

Member M. McHenry: Yes. Everything's so specific.

Co-Chair Gibson: And moving in the spectrum. Okay. So what I'm hearing is that people are generally comfortable with the question and generally comfortable with the work done but feel that maybe more work should be done to fine tune a little bit about what exactly NTIA should be doing. Is that, I'm sorry. Go ahead.

Ms. Atkins: Just to add, so I think, I believe this question may have started before we actually framed and started the quantification assessment. I

think it has some good in it that can be assessed in context of what we've learned with the quantitative assessment as well.

In the latter we used, I'll call it a general reference receiver, to help us get consistency on how we were depicting occupancy across different systems, areas, et cetera.

And so I think there are ways to generalize how you're characterizing occupancy, but I think what I would recommend is we consider this as a potential framework to then have us assess in context with what we've learned in the quantitative assessment as well, and determine where we need to go from that.

Co-Chair Gibson: I would agree with that. As I read through this, there's some prescriptions in here of things that could be done that are probably not being done now.

It may not get us all the way to the goal, but it's better than not doing anything, which is a lousy way to say it's a good question. But there is a lot of stuff in here that if it were done, you get at least a better handle on spectrum use and spectrum occupancy.

So it's not nirvana. It's maybe Nine Inch Nails or something. Okay. Having said that, it's late in the day. Having said that, are there anymore comments or questions?

And anybody on the phone? Okay. So I think we had a first and a second. We were in the general discussion. Anymore questions or comments before we call the question?

Okay. So let's call the question. All approve the recommendation as written, vote by saying aye. Any opposed by like sign?

(Off microphone voting)

Co-Chair Gibson: Good. Good work, Mark. And Mark and Jennifer and everybody else on the committee. Say again.

(Off microphone comments)

Report: Spectrum Sharing Cost Recovery Alternatives

Co-Chair Gibson: I never doubted that. Okay. Thank you. Now it's Spectrum Sharing Cost Recovery Alternatives. That's Michael and Charla, right? Go for it.

Michael Calabrese, Subcommittee Co-Chair, and Charla Rath, Subcommittee Co-Chair

Member Calabrese: Microphone on, I hope. Yes. All right, so we have four, our subcommittee has four recommendations, two of which we previewed in May.

Actually, all of them we previewed in May, but two of them were recommendations, tentative recommendations, in May. And now there are four that are ready for final adoption, we hope.

Just to review the NTIA question, fairly straightforward. How should federal agencies be resourced to develop and implement sharing with non-auction licensees or services, such as unlicensed devices?

And there's some background that we've been through before. I think everybody knows that there are several obstacles to agency cost recovery where there is not an auction, where there's not auction proceeds on that particular frequency band that end up in the spectrum relocation fund.

So there's CSEA itself, which limits the reimbursement to bands that are auctioned for the most part. And then there is kind of compounding that the Miscellaneous Receipts Act and the Antideficiency Act.

We had a whole series of informational meetings, which we talked about last time. And so to get to recommendations, Recommendation 1, which we discussed in May.

Oh, and I should mention that we asked for feedback in May, particularly on Recommendation 1 and 2. The committee made some minor wording changes, but we didn't receive any further substantive feedback.

So hence, these are both, one and two are pretty much the same. So first, we recommend that NTIA should request that OMB provide written guidance for dissemination to federal agencies, that cost recovery arising from shared access to hybrid bands is CSEA-eligible.

So that would be, we talked about whether we should specifically mention the 3.5 GHz band as an example. We decided not to because apparently DoD is saying there will be no requests there for reimbursement.

But that would be an example of what we mean by hybrid band. And B, the cost recovery related to additional source of indirect impacts on non-auction frequencies, so-called domino bands, that have some nexus to an auction, would be CSEA-eligible.

And there is already examples of that, that have passed muster with OMB as they explain to us and those are mentioned.

Mark, do you want to seek comment on these one by one, or should I walk through all four?

Co-Chair Gibson: Well, I don't think you need to walk through the ones that we talked about in Boulder unless there's new information on them. And I don't think there is.

Member Calabrese: Okay. All right.

Co-Chair Gibson: Yes, so if there's things new for

today to get this to get voted on, feel free to just touch on them or walk whatever comfort level you have. And we have time.

Member Calabrese: All right, so we won't, Recommendation 2 is more homework for OMB. And then, easy recommendations, right? Recommendation 3 is, was listed as an option in May. We didn't dwell on it, but it's now a recommendation.

NTIA should recommend to Congress an amendment to CSEA that would permit a limited percentage of the spectrum relocation fund balance that exceeds 110 percent of certified agency costs to be used to reimburse certain qualifying agency costs for general purpose activities that advance federal spectrum sharing and spectrum efficiency generally, including potential bidirectional sharing, whether or not the band was auctioned.

And this was, this came up to us, I think, initially from DoD, which was saying there's many general things that they could do to explore spectrum sharing across a range of bands. But they feel hamstrung as far as making it somehow fit a frequency that's been auctioned.

And then the elements of the process to achieve this would include, essentially it attracts the 2012 amendments to CSEA, which is proposals would be submitted to NTIA, which should remain the coordinating agency on any of this spectrum sharing.

Proposals should be reviewed by a technical panel, and OMB should certify the costs are reasonable and compliant with CSEA.

The Recommendation 4 would be a limited purpose exception to the Miscellaneous Receipts Act and the Antideficiency Act that's focused narrowly on facilitating spectrum sharing.

So this is two parts because, as you, as it's sort of

implied by Recommendations 1 and 2, we are not entirely clear. We don't think anybody's entirely clear where the guardrails are on these statutes.

So we suggest first that NTIA should request that OMB provide written guidance concerning the application of the Miscellaneous Receipts Act and the Antideficiency Act to arrangements involving the FCC and/or private sector entities to offset or recover agency costs for the purpose of expanding or facilitating spectrum band sharing.

So first, NTIA would learn exactly what the limitations are, specifically for agency cost recovery for sharing.

Then after reviewing, B, after reviewing OMB's guidance and if needed, NTIA should develop and recommend a limited purpose legislative exception to the MRA and the ADA that authorizes direct payments or reimbursements to NTIA on behalf of federal agencies, such as fees collected by an FCC-authorized band manager or in-kind services, such as equipment purchased by industry that benefit federal agencies or offset a reduced agency cost related to sharing, et cetera, et cetera.

And so this would anticipate the situations that we mention in the previous recommendations, but would actually seek to carve out an exception to those very kind of wholesale restrictions that apply across federal agencies and activities.

And Charla, do you have anything to add?

Member Rath: No, actually just questions.

Co-Chair Gibson: All right, Paul Kolodzy has a question. Paul?

Member Kolodzy: This is Paul Kolodzy. Just a quick question. I'm trying to understand because actually Recommendation 4 is a really interesting and great recommendation.

I'm trying to understand. So you're looking at that reimbursements or whatever band spectral fees that are collected would go to NTIA. Would that, let's say it's DoD spectrum.

So would that somehow go from NTIA then back to the DoD, or what happens in that gap? I'm just kind of confused about that part of the process.

(Off microphone comments)

Co-Chair Gibson: Button.

Member Rath: Yes, sorry. Thanks. This is Charla Rath. I think the idea would be, is it would be very similar to the spectrum, what's done now with auction-related expenses.

But the idea would be to reimburse expenses and probably flow through the spectrum relocation fund. But there's really no way right now because of the way CSEA is done, that you can actually do that because you have to have an auction. It's related to having an auction.

Member Calabrese: An example, Paul, might be, let's say for example on the 3.5 GHz band, this passive sensing system needs to be put in place. Apparently, that cost will be absorbed by the spectrum access systems and then amortized to the users through fees.

But imagine if that was a cost that the Navy was going to shoulder and wanted reimbursed. This would presumably help enable the FCC to allow, to authorize the SAS, the Spectrum Access System, to collect fees and replenish the spectrum relocation fund for reimbursements, for upfront reimbursements to DoD that may come immediately to pay for that sensing system.

Member Rath: And actually, this is Charla Rath again. The other thing that was contemplated here is something that we spent a lot of time talking about, which is not just the idea that you'd have

these fees and it would go into the spectrum relocation fund, but situations that had come up, for example, in AWS-1 where, and I believe it was T-Mobile actually tried to move some of the current users earlier than was expected but ran into problems because of current law not permitting it.

So this was, this is actually to get, all of these recommendations are really striving to do one thing, which is to take what we all as experts know and what a few of the agencies know and make them more broadly known to the agency, so as they think about these issues, they understand.

They already have guidance from OMB. That's number one. And then number two, to facilitate very narrowly, presuming because you don't want to make these huge loopholes that people can do things that you don't want them to.

But they would be very narrowly focused types of solutions, but we don't know. Part of it is you have to go back to OMB and say okay. What is permissible?

We know that in certain situations X's happen, but is that generally applicable to all agencies?

Co-Chair Gibson: Paige, I think you want to comment.

Ms. Atkins: Just to clarify that I wouldn't be wrapped up too much in the specific details like the flow of money because the SRF flow is not through NTIA.

So there's a separate pathway, but the premise that you would look at Antideficiency and Miscellaneous Receipts Act or create a funding mechanism to allow funding of other types of expenses, et cetera, I think are all valid.

Some of the details we may need to clean up, but we can do that as we assess the recommendations and potential actions against that.

Co-Chair Gibson: Just a second, Harold. I did have a question, and I apologize if you mentioned this in Boulder. But initially you were looking into methods like UTAM, where there'd be a fee associated with equipment that would go into a fund.

Is that wrapped up in the last recommendation, or did you abandon that because it wasn't workable? What were your thoughts on that?

Member Calabrese: I believe the main problem is that agency costs are upfront, and we were trying to account for that. I think that's the main thing.

Member Rath: Mark, to your question, that particular recommendation did not, pieces of it made it in here, but not that specific thing.

Co-Chair Gibson: Harold?

Member Furchgott-Roth: First of all, I just want to recognize the outstanding leadership that Michael and Charla had with this subcommittee.

There were lots of meetings and a lot of working through these issues, and they did a really excellent job of making these recommendations.

I do want to know just procedurally, I get very nervous as a former Congressional staffer about recommendations from agencies just mechanically how that gets done.

I'm going to support the recommendations that the committee has. I just want to note for the record concerns I have about recommendations that go directly to Congress from a federal advisory committee.

I'm also concerned about recommendations to amend the Antideficiency Act and Miscellaneous Receipts Act. I don't even know which committee has jurisdiction, but I'm absolutely sure it's not the Commerce committees.

And the other committees, the committees that

actually have jurisdiction will be potentially taking some umbrage.

I actually think the recommendations generally on modifying statutes may come better from OMB than directly from a federal advisory committee. But those are just minor tactical details about how this would get implemented.

Co-Chair Gibson: All right, thanks. Any other comments in the room? Any comments or questions on the phone?

Co-Chair Alder: This is Larry.

Co-Chair Gibson: Hey Larry.

Co-Chair Alder: Yes, I wanted to also say that I think the work from this group was really outstanding. And I definitely think this is an important issue as well.

And I intend to support these recommendations going forward. Just wanted to say for the record that funding, finding funding in ways for spectrum that's not being put to auction, I think is critical for sharing and something that needs to be looked at.

And I think this group's done a good job of kind of paving the way, so thank you.

Co-Chair Gibson: Thanks, Larry. Any other comments from the phone? Okay, Paige, did you have anymore you wanted to say?

Ms. Atkins: Just that I also think this was very good work, and you peeled back some tough issues. I would also add that there is a lot of discussion around many of these issues already across multiple agencies and organizations.

And like my earlier comment in terms of some of the details may not be quite right, in terms of how we engage and who we engage, the committee won't necessarily know the ins and the outs and the right way to approach it.

And we would obviously take the recommendations and put it in context with how it should be done. So again, I appreciate your comment, but I think the basic content was done very well. Thank you.

Co-Chair Gibson: And at the risk of doing me, too, I'd agree with that. I thought this was pretty amazing kind of work. It really dug into some of the details, so congratulations on the work.

With that, no more comments or questions. Can I get a motion to approve? Don't everybody speak up at once?

Member Warren: Moved.

Co-Chair Gibson: Thank you, one. And a second?

Member Kolodzy: Second.

Co-Chair Gibson: Okay. Any further discussion? Okay. All voting to approve, vote by saying aye. Any opposed, by like sign?

(Off microphone voting)

Report: Other / Next Steps

Co-Chair Gibson: We're done. Okay, thank you. So now, according to the agenda, we have next steps. Is this where you want to talk about the next questions? And we will talk about the next questions. So I will turn it over to Paige.

Paige Atkins, NTIA

Ms. Atkins: Okay. Again, I have to thank everyone in this room for all of the great work that's been done over the last, I think, almost two years on these sets of questions or the set of questions.

It has been great content, and we, and I'll talk a little bit later about some of our initial assessments for responses to your recommendations. But I do appreciate everything that folks have done around the table and on the phone.

So what we wanted to do was to tee up some next questions, where the CSMAC goes from here and what issues we consider as top priority that we think the CSMAC can provide valuable feedback and advice to NTIA to execute.

The intent, as was mentioned earlier I think by Mark and perhaps by Larry Strickling, is to help focus the next set of questions so they are manageable within a shorter time frame.

We did not want to work over another two year cycle but try to shoot for, I'll say a six month to one year cycle.

Larry mentioned we are considering, and we'll recommend to Secretary Pritzker, a reappointment for six months if folks were agreeable around the table, to allow for enough time to ensure we close on these next set of questions before we advertise for new membership and have a transition in that process or potential transition in that process.

So our intent is focus, a more limited time frame so we can get through the questions, and in part, in the last cycle we found that in some cases, some recommendations became somewhat overcome by events because we went forward with certain activities, in large part, based on the ongoing discussion within the CSMAC.

So what we've done, and you'll find around the table and we will post if it's not posted yet, a short briefing that's entitled, CSMAC Next Steps.

And what I've done is we came up with an initial set of questions. We got some feedback from the CSMAC members as well as some of the agencies, and we have narrowed down the set of questions into five.

And the intent is to finalize these questions the next two weeks, wanted to make sure we had a little bit of time if there was additional feedback.

We're also still looking at the enforcement area in particular to see what we might want to do there in terms of questions or actual actions.

But the questions we'll walk through for the first slide on next questions, this is really all about bidirectional sharing, the next stage.

The initial subcommittee was focused on very short-term, temporary bidirectional sharing. What we want to do is extend that, so it's short, mid, long-term sharing and how we can also, the regulatory framework around that and how we can use that to help the agencies or the commercial entrants understand the level of predictability or certainty.

And some folks have told me there is no regulatory certainty, so I put it in quotes, so they can invest, again, both commercially as well as from a federal government perspective.

And also what options may be available to incentivize the commercial industry to share when they have exclusive license rights in a particular band.

So again, this is the next step that we've talked about in prior meetings of extending to longer term, bidirectional sharing as well as looking at those two sub-components that I mentioned.

And I'll offer any questions, comments. And again, we'll have two weeks for you guys to think about these and for us to finalize them moving forward.

Co-Chair Gibson: Thanks, Paige. So with that, are there, okay. Carl, questions on the questions?

Member Povelites: Just one that came up from the bidirectional sharing. We're looking at short-term or interim. Do you have a definition for short-term, mid-term and long-term?

Ms. Atkins: So I have not specifically defined them at this juncture. I would say long-term, think

permanent, so the whole breadth of time lines. And we can look at definitions as the group gets kicked off to define what those look like.

I will also say that one of the things that we're going to do, and this is, will show up in some of the actions that we are taking now or have taken.

We are developing use cases, federal use cases, which we will feed into this group so you have a baseline of the kinds of things that the federal agencies are looking to do from a bidirectional sharing perspective.

Co-Chair Gibson: Okay, Giulia and then Jennifer.

Member G. McHenry: Giulia McHenry. I think one thing with the use cases is to really understand what flexible federal access means.

Ms. Atkins: And I think that will come out in the use cases.

Co-Chair Gibson: Jennifer?

Member Warren: So just with the experience of the prior committee, I think it would be very helpful for NTIA to provide what it would like to see as the definition of short, mid and long.

And then the committee can work with that rather than have us define that. We spent, I think, a good portion of our time coming up with definitions and then a great of time, obviously, on then applying that.

But I think it would be helpful so that we can meet your, and I'm seeing nods.

Ms. Atkins: We can do that. Yes.

Co-Chair Gibson: Thanks, Jennifer. Harold Furchtgott-Roth. I'm just going to announce for you guys.

Member Furchgott-Roth: Thank you, Mark. I would

just urge extraordinary care in the wording of this. I think that licensees, particularly those that have paid a lot of money for licenses, may have some concern about a government agency raising questions about federal access to spectrum which they have assumed they've gotten some degree of exclusivity.

I'm not suggesting there is any absolute degree of exclusivity. All these licenses have limitations to them. But I just, I would urge some caution in how you phrase this, in a way that does that indicate anything that would have some substantial limitation on use or substantial limitation on options for future use.

Ms. Atkins: I'll also clarify that, don't get too focused on just LTE or other services that are provided. We're thinking through options like how do we better share potentially fixed microwave kinds of bands, public safety.

So there are different elements of potential sharing that we want to take a look at, but I thank you for the question.

Co-Chair Gibson: Michael Calabrese and then Steve.

Member Calabrese: Yes, I was just going to suggest that as I guess Paige, as you think about giving more guidance on short, medium, long-term, I mean consider not just the time dimension but also conceptually because when I think of, in this context when I think of short-term, I think more of opportunistic access or very temporary, distinctly temporary access for a particular exercise or particular event or things like that, whereas you said like long-term could mean indefinite.

And I'm not sure what medium-term means, but I think it would be helpful for the subcommittee then ultimately to think in those, that sort of multidimensional space as well, especially because, and kind of responding to Harold.

The FCC has now just very recently in two different proceedings, adopted I guess what I call use it or share it provisions that allow opportunistic access to license spectrum, which is very definitely fallow, at least for the moment.

And where there's a mechanism to ensure that the unlicensed user backs out when the licensee commences operations, when they really need it because as Harold said, you don't want to diminish the value of what they purchased, but if they're not actually using it, then it remains a public resource.

Co-Chair Gibson: Steve Sharkey?

Member Sharkey: And just to build on Harold's comment, too, I think I like the wording, that second part there where it talks about what options are available for incentivizing licensees to engage in shared access, which would imply more of a carrot and a mutually beneficial arrangement that can be reached rather than something that limits use in a way that's negative for the licensees.

Co-Chair Gibson: Okay. Now, Dale, and then is that Reaser? And then Janice.

Member Hatfield: I'm just going to make a very minor comment sitting here and listening to the exchange that in marketplaces we face these sort of situations quite a bit.

I think it might be interesting to think about economics where essentially you might be able to get an option to have access and pay for it.

That would protect, for example, the licensee because they know the options there that they would be, well anyway. There may be even insurance products.

There may be economic solutions here that might help us. It's not going to be an engineering problem so much as it is how do you get the economic incentives right so people will, if they're

losing something, they have some opportunity to recover those costs and therefore not oppose them as much.

Co-Chair Gibson: All right. Thanks, Dale.

(Simultaneous speaking)

Member Hatfield: -- clear, but you get the idea.

Co-Chair Gibson: Rick Reaser?

Member Reaser: Rick Reaser, Raytheon. One of the other things this kind of brings to mind and Dennis Roberson and I are on this other committee that's looking at these things for the labs.

But a lot of the stuff seems to be kind of coming together about measurements, sensing and all those kind of things. And there's a lot of talk about establishing huge sensing networks in the U.S. that could be used to look at spectrum market being same usage.

And there's like devices that are fueling this. The FCC has talked about that, but that also gets in the area of enforcement. But I was wondering if that was something that would be on the table about this.

Can evolving databases and sensing approaches be adopted to facilitate more dynamic things in the future? Because if you were to sort of set up a sensing network that could feed databases, that could certainly enable sharing.

And then you'd be measuring occupancy and all that kind of stuff at the same time, and that might be a future model. In fact, that could be maybe built into reporting systems in every sensor, every radio.

But there's just been a lot of talk about that. We've been looking over the spectrum labs. You probably heard some briefings we got from some of the vendors about building very small spectrum analyzers and so forth.

Take the report back to a network as to what was going on and so forth, and that was talked about in a context of enforcement and also in the context of sharing.

So there might be some future world where you look at all of these things. You look at the occupancy and measurements and databases and dynamic sharing in a more, and it may be for the future.

But that would be kind of interesting, I think, to look at. And I was curious if that would, might have been one of the things on Next Questions 3, the first paragraph.

Co-Chair Gibson: All right, Rick went right down the list. Thanks. Mariam Soround?

Member Sorond: Thank you. I was wondering if just kind of going back to your comment where you said you're not necessarily just, Paige, looking at licensed sort of wireless spectrum, but you're also looking at microwave and public safety.

I think it's probably helpful to clarify that over here because whether we're talking about sharing with an exclusive operator, exclusive spectrum block dedicated to one operator versus like a microwave nature where anybody can come. Oh, I expired. Also --

Co-Chair Gibson: That's how you use spectrum. Your license --

Member Sorond: And also, other alternatives that you might be thinking of beyond microwave and public safety, if you could clarify.

Ms. Atkins: So, I think the use cases that we provide will bound at least the initial assessment, and those use cases will be specific to things like public safety, perhaps use cases that would be associated with license wireless sharing opportunities, fixed microwave.

So I would look toward the use cases to bound that, to describe it and bound it.

Co-Chair Gibson: And Janice, I jumped you. Part of the problem is your table tent's camouflaged by that white thing behind you. And I'm just seeing the edge of it. Go ahead.

Member Obuchowski: I just wanted to compliment you on this question, and we can all put our gloss on it. Harold, I appreciate your point of view I think both from a federal user perspective as well as a commercial user perspective.

Carrots as well as sticks are important, and as we move into the world of spectrum scarcity across all users, which I think I appreciate what Larry said earlier.

It's a lot of misinformation out there about who's doing what to whom. This is a very good statement, and I think we can all put our own gloss on it.

But we'll work through the use cases, which I think should put it into sort of less the realm of just creative tension, which is inevitable given the interests that exist in the radio spectrum to ironing out some win-win solutions. Thanks.

Co-Chair Gibson: Thanks, Janice. So that was Question 1 and a little of the rest of them. Any other questions?

Co-Chair Alder: Mark, this is Larry. Yes, I just wanted to give folks, take a minute to give folks a little bit of context of how these questions were developed because everyone didn't see all the behind the scenes.

Mark and I have been working with Paige and the other folks at the NTIA. We solicited input from the NTIA, and as you saw, we also sent around questions, added comments and even took a survey of the membership.

And so we tried to do behind the scenes working with the Paige to distill these into these buckets. Originally there were ten questions, and we've massaged them.

We've added some new ones. So we tried to make this process reflective of what we've heard from the membership through these different inputs as well as the NTIA and find this balance.

I just wanted to give kind of that context and as was pointed out by Rick Reaser about we have the question about sensing and sharing. And we took some input there.

And you'll see focus in on a specific band, so these questions are, we did try to incorporate a lot of the feedback we heard from the group, probably not, probably didn't do a perfect job.

That's kind of a little bit of the history of how this, these questions were developed. Thanks.

Co-Chair Gibson: Thanks, Larry. And the other that I'd add to it is that we also tried to make the questions a little tighter so that we had some, what we could get is real results as opposed to some of what we've been dealing with before.

So hopefully these questions will generate sharp recommendations. We're hoping. Did you have a comment you wanted, okay. Any other comments or questions or any of the other questions? Anybody on the phone?

For any of the questions, yes. They are all questions that are on the table. Okay. Well, as Paige said, NTIA, and Michael did you have a comment, Mike Chartier?

Member Chartier: On any question. So the third one on strengths and weaknesses of measurement-based sensing and focusing on a 5.3 GHz band, is it, as you know, there's ongoing work on that band between NTIA and industry.

Hopefully, we'll get an agenda item for WRC-19 looking at that. Is it your intent to collaborate with that ongoing activity so that we could produce some deliverables that will help in that process?

Ms. Atkins: Great question. Originally we had this question a little more open-ended. And what we decided for this next cycle is to focus it on 5 GHz in large part because there is a lot of work going on.

What I would anticipate is we would bring some of that work into the CSMAC discussions, not necessarily have a joint effort, but to see if we can come up with anything else that we may be missing.

Are there other innovative approaches that we need to consider, and even maybe then bring back into the working group that meets on a biweekly basis or whatever the frequency is.

So we definitely want to tie the two together and see if we can extend it and address other approaches that haven't been considered to-date.

Co-Chair Gibson: All right. Thanks, Mike. Did anybody have any other questions or comments in the room or on the phone? Go ahead.

Ms. Atkins: Since we're going through the rest of the questions, one thing I did want to just touch on very briefly are the last two questions.

One question is around what I'll call sensibility of solutions internationally. Obviously that's important for industry as well as government users for various reasons.

And as we look at things like SAS implementation, database approaches, sensing approaches, we want to understand how we can effectively extend it to a global solution.

So that's the context around that question. Was that an echo? Okay. The last question I wanted to

highlight as well, and it's around 5G, very important to the nation, important to all of us in this room, still very ill-defined.

But we wanted to inject some discussion around 5G so we can start wrapping our arms around it.

And I'll talk a little bit more about that when I go into my spectrum comments and my update a little later as well. But again, very important topic and help us wrap, start wrapping our arms around it.

Co-Chair Gibson: Okay. Thanks. Okay, with that we're done with the questions on the questions. As Paige said, oh, I'm sorry, Jennifer. Wave it at me. There you go. That's okay. I mean, blind.

Member Warren: Jennifer Warren. I just wanted to follow up on a point that Paige emphasized and maybe ask a question on it, with respect to the expensability internationally.

Is this question to be focused on both at the global level with the ITU but also at a country-by-country level, North America, or is there any limitation on the scope? Thanks.

Ms. Atkins: There is no limitation on the scope. I think it's a combination because it's the practicality of how we can implement things.

And as you know better than I do in terms of the interrelationships between the ITU activities as well as then the nation-by-nation, host nation coordination requirements.

So it's, I would think of it broadly, and then if there are implications one way or another to be able to pull those out.

NTIA Spectrum Update

Co-Chair Gibson: That was a good question. All right, any others, last call? Okay. So as I've been saying, we will, Paige and company will continue to dilate upon these. And we're hopeful to have a final

list out in about two weeks.

But if you wake up in the middle of the night with any other thoughts and comments, God help you, but let us know what those might be. So with that, I think we're into the spectrum update. Is that right? So, go ahead.

Paige Atkins, NTIA

Ms. Atkins: I have an extra light on my thing, so hopefully everybody can hear me. So today we're at a pivot point. We've closed the remainder of the existing subcommittee recommendations and teed up our next set of questions based on what we see as the priorities over the next few months.

And again, we're hoping to close on those, I'll say within the next six to 12 months and looking at a potential six month extension so we can close these items with this team that's around the table and on the phone.

And once those next set of questions are finalized in a couple weeks, I know the CSMAC, the new subcommittees I'll call them, will hit the ground running.

At the same time, we've begun to identify actions that we want to take against the recommendations that we have in front of us from the last couple of meetings.

And some of those actions, actually many of those actions, have already started. As I said, in some cases, as we've engaged with CSMAC, we have taken actions associated with the advice during our past several meetings.

And though our emphasis is to focus on the practical and actionable recommendations as we discussed at our last meeting, we're truly tackling some very nascent and complex challenges, particularly one I like to reference, is the enforcement area.

And we understand that in some cases there will be broader issues and will require further study and dialogue to determine how we move forward smartly in those topics.

And as we look to these future questions at CSMAC, we'll tackle, we're still focused on a lot of day-to-day priorities. And what I would like to do now is my normal, give you an update on some things that have occurred since the last meeting.

Some you are intimately engaged in, in different capacities, and some you may not be familiar with.

So in May, we highlighted what I'll call the significant achievement of 3.5 GHz and Larry mentioned that a little earlier, and the significant progress we've made toward the 500 MHZ goal, the 245 MHZ, again, that Larry mentioned earlier.

And that was significant. We continue to make progress. In June, we published a technical report detailing for the 3.5 GHz activity, the assumptions, methods, analyses and system characteristics that we use to generate the maps of revised exclusion zones, which form the basis for the report and order that FCC issued.

And more importantly, this report provides some transparency into the innovative analysis and methods that NTIA engineers, in great collaboration with DoD and FCC, pursued.

And that resulted in the significant reduction in the exclusion zone, so the intent of this report is anybody can take it and replicate what we did and understand how those numbers and those exclusion zones were derived.

So I think it's a great piece of work. For those that are interested, it is posted and available. And one of the things that we want to do is ensure that we leverage those lessons learned.

It was a different method. For instance, we used

probabilistic methods in this case, which we had not used before. And we want to drive benefit and try to apply some of what we learned to potentially other bands that we'll look at in the future.

Now there are a lot of important next steps in terms of 3.5 and implementing the report and order. We'll continue to partner with the federal agencies, industry, FCC to ensure in particular the maturation and implementation of the SAS, the sensing, et cetera.

So we're very focused, and that is a priority area for us as well as, in particular, DoD. So there's still a lot of work ahead of us. We know that. I think everybody knows that.

But we have a regulatory framework that we can use to move forward and prove out this new sharing approach, so we're very excited about that.

We're also still very focused, as the agencies are, on a successful AWS-3 transition, of which many of you are engaged in. CTIA and CCA co-hosted an event the 4th of June.

And this was a very, I think well-received and productive event to kick off the informal discussion between the agencies and industry.

And it included discussions around expectations, processes and tools that will facilitate the transition.

And this informal dialogue, coordination and collaboration between federal stakeholders and commercial stakeholders continues and is absolutely critical to the success of this transition activity as well as preparing for formal coordination, which is going to start in very early November, end of October, early November.

Many of the activities that we've put in place to ensure successful transition were a direct result of the recommendations that we got through the CSMAC, not just AWS-3 working groups but also the

ongoing discussion in the areas like bidirectional sharing, transitional sharing, et cetera.

So we thank you for this critical role that CSMAC has played and continues to play in this process. We also continued to examine the potential sharing at 5 GHz, focused on two bands, 5350 to 5470 as well as 5850 to 5925 MHZ, between federal systems and unlicensed devices, the UNII bands.

And NTIA continues to work with the federal agencies, FCC and industry, particularly on that lower 5 gig band that was mentioned earlier, and it is not only for domestic implementation but also to support a future World Radio Conference or WRC agenda item for 2019.

So it's very important for us, and this future agenda item is related to designating that band for international mobile telecommunications, or IMT, mobile broadband for those that are not familiar with that term.

We've made significant progress in evaluating dynamic frequency selection and dedicated sensing and are continuing to evaluate database approaches to ensure compatibility with military and space science radar systems.

And we are optimistic that they're viable technical and operational solutions. We hope that CSMAC can continue to extend our work in this area as well just discussed in that new question around sensing and measurements, in particular, looking at 5 GHz and help us think through if we're missing something that we need to really take into account with our study.

The last item I'm going to mention before we go into some of our responses to your recommendations is something that's near and dear to many of us in this room, and that's World Radio Conference in 2015, which is coming up, just around the corner in November.

While we remain very busy working all these domestic priorities, we can't forget that we're in full throes for WRC-15 preparation, addressing many interrelated, international priorities.

And for those that aren't directly involved, and I mentioned this last meeting, each WRC is held every three to four years, advises treaty-level radio regulations, which allocate and govern how frequencies and satellite orbital slots are used globally.

It's critical to all of us, again, whether you're industry or government, for operational utility, market potential. There are many implications.

And the U.S. recently, this was last week, I think, had a very successful, yes, Allison was there the entire week, had a very successful Inter-American Telecommunications Commission, or CITEL, our regional group meeting.

And for those not engaged in WRC activities, regional positions are very important. So for the U.S. to be part of a regional position going forward is very important to us.

And as we discussed at the last CSMAC, the top two U.S. priorities for WRC-15 are identifying additional spectrum for IMT, mobile broadband, globally and identification of spectrum support beyond line-of-sight, command and control and non-payload communications for unmanned aircraft systems.

And we've made a lot of progress on both fronts to include in the CITEL meeting I just mentioned. The item I wanted to specifically highlight here is actually a future agenda item, and that is around spectrum for IMT above 5 GHz or above 6 GHz, sorry, and particularly focused on 5G.

And going back to one of the questions that we're teeing up, and though 5G really is still very ill-defined, there's great interest. There's great and growing interest in spectrum above 6 gig to apply in

this area, particularly in millimeter wave spectrum.

And we do expect a future agenda item to come out one way or the other. The U.S. has signed up to the CITEL proposal, which was negotiated at the end of last week.

And this addresses a proposal for specific bands. I can't remember exactly how many, maybe eight to ten specific bands, in the range from 10 GHz to 76 GHz. And then the 10 GHz is just for a small subset of countries specifically.

And the takeaway here is, again, we must not forget about the international implications and interdependencies with our domestic policy decisions and vice versa.

And I do really look forward to kicking off the 5G discussions in this forum, so we can help think through it. I know, I believe the FCC TAC is looking at some topics associated with 5G as well so very excited about, and it's an important area to address.

So as you can see, collectively we've been pretty busy for the last three months, and the momentum continues. We have much work ahead of us, and we can't thank you enough and tell you that we appreciate all the contributions that CSMAC has provided and the wisdom that you have shared with us.

As such, what I want to do next is focus on our preliminary assessment of the recommendations to-date for this last cycle and talk about where we are.

I do want to couch this next discussion with a few caveats. This is a work in progress. I thought it would be beneficial for you guys to see some of the preliminary results and our thought process.

It's not all-inclusive. The slides that you see are summarized content, so don't be alarmed that the wording isn't quite right or we missed something in

terms of the recommendations or our responses.

And the actions that I'll touch on are just examples out of many, some which are already ongoing and some which we plan for the future.

And our intent is to publish a full set of our responses by the next meeting, and hopefully that will include the recommendations, the response to the recommendations that the CSMAC approved today.

So again, don't get alarmed by the summarization and the examples. So I'm going to go the slides entitled CSMAC Recommendations, and you all should have hard copies on your desk. And they will be posted on the website if they aren't already as well.

So the second slide in the deck I already summarized in terms of the caveats of the structure of this summary briefing. I tried to summarize the question and the recommendations just for everybody's reference.

And I don't want to go over those in detail since you guys have been part of this process, but I wanted to include those so you could do a quick refresh.

And for the spectrum management via databases, some of the actions, and I'm going to move. And these slides aren't numbered, so I apologize, to the example NTIA actions. And I'll just touch on a couple of these.

As I think everybody knows, we are actively working with FCC, DoD and in some cases industry related to 3.5 and SAS and sensing implementation.

And that's an ongoing activity that involves many different components, to include a, I think it's biweekly joint working group that we have in place. So that will continue.

In general, one of the tasks that we have identified

is to look at what was done for 70, 80, 90 GHz. I think some of you are familiar with that, where we used a, I'll call it a government master file light application that allows us to accept requests for entry and allows us to generate responses on a fairly rapid basis.

We want to take a look at that construct and see can it be applied to other bands, other types of systems. That one is fairly lightweight for the systems that are in there, but it may be an approach that can be used in other bands.

And there was, go down to the fourth one. There's been a lot of discussion on classification of data, needing to review certain activities and policies.

And we are going to continue to work with the Spectrum Policy Team that was formed as a result of the last Presidential memo to further assess that area.

Now going down to bidirectional sharing, I'm going to skip over the questions and summarized recommendations and go to the NTIA actions.

One of the NTIA actions is in direct response to a recommendation to look at the manual, the current NTIA manual and see. Test the bounds in terms of secondary access.

What can we really do today that we don't necessarily fully take advantage of for short-term, intermittent kinds of applications?

Now as a result of our ongoing discussions, we already established an interagency bidirectional working group, and that falls under the auspices of the Policy and Plan Steering Group, the PPSG and the Spectrum Working Group under that specifically.

And we did that first quarter of this fiscal year, so the end of last calendar year. And that is the, where we are hashing out the use cases and have had ongoing discussions.

So those use cases will come out of that working group, which we will apply in this case. And we are wrapping those up here this fourth quarter of fiscal year '15. So again, some examples of what we're doing.

Now let's go to the government and industry collaboration. Again, I have the questions and summarized recommendations, but I'm going to skip over those to talk about some of the NTIA actions.

One of the recommendations out of the subcommittee was that the initial framework that we proposed seemed reasonable. And so what we want to do, and that was part of the report that the subcommittee provided as an appendix, is that initial framework.

And what we're going to do is take that and really flesh it out and provide detail around what that looks like in terms of activities, collaboration mechanisms, agencies and industry involvement, et cetera.

So I encourage you to look at that appendix if you haven't had a chance to to-date, and we're planning to have that complete in the second quarter of FY '16.

That doesn't mean in parallel we aren't going to already pursue things related to the multi-tiered approach and collaboration activities, but we want to make sure things are well-documented as well. So we'll do that in parallel.

And there was a number of, set of topics that were proposed for collaboration among industry and government, through the subcommittee.

And we are going to use the PPSG that I mentioned earlier to help us prioritize those and feed into our collaboration efforts.

One of the areas that was discussed was how can

we ensure that we're using our resources smartly, not duplicating activities because we have a couple of interagency groups already.

We have the CSMAC, and we want to make sure that we streamline and mitigate any kind of duplication across those activities.

So we'll use the PPSG for prioritization, and we will also help to clearly define the priorities in the different groups and who's working on what and how they tie together.

And the, I'll just mention we did also already establish liaisons. There was a recommendation or a couple recommendations about ensuring FCC engagement, ensuring we're leveraging the FCC TAC activities.

And as you know, we did establish liaisons, Rangam from our team as a liaison to the FCC TAC and Matthew as the liaison from FCC into the CSMAC.

So again, some of these actions we already took and continue with. So the last slide, the way forward, this was meant to give you an idea of the things that we're identifying.

There are many more that we're identifying, either things that are ongoing that we already started or things that will be new and will have at least quarters and fiscal year dates associated with them and then refine those dates as we move forward.

Not all the subcommittees are represented here. Again, it's not all-inclusive, so don't take offense. And we will continue to modify these actions if we need to and, again, publish something by the next meeting.

The enforcement results we're still assessing, so we've got some thoughts in terms of preliminary responses. But that one's a little more complex than some of them.

So that's still underway, and the recommendations, again, from this meeting we intend to include in what we publish by the next meeting. Any comments, questions, concerns? That was easy. Oh, sorry. Jennifer?

Member Warren: It's still going to be easy. Jennifer. No, I just wanted to say thank you. I think this is a really helpful insight into what becomes of what we do here, even at the intermediate stage, just to give us some sense and some feedback.

And then that gives us an opportunity in the work that we eventually need to do to kind of roll that up. So thank you very much for that.

Ms. Atkins: Thanks, Jennifer. Anything else? Oh, anybody on the phone? Larry?

Co-Chair Alder: No comments from me.

Ms. Atkins: So hopefully that was helpful, and I'm glad at least one of the members thought it was helpful.

Co-Chair Gibson: Well, I think we all did, but it's nice that you're putting, yes, really. And they weren't nodding off.

No, it's nice that you put time frames on this because it really kind of puts the NTIA to have a deliverable. So that's, this is great. I second what Jennifer said.

Ms. Atkins: And we are considering things like resources, so we don't want to say we're going to do something if we know we may not have the resources associated with it.

So we're taking into account the intents of the recommendation, the usefulness, the executability against that recommendation. And so that's what you'll see out of the next meeting.

Co-Chair Gibson: So we're way ahead on the

agenda. It's because this was an agenda created for seven working groups, and so I think we're past that.

Opportunity for Public Comment by Attendees

So now we're at the point where there's the opportunity for public comment. So that said, would the public like to comment? Take that as a no. Is there anybody on the phone that's not CSMAC that would like to comment? We are moving fast.

Closing Remarks

H. Mark Gibson, Co-Chair

Okay. Well then that's it. The only closing remarks that I would make are thanks to everyone for all the hard work that's done. And I'd like to also thank the work that Paige and the NTIA have done to really focus, help us focus on questions.

I feel really coming out of this that we'll have a set of really good questions that are sharp, that we'll be able to wrap some good work around and get a good work product.

So I thank you and all the work you've done. I know there are a lot of, I saw I got emails from her at like 10:30, 11 o'clock last night, so.

Co-Chair Alder: I do have some comments, too.

Co-Chair Gibson: Okay, stand by. I'm done. You can talk. Go ahead, Larry.

Larry Alder, Co-Chair

Co-Chair Alder: Yes. I also wanted to thank the membership of the CSMAC for participating in helping to form these new questions. I know we did a lot of it online.

And I think the input was, we tried to hear that input and work with the NTIA to get that. As Paige

said, we've got a couple of weeks to finalize these questions, but I think the intent is to move pretty quickly.

We've already identified some potential leaders for these questions, and those people know. We've already reached out to them.

And I think we will probably before the next meeting try and get people to join some of these groups and get some momentum because as Paige said, we have a limited amount of time.

And then my final comment is when I said no comments, Paige, I actually thought your feedback on the questions and recommendations was really good and very important.

Speaking for myself, I feel like it's great to see actually the recommendations digested and as Jennifer mentioned. So I didn't mean to just say no comment. I think it is super helpful. So those are my closing comments. Thanks, Mark.

Co-Chair Gibson: Thank you, Larry. It's like you're here. One thing I would say is if you look around at the questions, and if there's any ones that resonate with you and you'd like to participate, be thinking about that because we'll put out a call for participation as soon as the questions are finalized.

So just be thinking about that, and I'm sure you would not have done that if I hadn't said so. You got anything more?

Ms. Atkins: I would ask that as we discuss the possibility that we may want to reappoint folks for a six month period to ensure we have enough time to get through the questions, if that is an issue for you, if you could please just let Bruce know so as we assess our options there and the recommendation we may want to put forward to Secretary Pritzker.

The other thing I'll just mention for next meeting is

we're still working on the specific dates. Our next quarterly session should be in November.

And obviously there are quite a few people that might be tied up the month of November at the World Radio Conference, so we're looking at what the potential options will be for that.

And I think Bruce will be working those dates and get it published out to the membership so we can finalize them.

Co-Chair Gibson: Thanks, and a question on that. I kind of figured that that would be a concern, and it says location TBD. Are we looking at the D.C. area?

(Off microphone comments)

Co-Chair Gibson: Okay. Bruce says yes.

Ms. Atkins: And we take volunteers in terms of space.

Co-Chair Gibson: So it would not necessarily be at NTIA. You're looking at, call for volunteers for hosting the next meeting.

Ms. Atkins: Yes. At NTIA we have, as folks know, the building is being renovated, so that has impacted our ability to use certain conference space that is relevant to this group. So volunteers, I'm sure Bruce will take any volunteers to host the next session. I think they just volunteered you.

(Off microphone comments)

Member Tramont: This is Bryan. We can host. We'll be in our new office space by then if that's useful.

Adjourn

H. Mark Gibson, Co-Chair, and Larry Alder, Co-Chair

Co-Chair Gibson: Oh, cool. All right, good. They're coming in. Okay. With that, we're adjourned.

Thanks everyone, and thanks again to Audrey and Boeing for the wonderful facility. Thank you.

(Whereupon, the above-entitled matter went off the record at 2:45 p.m.)