UNITED STATES DEPARTMENT OF COMMERCE

NATIONAL TELECOMMUNICATIONS AND INFORMATION

ADMINISTRATION

COMMERCE SPECTRUM MANAGEMENT ADVISORY COMMITTEE

(CSMAC) MEETING

Via Teleconference

Thursday, September 21, 2023

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 5              HILARY CAIN

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

2   (1:11 p.m.)

3   MS. MANNER: Let me just conclude by

4   saying thank you again for everyone on CSMAC for

5   their hard work. We're looking forward to our

6   meeting in December. We hope to see even more of

7   you --. And with that, we're looking forward to

8   hearing everyone's reports today and then turning

9   our floor over to --.

10   MS. RATH: Great. Thank you, Jennifer.

11   The next stage is what I want to do is do a roll

12   call. So, I will call your name if you're on the

13   phone to say, aye. Same thing here in the room.

14   So starting with Jennifer Alvarez.

15   MS. ALVAREZ: Hi.

16   MS. RATH: Great. Reza Arefi. Donna

17   Bethea Murphy. Hilary Cain, is not on but I'm

18   just asking, is she here? Michael Calabrese, Tom

19   Dombrowsky?

20   MR. DOMBROWSKY: Here.

21   MS. RATH: Mark Gibson is also on

22   travel. Dale Hatfield. Dale? Okay. Paul

1   Margie?

2   MR. MARGIE: Here.

3   MS. RATH: Jennifer McCarthy, Karl

4   Nebbia, Louis Peraertz?

5   MR. PERAERTZ: Here. Can you hear me

6   okay?

7   MS. RATH: Great. Yes. I can hear you

8   great. Thanks. Danielle --, Glenn Reynolds, Dennis

9   Roberson? We heard you, Dennis --

10   MR. ROBERSON: I'm here.

11   MS. RATH: Andrew Roy? I think he's

12   traveling, too. Jesse Russell?

13   MR. RUSSELL: Here.

14   MS. RATH: Steve Sharkey, Mariam Sorond?

15   MS. SOROND: Here.

16   MS. RATH: Ricker Thakker, who I think

17   is also calling in.

18   MR. THAKKER: Here.

19   MS. RATH: Brian Tramont, Jennifer

20   Warren, Robert Weller?

21   MR. WELLER: Present.

22   MS. RATH: Patrick Welsh, I know it's

1   not able to attend. I forgot to mention Jennifer

2   Manner, who I have to check in, even though I know

3   she's here. And me, and David Wright is on his

4   way will -- and checking in. And first off, thank

5   you. This is great. It's nice to see everybody's

6   faces around the table. And to those of you on

7   the call, sorry you can't be here, too. And as

8   Jennifer said, we look forward to seeing you in

9   our December meeting.

10   Now I want to turn it over to Scott, who

11   has kindly offered to take questions, but he's

12   going to hold off until the end, until after we're

13   all finished with all of our report. So --

14   MR. HARRIS: I offered to take questions

15   only because it makes all of my colleagues

16   nervous. First, as we get here, the end of this

17   next cycle, I want to reiterate what Jennifer

18   said. We want to thank everyone here, their hard

19   work in this process with in December. And we're

20   close to the finish line, the current study

21   questions. But I want to be clear how

22   appreciative we at NTIA are for all of your

1   efforts. It means a lot to us.

2   So, speaking of the finish line, let me

3   talk about the National Spectrum Strategy, which,

4   as you all know, is only because I talk about it

5   all the time, is something that's been a major

6   focus --. We, too are near the finish line. We

7   are absolutely committed to releasing the strategy

8   no later than year end. We hope and we expect

9   that we will provide a framework for solving

10   spectrum management problems and answering some of

11   the really tough questions between the months and

12   importantly, years ahead. It's critical that we

13   get this done, and it's critical that we get it

14   right.

15   We are now working to finalize the tax,

16   get all the appropriate clearances. And I spent a

17   lot of time thanking all of the members of the

18   private sector who provided us advice and guidance

19   in this process. I also want to take a second to

20   thank the federal agency -- collaboration valuable

21   input, which by the way is ongoing. So, as I've

22   said a couple of times before, the strategy is

1   going to have four pillars identifying spectrum

2   bands that can be studied -- term for potential

3   repurposing, improving the spectrum policy

4   process, leveraging technology through spectrum

5   access, and finally accelerating workforce

6   development.

7   Publication of the strategy though is

8   not going to be the end of the process. We are

9   already working on -- implementation plan. We

10   intend to issue a few months after the strategy.

11   Simply put, the strategy is designed to explain

12   what needs to be done. Implementation plan is

13   going to give some of the specifics on how we

14   intend to do it. We expect to continue to engage

15   in dialogue with all stakeholders as we proceed

16   from the strategy implementation. And as one part

17   of that process, we are tentatively planning to

18   hold the next NTIA Spectrum Policy Symposium,

19   early -- Expected Policy Statement Strategy to be

20   a critical part of that.

21   And I hope that when we have our last

22   meeting in December, we'll be able to talk about

1   both the strategy --, what's going to be released

2   and the implementation. So, with that said, I hope

3   you'll indulge a few minutes longer because I'd

4   like to note a few other spectrum developments at

5   NTIA. Let's -- be today the FCC is voting or has

6   voted on its face launch site. Our team worked

7   with our colleagues at the FCC to help ensure that

8   they were able to make more spectrum available for

9   commercial space launches while protecting federal

10   space --. Among other things, the commission's

11   demonstrated again today that it's possible to

12   meet the needs of private sector and public

13   sector.

14   I'd also like to note that we continue

15   to work on CBRS. We of course think it is of the

16   utmost importance that the CBRS approach

17   assessment. But it was never our fault that the

18   first -- thus we're always willing to take real

19   world experience into --. We are willing to

20   revisit federal protection criteria as needed and

21   -- possible whether temporarily or long term. I

22   want to give you two small examples. CBRS

 1   devices, as you probably know, must continually be

 2   reauthorized to use the spectrum lest they operate

 3   on --. But since our last meeting worked with our

 4   federal partners and mission extend the time

 5   before reauthorization needed from five minutes to

 6   up to 24 hours places and frequencies --.

 7   Also worked with the Hawaii Electrical

 8   Company, friends with the commission, and the Navy

 9   to allow portal-based scheduling access till an

10   environmental sensing capability fully --. Goal

11   simply to get as much better as is possible till

12   the full system is up and running. The point of

13   this -- but it's that we're always looking for

14   ways big and small to improve CBRS spectrum

15   access. I know we're going to hear today from the

16   CBRS subcommittee about some good findings

17   including operationalizing a process for

18   addressing improvements to potentially overly

19   conservative protective measures. We truly

20   welcome that conversation. We are always open to

21   hearing from licensees what we can do --.

22   And finally, I'd like to take a minute

1   to brag about our research custom lab --. ITS, if

2   you've not read about it yet, just won an award

3   from the state of Colorado for its work on the

4   compatibility of radio altimeters and 5G broadband

5   operations --. ITS played an important role in

6   helping get that particular saga to a big place.

7   And today in Colorado, there's an award ceremony

8   for the winners of the 5G Challenge program. ITS

9   conducted coordination with the --. 5G Challenge,

10   as some of you may know, was designed to help

11   assess the deployment readiness of open ran

12   equipment system.

13   Just to give you a sense of how

14   significant folks consider this endeavor to be.

15   Colorado's Governor Jared Follis -- after ceremony

16   and both Senator Hickenlooper and Deputy National

17   Security Advisor and --. As all of you who know

18   me are aware, I could talk all -- and not just

19   about my granddaughter. I can talk about OSN or

20   ITS, but I guess it's probably -- your work. So

21   without further delay, I'll turn the meeting back

22   to --. Thank you. Want to hear about my

1   granddaughter?

2   MS. RATH: So once again, thank you,

3   Scott. Always inspire --. We'd love to see. But

4   just to turn to business, before I turn over to

5   our first Co-Chair to give a report is we want to

6   remind folks, if you want to take the floor,

7   please put your tent card up. And then for folks

8   on the phone, I'm assuming, Antonio --. How do

9   you want to handle folks on the phone, members are

10   on the phone? Will they just raise their hand?

11   MR. ANTONIO: Yes, that's fine.

12   Actually, they can just speak up. I will ask for

13   those on the phone though, to make sure that your

14   phones are muted right now. I'm hearing that

15   there's a lot of background noise. I think we're

16   all muted here in the room. So, I'll get you guys

17   mute on the phone as well. Thank you.

18   MS. RATH: Thank you so much. So with

19   that, I'm going to ask -- committee and since

20   Mariam's going to start it once again. You've had

21   a challenging time to do, a very short period of

22   time. Let's do the work. So, we appreciate all

1   --.

2   Ms. SOROND: Thank you. Jennifer,

3   Charla. Also, thanks to the subcommittee

4   co-chairs. Jennifer McCarthy and Patrick Welsh

5   could not make it today either. -- to Jennifer

6   for being here. We also have amazing NTIA

7   liaisons -- forward and also thanks to the FCC

8   liaison --. So, with that, let's move on to the

9   first slide, please.

10   Subcommittee members a reminder, the

11   NTIA questions are listed. They will be four high

12   level questions that we looked at primarily

13   lessons learned, improvements and then questions

14   on the consideration for future bands of what can

15   be considered and what should be --. Next slide,

16   please. So, as an update, we did kick off this

17   subcommittee in January 2023, earlier this year.

18   At the last July meeting, we were only able to

19   provide initial observations, but we've made

20   amazing progress since we've completed 26

21   interviews.

22   The interviews are listed over here in

1   two buckets of non federal and federal. And in

2   the actual federal category, besides ICS and DoD,

3   just this morning we also had Navy, which was

4   very, very informative for us that this report has

5   not captured -- interview yet, but it was also

6   extremely helpful. I think we have made really

7   substantial progress to get the views from the

8   commercial side, but we really did need more

9   federal views. And one of the reasons why it

10   would have been premature to jump to any sort of

11   recommendations prior to this.

12   But as we are looking at this, we're now

13   ready to move forward with few recommendations

14   that are high level and we will be able to dive

15   into that further and that has been one of the

16   reasons to come up with the report. We have nine

17   more interviews scheduled by the end of October to

18   be completed. Again, Navy is completed, but there

19   are a few others both on the commercial and

20   federal side that we expect to get to be able to

21   kind of complete the views to make sure all

22   stakeholder input is provided to the --.

1   If you can move on to the next slide,

2   please. So, in the general lessons learned

3   categories, first of know just a step back, CBRS

4   band was a very unique opportunity. It did have

5   various stakeholders that really in previous

6   spectrum, this framework did not exist to allow

7   this sort of coexistence across various use cases

8   of mobile -- wireless equipment, vendors operating

9   smaller enterprises, larger licensed operators.

10 And therefore, it did utilize unique solutions to

11 address the three-tier sharing framework. So as

12 Scott also mentioned earlier, anything that is new

13 is going to need to be potentially improved with

14 the framework that we're providing. However, with

15 that said, we could say confidently that all the

16 stakeholders, they all felt that this framework

17 provided and promoted sharing and the lessons

18 learned were valuable.

19   We did not hear from anyone in the

20 subcommittee in the interview that this was a

21 wrong approach or the framework has fundamental

22 problems or any of these things. Everybody was

1   extremely positive on both sides about this

2   sharing framework being the right approach to this

3   band, addressing this unique opportunity. Also,

4   it was generally agreed that the CBRS sharing

5   framework should be considered another band, but

6   with the caveat that we have to look at the

7   incumbent situation, the policy goals, the

8   licensees and use cases of every band that would

9   actually impact how that sharing framework should

10   be modified.

11   Now again, being a new band, this

12   sharing framework did come in and being a new

13   approach, it did come in with conservative

14   approaches, and that was highlighted actually both

15   on the federal and nonfederal side and the

16   processes adopted initially also were

17   conservative. So therefore, it was acknowledged

18   that there could be better process to address both

19   the conservative maybe methodologies and the

20   conservative processes. Finally, -- I should note

21   that coexistence among nonfederal users actually

22   could also be helped with improvement. That was

1 also highlighted more from the commercial side.

2 With that, we can move to the next

3 slide, please. So, here's aligned with question

4 two asking us for improvement recommendations.

5 Here are some improvement recommendations that we

6 are thinking of and, you know, these kind of be

7 worked on a little bit more. But starting with

8 the first one and as it was highlighted before, we

9 are considering a process and recommending to

10 create a process where all stakeholders, NTIA

11 expertise are able to drive timely changes to

12 whether the rules, operations, settings, or

13 standards is applicable.

14 We also have heard that these processes

15 need to be automated to kind of move things along

16 faster with cheap decision makers and sort of a

17 multilevel implementation process. This

18 recommendation needs to be actually formalized by

19 the subcommittee. So, we have a lot to discuss on

20 what this looks like. This is a very high level

21 recommendation at this point. We will come back

22 in the December time frame to say what does this

1   look like, how, who, and what would be the

2   recommendation of the subcommittee. Also, we

3   highlighted some observations, but obviously these

4   formal processes that we are -- these processes

5   that we might be able to propose will also help

6   some of these initial observations that were

7   detailed information and feedback that we received

8   from the subcommittee members.

9   I'm not going to go through the whole

10   list. It is a large list, but it is spanning over

11   the propagation methodology, the complexity of the

12   processes of aggregate interference, the

13   methodology of aggregate interference, heartbeat

14   intervals, DPA neighbor foot sizes. I guess I am

15   going --. DPA activation timer. And well, there

16   are key sort of findings of the report improving

17   the limits for ground heat, resolving the

18   reservation of excessive amount of spectrum during

19   events and improving the timing, pervasiveness

20   coordination of advanced notifications, and

21   considering PDV (phonetic) synchronization and

22   increasing -- management for GAA.

1   As we were going through this and with a

2   lot of the secretary members that we have, that

3   stakeholders have very insightful feedback to

4   this. Some of these items on these lists are

5   being worked on in other groups. We do not --

6   recommendation with some of them -- being done

7   obviously in various entities to kind of bolster

8   the recommendations. Some of them we might

9   actually come back with specific recommendations,

10 but we will be deciding that in the next couple of

11 months as we're trying to finalize this for

12 December.

13   And then finally, we recommend that for

14 other bands subject to sharing, the NTIA develop a

15 collaborative process that includes all

16 stakeholders. And let me clarify that. We did

17 hear comment that the CBRS process was

18 collaborative. This is not to say that the CBRS

19 process was not collaborative, but this is aligned

20 with our first bullet of coming back with a

21 recommendation on process improvements that would

22 continue to be a collaborative process across the

1   state. So, with that said, I will ask if Jennifer

2   has any comments to add to this, otherwise, open

3   it up for questions.

4   MS. MANNER: Thank you, Mariam, you've

5   been doing an amazing job guiding this discussion

6   and this subcommittee's efforts. It's a rather

7   large gap, but I think we've done a great job of

8   getting a variety of viewpoints and coming up with

9   some very practical and implementable

10   recommendations. Some of which are going to be a

11   little bit more challenging, the process ones and

12   figuring out the interagency communication with

13   the commercial sector and vice versa. So, you

14   know, I -- to getting further analysis and thought

15   into some of those recommendations, which I think

16   will take the brain power of the entire committee

17   to figure out what we think we can improve upon.

18   But great job and thank you for all of your

19   leadership.

20   MS. RATH: Questions. Do we have any

21   questions in the room on the floor for Mariam and

22   Jennifer? Well, thank you so much. We know you

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1    have just a few months to finish your task --.

2    And we appreciate everything you're doing.  So

3    with that, I'd like to turn to the 6G subcommittee

4    and would ask Reza to take the floor.

5         MR. AREFI:  Thank you very much.  Very

6    good.  Hi, everyone.  -- reporting on our

7    activities.  Yes.  So here are the subcommittee

8    members listed.  We enjoyed the presence of our --

9    liaisons and also  --.  Okay.  All right, so this

10   was the -- numbers.  Yes.  Thank you.  For the

11   mandate, you have seen these first slides from

12   last time.  The mandate that was given to us by

13   CIA is basically two-thirds.  First was on the

14   focus on use cases.  And use cases 6G maintain

15   what kind of use cases would be useful for federal

16   agencies to be aware of, which ones would be

17   applicable to them, especially those that are

18   related to nontraditional use cases with

19   applications and safety, radar space, et cetera.

20   Second, ask what about spectrum.  When we got the

21   mandate, of course, there was around the use of

22   terahertz and sub-terahertz band.  And they asked
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1   us whether any kind of impact on government users

2   and what kind of impact they would expect, whether

3   the use of these bands would be useful -- and in

4   addition to sub-terahertz, if there are any other

5   spectrum bands that might be a good --.

6   As you can see, they didn't ask us --.

7   Now, in early discussions about specific impact to

8   some federal government operations, it was

9   clarified by NTIA that we don't need to bother

10   about specific impacts to users in terms of

11   coercion sharing. And that was --. It was

12   probably way too early for that conversation --.

13   Next slide, please. So, our approach, we scope

14   the work in development plan. We prepared an

15   outline for the report, and we conducted about 40

16   interviews to the great cross section of federal

17   and non federal and for nonfederal service

18   providers, -- profit organizations. We had many,

19   many meetings and discussions development our

20   findings and our recommendations. Draft report,

21   you know, available and we try to address both the

22   use case aspect in -- our mandate.

1   Intro schedule, we started last August

2   and we conducted interviews six months -- and

3   cataloged all the information that we received

4   interview both with verbal and correlated

5   everything. We use that information to prepare

6   our draft -- our draft -- recommendation. We

7   continue to improve the report between now and

8   December the -- final paper. So here you see the

9   entities that we approach for interviews, the ones

10   in gold are the ones that we actually -- speaking

11   with and as you can see the large number of

12   federal agencies, industry covered service

13   providers, -- equipment manufacturers, chip

14   manufacturers, officers, software companies, as

15   well as academia, nonprofit organization.

16   We took a lot of valuable information

17   from our -- on 6G technology and -- organizations

18   and other regions working on defining --. Here's

19   a graph for that alcohol paper. As you can see, a

20   big portion -- by federal government. Another big

21   portion of -- technology as a creative between

22   capture our findings and recommendations on that

1   finding. On technology development and migration

2   from 5G to 6G, we observed that the carriers are

3   still focused on deploying 5G. Moving to --

4   moving to adding features of 5G. -- implemented.

5   On the other hand, -- manufacturer -- manufacturer

6   -- tens of vendors technology elements related to

7   that also inspection that. Another observation --

8   technology was the dominant trend next on these

9   cases.

10   As expected, a new generation of

11   technology response year and gradually move

12   towards what excellent. And we are in the

13   visionary phase -- with that is expected towards

14   the end of the decade commercialized. There are

15   many challenges with respect to that process. One

16   aspect is the business case. Business case has to

17   work, no matter how great the technology is --.

18   Scale has always been a big element in success of

19   different generations of technology. However,

20   going forward, especially given the fact that with

21   6G, we're looking at nontraditional use, case

22   driven applications coming in, it might be also

1   good for specialization, or that could be taking

2   advantage of.

3   Another aspect with respect to use cases

4   is how the technology that enables those use cases

5   are being developed -- earlier next year, making

6   up bridge from anticipated use cases, use cases

7   towards the development of the technology, what it

8   takes --. And they started a partnership with LSF

9   creating -- that. Next slide. On spectrum,

10   findings show that the terrestrial side, the focus

11   shifted past couple of years, maybe talks about

12   utilizing subterranean spectrum. The focus has

13   shifted towards midband and -- midband, up to

14   around 15 gigahertz. We have reflected this --

15   CIA. -- that's mostly research area for

16   communication -- commercial. Everyone kind of

17   pointed to lack of suitable dedicated spectrum

18   additional -- previous generation and specifically

19   very frequently ranges are finding show that low

20   band is not focused post -- low band, and the

21   focus is more on the mid band, which is considered

22   a very loss of spectrum where both coverage and

1   capacity could be traded off depending on the

2   deployment scenario. That's what we heard from

3   interviews and studies.

4   There's a no band spectrum, however, is

5   of interest for the space segment and for non

6   terrestrial, especially for applications such as

7   rec to handset coverage. -- understood area.

8   Interest in higher frequencies -- wave and

9   sub-terahertz -- still exist, but not for specific

10   applications --. So, these are our findings and I

11   pass them to Carolyn (phonetic) to go over most

12   important --.

13   SPEAKER: So, we're presenting draft

14   recommendations on the next slide, and we've got

15   two sets of complementary recommendations that

16   we're presenting on behalf of our subcommittee.

17   This first set addresses our recommendations to

18   help prepare government users for the impact of

19   6G. And we do want to see upfront that it doesn't

20   include operational impact to federal government

21   users, which was outside of the scope of our

22   question. So, we have two recommendations here.

1   We recommend that NTIA work with FTT and agencies

2   to develop and incorporate more readily spectrum

3   sharing approaches into plans. So, there's two

4   pieces of this. First is the spectrum piece, and

5   then second is the process piece.

6   So for the spectrum piece, we recommend

7   that NTIA engage early with federal incumbents in

8   bands of particular interest to 6G and to

9   understand the type of uses there and the degree

10   of uses as well as their ability to share. The

11   second piece on the process is we recommend and --

12   to leverage more data driven automated dynamic

13   methods, including such as developing the alpha

14   version of the --. Our second recommendation here

15   is that acquisition form and incentives be

16   considered in order to do spectrum more

17   efficiently and effectively.

18   And so, for that, NTIA working with the

19   agencies like California and Congress to consider

20   those --. The next slide, please. Antonio, you

21   hit the finish slide. Thank you.

22   MS. RATH: I think Antonio is still

1   trying to fix this major problem on -- people

2   having trouble hearing. So, all of us suggest

3   really try to -- get over some of the

4   interference. --

5   SPEAKER: Okay, so this slide is our

6   overall draft recommendation. And so, first the

7   first recommendation that we have here is on the

8   use case of our question, which is that -- should

9   work with agencies to identify if and when

10   commercial 6G services would be beneficial to

11   federal agency missions, and also to identify and

12   characterize any differentials and requirements

13   that they see for 6G compared to where industry is

14   going with 6G and to incorporate that --

15   coordinate with industry on those differentiated

16   requirements in alignment with the IT timeline.

17   Our second recommendation here refers

18   back to the previous slide about proactively

19   helping prepare for the impact of this be to

20   government users. Our third recommendation is on

21   spectrum. Actually, the other recommendation --

22   7.125. Our fourth recommendation is NK (phonetic)

1   to adopt a toolbox approach so to choose sharing

2   mechanisms that are substituted for particular

3   bands and particular incumbents in those bands,

4   including commercial incumbents and considering

5   the requirements of commercial services in that

6   process in rising and implementing these during

7   method. Noting that less management may be

8   required in the sub-terahertz ranges due to those

9   populations in those ranges that the signals have

10   to travel as far or there's more building losses.

11   So that is helpful in enabling sharing.

12   Our fifth recommendation is that NTIA

13   collaborate with facilitate innovation in the

14   Careford (phonetic) spectrum on an exploratory

15   basis and considering those operations tend to be

16   more localized again due to the propagation --.

17   That presents our --. Thank you so much. I know

18   that --. So, I'm going to ask if there's any

19   questions and once that if you have questions on

20   the phone, please, --.

21   MR. NEBBIA: Thank you. Wanted to ask

22   regarding the first recommendation. Seems to me

1   historically that the government has begun looking

2   at these commercial wireless type technologies

3   after they've been deployed by the wireless

4   industry --. And the initial discussion here, we

5   noticed that everybody's really focused on 5G and

6   6G address what in terms of time are you expecting

7   communicate an application to excel? They haven't

8   --.

9   SPEAKER: So, we think that it -- isn't

10   understanding that agencies are busy with a lot of

11   things. We think this is important and to be--.

12   MR. AREFI: To that also, one of the

13   most important elements in how, like, what shape

14   or form -- are, how they are defined in terms of

15   technical capability. What is it that they would

16   be able to -- what type of application? And

17   those -- at that stage defining those capabilities

18   -- much sooner than we expect going to IT timeline

19   next year is when IT is going to discuss

20   technology performance criteria and KPI

21   (phonetic). It's even sooner than what standard

22   organizations are going to discuss. So, in order

1   to not be preempted --.

2   SPEAKER: --.

3   MS. RATH: Yeah, the fan blew. So, I

4   think, you know, I'll come in and out --. But one

5   of the things that I was listening to the entire

6   discussion was it does sound premature, but I

7   think the -- is on the services side. Some of

8   what we can look at is how does the commercial

9   technology have applications but it doesn't have

10   to be provided by a service provider. It can be

11   leveraged by any --.

12   There's ways to leverage wireless

13   technology that doesn't have to have it --. There

14   are other ways to leverage that technology --.

15   Particularly when I think, Reza, you were talking

16   about fact that the service providers really are

17   paying attention to it. But it's the OEMs and the

18   Rams (phonetic) and what have you. That's

19   different, right? So maybe we should be thinking

20   about that as we go forward a little bit more,

21   breaking out service and technology. And then

22   from a process perspective, everything's going to

1   be really challenging when we get the next

2   meeting. And we're going to be trying to adopt

3   things if we have a situation, and this is not on

4   NTIA at all, but to have a full consensus on

5   things that people aren't able to hear well, the

6   conversation. So, I just want to flag that. I

7   don't know what we do about it as a collective,

8   but, you know, we've got a third of our people not

9   able to --. Thank you.

10   MS. MANNER: Thank you.

11   SPEAKER: Thanks. Just a little bit of

12   a riff off of Karl's comments and maybe also a

13   little bit off Jennifer's as well. But with

14   respect to your comment, Karl, about the fact

15   that, you know, fairly frequently what happens is

16   the government is waiting, or is not necessarily

17   waiting, doesn't actually deploy until well after

18   --. I wonder whether, you know, I've been trying

19   to be -- of meetings going on among the three

20   subcommittees. I'm wondering if part of what

21   you've looked at is vegetarian appropriation --

22   that's a huge piece of this. I also wonder

1   whether -- there are ways to change that that

2   would allow even earlier involvement in some of

3   these types of --. The president and I were

4   having a conversation beforehand about, you know,

5   having been in this situation and seeing how it

6   unfolds. It's not uncommon, for example, years

7   after we deployed --, you know, by the government.

8   So, I just -- I wondered -- and that was that first

9   question. That was part of it.

10   The other point about the service versus technology --

11   that the vendors will be thinking about these things

12   long before the carriers will. And so, there's always

13   that kind of disconnect --. Who do you focus on? How

14   do you get -- out because the service providers --.

15   Jennifer looks like she wants to comment back on --

16   maybe offline for another day.

17   MR. AREFI: Yes. Thank you. One thing

18   to mention here is that maybe instead of -- I

19   wouldn't call it a discontinue -- problem. I

20   think it's an iterative process between vendors

21   and service providers defining technology versus

22   application versus service and requirements. And

1   that has been -- I think will be similar with the

2   possible difference that because of all the

3   nontraditional use cases you talked about, you

4   might see certain applications use cases coming

5   forward financially viable --. That's just an

6   example, right? So, some of this and these will be

7   developed as we --.

8   SPEAKER: --. Although I do think it

9   draft recommendations to all agencies for 6G. And

10   so, perhaps we can have a more specific

11   recommendation --.

12   MR. SPEAKER/Q3: -- conferences and

13   getting people to drink and talk about this stuff.

14   Of course, right, I mean that helps. My point is,

15   okay, how, try to make this happen given all the

16   other issues people are talking about?

17   SPEAKER: I understand there are a lot

18   of issues with -- agencies are very busy with a

19   lot of things. I think it would need to come from

20   the federal agency or -- priority. Looking at

21   what their needs are, how. So we need to rise up

22   to a priority with an incorporate that --.

1   MR. WRIGHT: Thank you. Dave Wright. I

2   kind of wanted to iterate what Charlie was

3   bringing up. I think that's --. That's one area

4   where I don't think that this -- is happening too

5   soon. We deferred to committee -- recommendations

6   as it pertains to incentives. I'd love to see

7   that fleshed out more --.

8   SPEAKER: Okay. -- Thank you very much.

9   MR. SPEAKER/Q3: Yeah, I was just going

10   to observe that you mentioned in the draft

11   findings conversion to public --, a certain kind

12   of conversion between vision and path forward.

13   And one thing that I think deserves -- some

14   discussion maybe further thoughts from this group

15   is also whether 6G is an opportunity if not an

16   inevitability conversion and whether we should be

17   anticipating that. So, for example, we have --

18   today we have networks that are mostly standalone

19   in reflection of --. You have WiFi networks, you

20   have private shared spectrum net -- licensed by

21   rural networks where you have mobile network

22   spectrum. But in fact, those walls are coming

1   down. You have two big cable companies, for

2   example, right now that sell a mobile service

3   that, in fact, combines -- shortly combine all

4   three, mostly WiFi offload but mobile MBN

5   (phonetic) to an increasing degree.

6   And IoT is similar. Where IoT can be on

7   any of those three. But then it's ideally from

8   the enterprise perspective it would interconnect

9   with others. So, the question is, are we thinking

10   enough about the use cases and the applications

11   that are going to run across for -- all of those

12   network types and those spectrum access types. So

13   I just want to make sure that we take note of that

14   maybe for a later time. It hasn't come up very

15   strongly in these interviews.

16   MR. AREFI: Yeah, thank you for that.

17   We can discuss that for interviews. -- was impact

18   on federal user --.

19   MR. SPEAKER: Somebody else has a sub to

20   this question.

21   MR. SPEAKER/Q6: So, going back to a

22   couple of the questions, actually I thought I

1 might mention things in the report and at risk of

2 a bit of a shameless --. Reza mentioned that one

3 of the -- next alliance in full disclosure is part

4 of that. But the next -- of it has been to sort

5 of create a forum where industry, academia, and

6 government agencies can sit down together and have

7 these exact types of conversations early on.

8   Currently our current government members

9 include NTIA, NIST, FISTA, Department of Defense

10 and Persona (phonetic). Always looking to add

11 more -- rather than Karl traditional idea of

12 studying the industry. Go and figure things out,

13 figure out what they want to do and then see how

14 it might work for -- the agencies is trying to

15 figure out what do the agencies think their needs

16 are in the next decade? How do they think that

17 this could work, and can we figure out how to get

18 those ideas embedded in the technology? And then

19 in the standard early on rather than reactively.

20 So there is, you know, that is sort of the whole

21 idea of that forum.

22   Second of all, on the budget question,

1   one of the things that you reference in the

2   report, if not -- directly, are the Research

3   Funding -- Issues Act authorized lots of money

4   directly to the issues that we're talking about

5   here as far as research --. At some point

6   technology points 16 science. So that is --.

7   MS. WARREN: what can we do about the

8   brick framework? What can we do? What are the

9   technological advances to kind of, you know,

10   update our technologies on the government side?

11   Be able to create more of a sharing with --?

12   They're more sort of, I guess, faster --

13   deployment. And so, it needs to be really

14   initiated and created on the federal agency side,

15   not be participating standards. And I think then

16   the industry will follow and see, okay, what is

17   this framework? How can we make sharing more

18   automated, you know, go beyond the level of, you

19   know, the 6G version of --?

20   SPEAKER: Thank you, Mary (sic). So

21   anyone else who have comments? I know Karl does.

22   Any more substance comments --?

1   MR. NEBBIA: So, I did want to mention

2   that I think the federal government acquisition

3   and processes for getting funding don't lend

4   themselves real easily to just starting up a think

5   process for how you can use a technology that's

6   not available yet. So, I think there are some real

7   challenges there because you've got to get a

8   funded program. It can't just be one of the

9   spectrum managers going to a committee meeting

10   somewhere and saying, well, this would be really

11   good.

12   From a process standpoint, given the

13   fact that Scott had warned us that our silver

14   slipper is going to slip off in a few months,

15   right, at the end of December. We traditionally,

16   I think, have reviewed a completed document and

17   had a specific time to respond to that. So, I was

18   just wondering whether the attached document we've

19   got here is the one we're supposed to start

20   reviewing and presenting formal comments to wrap

21   this up because come December there's not going to

22   be much time.

1   SPEAKER: Yeah, actually that's a really

2   good point. That's exactly why it was given to

3   everyone. No, but it's a good point because it

4   does bring up just some questions about the two

5   other subcommittees because right now what you

6   see, what you've got is actually the report. We

7   need comments, they need to get comments back and

8   the final will be presented to you for a vote in

9   the next meeting. So, for the other two

10   subcommittees, what you're going to see is things

11   done by email, and they'll be posted on the

12   website. Because, you know, I know that we'll

13   talk about this in a minute about the

14   Electromagnetic Compatibility Improvement

15   Committee has a report that we'll be sending out,

16   and the same thing for CBRS that you'll be seeing

17   those things in order for the full CSMAC to be

18   able to vote in December. So, thanks for bringing

19   that up, Karl. But just so everybody is clear,

20   okay, is there --

21   MS. WARREN: Thanks. Just along the

22   same lines as Karl and I'm loud so I can hopefully

1   be heard. I think there is a logistical issue

2   associated with asking the federal government,

3   which happens to be a lot of different agencies

4   and entities and it's not just NTIA to attend

5   every standards group plus create more standards

6   group. And I think we need to make sure that

7   whatever we come up with is actually somewhat

8   implementable, especially when we're talking about

9   a technology that is still under, you know,

10   definition, shall we say. So, I think that asking

11   the federal government to staff up to attend all

12   of these for that maybe something we should think

13   about. Thank you.

14   MS. WARREN: Thanks. Jennifer Warren.

15   Two points. One bill from what Donna said, which,

16   you know, again, the federal agencies, right, it's

17   not a single fire and it's also not a single

18   mission. So, whether it's a civilian agency from

19   an FIA to a DOJ to NASA NOAA to missions of those

20   agencies are very different. So, it's not going to

21   be, oh, they get to identify one or two use cases,

22   and that's going to be the killer use case for the

1   federal government.

2   But I think we need to be a little

3   nuanced as we have that next conversation,

4   probably in subcommittee, but I would say also on

5   the exposition reform. So, we've tried this

6   discussion CSMAC, and we made recommendations for

7   an OMB circular modification. We've done a number

8   of different things in the past, and honestly, as

9   we know from the interviews that we did in

10   following up on some of the recommendations. They

11   were unusable. So, we made recommendations that

12   actually got implemented, but they were unusable

13   by OMB and others.

14   So we need to be realistic. And I think

15   Donna's point was right in acquisition reform and

16   incentives. But I think we should look back at

17   some of what we've tried and understand why it

18   didn't work. And it wasn't because the federal

19   agencies didn't even ever get applied to them. It

20   never made it out. So, again, I think there's

21   more work there. And I know from or I've

22   experienced, I should say, in the past that

1   acquisition reform is a much bigger matter than

2   spectrum governance issues, no matter how linked

3   we'd like to make them. Thanks.

4   MS. MANNER: Okay, thank you. Anyone

5   else want the floor? Anyone on the phone? I'm

6   going to turn the floor over to Charla.

7   MS. RATH: Great. Thank you, Jennifer.

8   And I understand we've been hearing that maybe the

9   interference is gone. So, thank you, Antonio, for

10   taking care of that. But anyway, now to move on

11   to the third subcommittee reporting today, the

12   Electromagnetic Compatibility Improvements. Over

13   to you, Tom Dombrowsky.

14   MR. DOMBROWSKY: Thank you. Thanks,

15   Charla. Let me know in the room if this isn't

16   loud enough. I feel like I talk fairly loudly,

17   but let me know. And I'm pleased, Antonio, that

18   you got to the important subcommittee to make sure

19   all the interference was gone. So that was well

20   done, Antonio. To go to the next slide. The

21   first five or so slides here will be a bit of a

22   recap because we've presented most of these. I'll

1   just stop on this slide to sort of suggest that

2   our group has been very collaborative and very

3   involved. Almost every member of the committee

4   has provided some input to our report and to our

5   recommendations, and it's been very helpful and

6   very useful in terms of getting everybody's

7   opinions in and really having good, active

8   discussions about things.

9   If you go to the next slide, please.

10   This was our tasking, which was really focused on

11   aeronautical radar and commercial systems, looking

12   at co-channel and non-cochannel relationships, how

13   to use statistical risk-based analysis for those.

14   What improvements in propagation modeling could we

15   have there? How does NTIA play an independent and

16   timely analysis role in this? And then any other

17   improvements by the CSMAC as well. One

18   clarification or round of clarifications we got

19   from NTIA was to really focus in on aeronautical

20   radar and commercial wireless in the 5-16

21   gigahertz frequency range. We had a whole meeting

22   about frequency range. So, I'm going to highlight

1   those two words because that was awesome. That

2   was the best meeting we ever had.

3   And then the subcommittee is not

4   conducting any analysis, but just has

5   recommendations on the methodologies and types of

6   inputs that could be considered by NTIA. So, we go

7   to the next slide. So, we have met at least

8   monthly and in the last few weeks we've been

9   meeting fairly regularly at some level. We did

10   have a number of interviews that we did put into

11   the draft report. Our goal had been to try and

12   provide the full draft report, which is running a

13   little over 40 pages when you add dependencies in

14   there. That being said, because we had these

15   variety of meetings and discussions and changes

16   ongoing, it felt wrong to sort of deliver it to

17   the full subcommittee until full committee --

18   until the subcommittee fully engaged.

19   And really enforcement is still an

20   issue. We're still debating and discussing and

21   sort of how to make this work so that

22   bi-directionally, both the federal folks and the

1   commercial folks can continue to modify their

2   systems when you use this kind of analysis. So

3   those are the two main areas that we're still sort

4   of debating and discussing in the draft report.

5   If you go to the next slide here, this is sort of

6   the overview of the report. So, we'll have

7   aeronautical radar discussion, again focused on

8   the 5-16 gigahertz frequency range. Remember

9   folks, frequency range, it's important. And then

10   a summary of responses and discussions and

11   interviews that we had with FAA, NASA, Garmin and

12   Collins. We are actually still waiting for sign

13   off from some of the interviewees in terms of our

14   summary of what we learned from them. So, we do

15   have that as an outstanding item as well.

16   And then commercial wireless coexistence

17   modeling sort of talking about the parameters that

18   could be used and that mutually acceptable value

19   should be used unless the commercial providers

20   provide something more granular. So, on the next

21   slide there. And then on the coexistence analysis

22   itself, we're sort of talking about the parameters

1   and inputs that are needed in there, how other

2   federal agencies are using statistical analysis,

3   not necessarily for spectrum related issues, but

4   still some lessons learned that could be applied

5   potentially to spectrum. And we have a fairly

6   lengthy appendices that was provided as a

7   contribution that sort of walks through those

8   statistical analysis and how we develop risk

9   measures associated with those.

10   And then a key point that I said that's

11   still under discussion is how do we evolve this

12   over time? The idea that you do a coexistence

13   analysis on day one, everybody signs off and then

14   no one ever does anything ever again seems wrong

15   both ways. So, we're trying to figure out a way

16   that we can have some changes over time. The role

17   of the NTIA in terms of making sure there's a full

18   representation of all agency views and trying to

19   get one coordinated view into the FCC. And

20   finally, enforcement. As I said, I think this

21   one's an area that may still change and we may

22   still have some additional points here, but

1   really, how do we make sure if you have these

2   coexistence arrangements?

3   There's compliance with those

4   arrangements, and how do we mitigate and identify

5   interference should it arise? I think a couple of

6   areas we've been talking still is should there be

7   penalties associated with that and should we be

8   looking at things in terms of reportable

9   interference before you get to the harmful

10   interference discussion? So, onto the next slide.

11   So I'm going to turn over to Donna to go through

12   the first five, just so you guys are keeping track

13   at home. There's ten of them, so don't fall

14   asleep after the first five, because I could talk

15   about the second five, but these are still very

16   much in draft. We still think they could change,

17   but I will say we've had probably three or four

18   different meetings just talking about the

19   recommendations. So, I felt strongly that we could

20   at least share the recommendations and give an

21   idea of where the subcommittee is heading. So, go

22   ahead, Donna.

1   MS. MURPHY: Thank you. And the full

2   representation idea and the coordination and

3   collaboration idea sort of weaves themselves

4   through all of our recommendations. And I think

5   that that's a theme we also see in a lot of the

6   other groups. We start out because we didn't want

7   to put this in every single recommendation

8   explaining that these were developed for this

9   frequency range and -- that is not -- and these

10   services. It wasn't really meant to be taken out

11   of context. You know, each context, as was

12   mentioned with one of the other groups, needs to

13   be evaluated to figure out the tools and the tools

14   that should be used.

15   Our first recommendation is regarding

16   the coexistence collaboration process, and it

17   talks about having a routine early step in the

18   spectrum decision making so that all of the full

19   representation can collaborate for the

20   coordination tools and techniques for this band.

21   I mean, for this frequency range. I knew I was

22   going to do it. I knew band was going to come up.

```
1              Second, statistical models and analysis.

2    This recommendation deals with the stakeholders,

3    all of the stakeholders, getting together to

4    develop guidelines for use of the statistical

5    models and analysis through coexistence, in the

6    first stage of coexistence.  And then the modeling

7    taking into account having different metrics for

8    defining the risk of interference.  In

9    recommendation 3, we talk about data transparency.

10   We recommend that the process be developed for the

11   filing and public availability of nonsensitive

12   data that's needed to model the radio frequency

13   environment for this frequency range.

14             And finally, recommendation 4 deals with

15   coexistence analysis update, and I think Tom

16   mentioned this before, that there needs to be a

17   process for updating coexistence arrangements both

18   on the federal and nonfederal level.

19   Recommendation 5, risk measures that we recommend

20   that NTIA translate interference in the radio

21   frequency realm into risk measures.  The risk

22   measure could talk about the tolerance for
```

1   interference in a particular system. It could

2   also be used to model the statistical likelihood

3   of harmful interference. Risk can also include

4   the ability, or lack thereof, to adapt innovative

5   or next generation capabilities either in the

6   commercial or federal missions under the

7   coexistence arrangements. I'll turn over to you.

8   MR. DOMBROWSKY: So, the next two

9   recommendations are around propagation modeling.

10   If you go to the next slide there, Antonio. So

11   the first one is really suggesting that if we're

12   looking at the 5-16 gigahertz frequency range, we

13   really need to improve and inform propagation

14   modeling. So do some measurements. We know ITS

15   has been working in the lower 3 gigahertz range.

16   We think sort of extending this to this other

17   range if we really want to have an honest

18   discussion about it, makes sense. And in

19   accordance with that, is suggesting, creating a

20   working group that includes pretty much all the

21   affected stakeholders to actually engage in what

22   kind of measurements and how to actually analyze

1   the measurements and data that's actually provided

2   from that effort.

3   And then finally, in terms of inclusive

4   analysis and recommendation 8, we're talking about

5   having NTIA have full representation of the agency

6   views, concerns analysis to get the one

7   coordinated view. Trying to avoid the need for

8   federal agencies to publicly or nonpublicly

9   supplement records of their views and facilitate

10   the direct discussions between the federal and

11   nonfederal entities to really vet these kind of

12   analysis upfront. So, we are not sort of stuck in

13   a sort of endless -- where one party says they

14   weren't represented and didn't get their points

15   across during the early parts of the process. And

16   then finally, recommendations

17   and 10 are really enforcement related.

18   And again, I think we may supplement these, either

19   change them or add to them. And it's really about

20   how do we make sure that you mitigate any

21   inference that might occur when you set up these

22   sort of coexistence analysis, and how do you

1   ensure that people actually comply with the

2   agreements themselves. So, I think that was it.

3   Next slide. Yeah.

4   So we're happy to take questions and

5   like I said, I think we're optimistic. We have

6   another meeting first week of October. We've got

7   a current draft with more red lines and discussion

8   points. I'm hoping we put it to bed, and if not,

9   then I'll threaten the committee with having daily

10   meetings until we're done include, you know,

11   holidays and weekends. But I am pretty confident

12   we're getting close because I feel like we've made

13   really good progress in the last few weeks and we

14   just couldn't quite get the draft report to

15   everybody here today. But we each got

16   recommendations.

17   MS. RATH: Thank you. Any questions for

18   Tom and Donna?

19   MR. SPEAKER/Q8: Thank you. Thank you,

20   Tom. So, question about the working group on

21   propagation. What exactly do you expect the

22   working group to accomplish and in what kind of

1   time frame?

2   MR. DOMBROWSKY: We didn't really put a

3   time frame on it. And again, I think the thought

4   is, you know, first you have to get the

5   measurements and have parties involved in

6   determining what those measurements would be. So

7   I think our thinking is the working group would

8   help inform what should be measured, how it could

9   be measured, which bands are important, which

10   system should be measured, how do we actually put

11   together this sort of testing regime and get those

12   measurements done? And then what do you do once

13   you have those measurements to actually figure out

14   how a propagation tool could be either tuned or

15   improved, et cetera, to better map, you know,

16   aeronautical radar, commercial wireless

17   interactions?

18   MS. WARREN: Jennifer Warren. It's an

19   observation, not a question. I think when we've

20   been struggling a little bit in the group, and I

21   have to first commend Tom and Donna both. They

22   have done a tremendous job, and I know you will

```
 1     continue to do that tremendous job to get us to

 2     the end here.  But one of the things that I think

 3     we struggle with is the fact that there's a

 4     breadth question here, 5-16 gigahertz frequency

 5     range.  It's an enormous range with far more there

 6     than federal aeronautical radars.

 7               So when we talk about a lot of the

 8     recommendations here, which are good

 9     recommendations in many contexts, as Donna

10     predicated our entire discussion with it has only

11     been a process and a focal point for commercial

12     wireless and aeronautical radar.  There are many

13     other commercial and federal uses in that

14     frequency range.  So much -- I think it's what we

15     continue to have to talk about, and I understand

16     why it got narrowed down to those services, but

17     perhaps in the future a recommendation to NTIA

18     would be to narrow down the frequency range.  If

19     we want to have something less generic, then we're

20     able to give to you with the question as modified;

21     is that fair?

22               MR. DOMBROWSKY:  Yeah, I think it's
```

1   fair. I think when I had understood in NTIA's

2   clarification was to really focus in on radar

3   because they felt like terrestrial to terrestrial,

4   they knew how to do it, and they knew different

5   other ways to do it, so they really wanted to

6   focus on that. But your point is on the frequency

7   piece is well taken.

8   MS. RATH: Thank you. Paul Margie

9   (phonetic) is up next.

10   MR. MARGIE: First, great presentation,

11   that was really useful, thank you. I took it that

12   the analysis that you're talking about is all kind

13   of a probabilistic analysis. Did you see in the

14   interviews that there were folks that were still

15   saying we should be doing this as kind of a

16   traditional static link budget analysis, or was

17   there just general agreement that we're now in a

18   world where the appropriate way to do it is

19   probabilistic?

20   MR. DOMBROWSKY: I don't think we got

21   agreement from any interviewees. I think it was

22   more of, okay, that's what you want to do. Well,

1   we haven't really thought about that, and we're

2   happy to engage on that, but no one sort of pushed

3   one way or another, other than to sort of say, we

4   hear what you're saying, that could be

5   interesting. But we've never really done that, at

6   least with the federal folks, which has made most

7   of our interviews were on the federal side. They

8   didn't really -- they don't have the sort of

9   bandwidth to do it. They don't have the data to

10   do it.

11   And so, I think they were open to the

12   idea, but they were still sort of trying to get

13   their head wrapped around how would you do that

14   for their particular systems and services?

15   MR. MARGIE: Because I mean, I don't

16   know if this is your experience, but I think there

17   are folks that are in agencies that are really

18   expert at probabilistic analysis and are really,

19   really good, often not always just in wireless

20   matters. But there are folks that are great at

21   probabilistic analysis and there are others where

22   that just hasn't been something that they've had

1   to do and it's part of their jobs. And I wonder

2   if one thing that NTIA could do would be getting

3   people more comfortable with the general kind of

4   tools that are out there for probabilistic

5   analysis, for that to be a more common expertise

6   among these agencies. Because I think once people

7   get more comfortable with it, they understand how

8   powerful a tool it is and become less insistent on

9   things that are nonstatistical analyses and are

10   difficult to do.

11   The other point I wanted to make was you

12   mentioned that one of the recommendations is to

13   establish kind of an interference figure, a

14   harmful interference figure. Am I taking that

15   wrong? I mean, it seems like a huge part of the

16   fight is figuring out what is the metric? Is it a

17   metric that's looking at real world downtime or is

18   it one that's meeting a particular Iren figure or

19   what that is?

20   MR. DOMBROWSKY: Yeah, no, we definitely

21   were not going down the wormhole of harmful

22   interference because for those of us that have

1   done that too many times, it's sort of a pointless

2   exercise. What we were talking about is a risk

3   measure. So, figuring out if you are the federal

4   agency or if you're the commercial wireless

5   provider with these coexistence, what level of

6   risk are you comfortable with? Because if you

7   think about this in terms of a cumulative

8   distribution function, where on the curve are you

9   comfortable living? And that's the place that

10   we'll then look at when we do the coexistence

11   analysis, once we have agreement that that is what

12   you need and where you're comfortable with. So

13   it's going to be very agency by agency, commercial

14   entity by commercial entity kind of process. And

15   we definitely were not going to try and define

16   harmful interference or any metrics on that.

17   And then the last thing, just to your

18   first point, I wanted to sort of fill in. I feel

19   really bad that we were not able to deliver the

20   draft report because there was some very good work

21   going through all the other agencies and sort of

22   risk analysis that they do as part of that. So

1   that will be part of the full report. And it

2   builds on that sort of recommendation to take a

3   look at what other agencies are doing and to try

4   and form it towards spectrum rather than these

5   other areas that other parts of the federal

6   agencies have looked at risk-based analysis.

7   MR. MARGIE: That's great. And then

8   just maybe a more general observation, not just

9   for this group, but in general, I think it's

10   striking that you're now hearing multiple groups

11   all saying that improvements in propagation

12   modeling are important to a whole range of the

13   questions that NTIA asked. And so, like the

14   nontechnical infrastructure that makes sharing or

15   interference analysis or whatever else, you know,

16   subcommittee after subcommittee after subcommittee

17   is saying that we rely on these probability models

18   that are, some of them kind of old. They're not

19   always built to the purpose that we're trying to

20   the jobs that we're trying to do. And I think

21   that's a thing that the government could do, which

22   is invest in making those better and more up to

1   date and more updatable for all three of the

2   questions, I think, today.

3   MR. DOMBROWSKY: Yeah. And to be

4   brutally honest, most of propagation model

5   information has come from federal government work

6   in the past. So, it's consistent and builds on

7   that. And it's just we were focusing in sort of

8   saying there's not a lot here in 5-16 that we can

9   rely on that has been measured, validated, tuned,

10   et cetera, et cetera.

11   MS. RATH: I guess we have one more from

12   Karl and then it looks like Carolyn as well.

13   Mr. NEBBIA: Karl Nebbia. So, I just

14   wanted to mention that the recommendations and

15   inputs, as we've talked about, are linked to this

16   band. They are very generic in nature. There --

17   but you will not find in the report, as far as I

18   know, for instance, somebody -- us discussing how

19   would the new -- these new propagation tools be

20   applied specifically to this band range and these

21   services. You will not find that in the report.

22   For instance, when we went through the

1   radar altimeter problem, people were shocked, of

2   course, that wireless industry, a couple of

3   hundred megahertz away, could cause interference

4   into these radar forms. There wasn't much data on

5   their characteristics and so on. But we don't,

6   for instance, approach that same question here in

7   terms of figuring out the interference problem of

8   potentially high-power transmitters transmitting

9   in an adjacent band next to radars in this range.

10   We didn't approach the subject in that way, is all

11   I'm saying. We approached it more on what are

12   approaches to improvement that we could do in

13   these ranges without getting into the specific,

14   you know, we got this adjacent band problem or

15   whatever.

16   MS. MURPHY: So just to comment on the

17   risk portion. In addition to differences in risk

18   measures, risk tolerance across organizations,

19   they can also differ on a system level. So, some

20   systems that are safety critical will have

21   different risk tolerances, like Lazine (phonetic)

22   or mundane systems.

1   MS. RATH: Jennifer Warren.

2   MS. WARREN: I'm just going to comment

3   on something that Karl said because you mentioned

4   high power. We made no assumptions as far, as I

5   can recall, in the report about what commercial

6   wireless service would be, whether it would be

7   CBRS like, whether it be high power, low power.

8   There are no assumptions in there on that. So, I

9   just wanted to make that clear. So, somebody could

10   have misinterpreted that we're assuming high

11   power.

12   MR. AREFI: Thank you. Two comments.

13   One, with respect to the propagation modeling

14   again. So, I have some engagement in the IT group

15   that is working on the main propagation model for

16   your purpose basically, and ITS has been

17   contributing to that, but most of those

18   measurements are around PCS spectrum 1.8, 1.7.

19   And so, I don't know, maybe they are doing it, but

20   if not encouraging them to do more in the entire

21   5-16 frequency range, I think it's good because we

22   are facing some lack of data in order to update

 1   the model in the IT.

 2   The other comment I was going to make

 3   was with respect to the interference criteria in

 4   the coexistence studies involving radars. For

 5   years, we always faced the situation of using

 6   deterministic link-budget-type approach to

 7   calculate an I over N or worst case, I over N,

 8   right? Now, agencies have moved away from that.

 9   Now they have started implementing Monte Carlo

10   simulations and all that. But still the topic of,

11   okay, where do you exactly draw the line was not

12   very clear and there were disagreements on that.

13   I think we have agreed on in the past

14   couple of years, for studies towards WRC, was that

15   when it comes to radars, looking at more than just

16   one point gives you suddenly a whole lot more

17   information in this way that you look at the --

18   where exactly -- which points are exactly these

19   worst I over Ns, right? And by what margin are

20   you off when you are crossing the I over N? It's

21   just.1 DB or is it 10 DB? Looking at a wider

22   range of -- and this is possible when you do

1   statistical analysis, it's just that it has not

2   been exactly the method to look at it. But

3   gradually I hope we can all move towards that

4   larger picture in order to determine the impact.

5   Thank you.

6   MS. RATH: There are no more questions

7   in the room. Are there any questions on the

8   phone?

9   MR. HATFIELD: This is Dale, can you

10   hear me?

11   MS. RATH: We can, Dale.

12   MR. HATFIELD: One of the things that

13   this discussion led me to think about, again,

14   excuse me, again, is the intermod problem. You

15   start talking about high power and so forth.

16   Intermod, and that becomes -- becomes a bit of an

17   issue. And in general, I don't think we have

18   addressed the intermod problem as much as perhaps

19   we -- perhaps we should have. Thank you.

20   MS. RATH: Thanks, Dale. Any other

21   comments from the phone or around the room before

22   we move on? Great. And I think Mariam wanted to

1   say something quickly.

2   MS. SOROND: Yes, thank you. Actually

3   this is a comment, we have a wonderful

4   subcommittee of CBRS. I'm just echoing Louis's

5   comments. So, Louis, you want to speak to

6   yourself, go for it? Otherwise --

7   MR. PERAERTZ: Yeah. Can you guys hear

8   me?

9   MS. SOROND: We can hear you.

10   MR. PERAERTZ: Okay, great. So, I just

11 wanted to thank NTIA, Nick LaSorte (phonetic),

12 Scott Harris, and any other folks that were

13 involved from NTIA. I know Charles Cooper was

14 also involved. In working with the FCC to issue a

15 public notice that essentially moved the time that

16 fastest needed to reauthorize CBSDs from five

17 minutes up to one hour when you're in 3,500 to

18 3,700 megahertz. But outside of a DPA activation

19 neighborhood and also doing the same thing when

20 you're between 3,650 and 3,700, even if you're in

21 a DPA activation area. So that was -- that's a

22 major help to wisps (phonetic) and I just wanted

1   to thank you for that.

2   MS. RATH: Thanks, Louis. Before we

3   move on to the public comments section, two

4   things, just some process comments again and then

5   we'll turn it back to Scott for any of you who

6   have questions for him. Just wanted to remind

7   folks, we've already talked about it a few times.

8   We have a final meeting in December, December 19th

9   I believe it is, and what you've been given today

10   have been a series of recommendations from the

11   three subcommittees. We've had a very good,

12   robust discussion around this. I'm sure the

13   subcommittee chairs as well as members of the

14   subcommittee have heard that they'll be

15   incorporating comments back in for a vote that

16   will take place at our meeting on the 19th.

17   Also, as was mentioned earlier, the

18   Electromagnetic Compatibility Improvement

19   subcommittee never sure, should I call it the

20   ECMI, MCI?

21   MS. SOROND: ECI.

22   MS. RATH: ECI is good? Okay, good. I

1   don't need the end in there -- too many letters.

2   Okay. So, they will be sending out their report

3   fairly quickly. Again, I'm reminding everyone

4   this is an opportunity for the full CSMAC to

5   review comment on it, get your comments back in,

6   so that what you're voting on, you know, either

7   your comments have been incorporated or there's

8   been discussion of the subcommittee that they

9   don't like the comments, that they don't agree but

10   you need to generate that kind of discussion.

11   The same thing will happen with the CBRS

12   subcommittee. So just a reminder to folks that

13   it'll be a little differently. Usually, we try and

14   have all of that in the meeting before, but we've

15   all been, you know, this has been, you know, in

16   particular for a couple of the subcommittees, it's

17   been, you know, a lot of interviews and a lot of

18   time spent and therefore, you will be expected to

19   review and comment over the next several weeks.

20   So that what you'll have when we come back is a

21   full committee, you know, something you can vote

22   on.

1   MS. MANNER: And we are asking for the

2   committees to get their reports in. We're

3   cognizant of the WRC.

4   MS. RATH: Yes.

5   MS. MANNER: So, one of the things we've

6   worked out with our CFO Antonio is to have a due

7   date for the reports in advance of that so that

8   people will have some time. I know it puts the

9   Chairs under increased pressure, but because of

10   the WRC this year and we know a number of people

11   in this room will be there, at least for part of

12   it, if not all of it. That's something that's

13   important and we need to make sure people have

14   enough time. And that's part of the reason for

15   the December 19th day. It's the WRC runs very

16   late, so we apologize for that, but trying to

17   manage schedules.

18   MS. RATH: Thanks, Jennifer. Looks like

19   Karl may have a comment.

20   Mr. Nebbia: Yeah, just a quick

21   question. So, the versions that are going to be

22   going out for a formal review before that December

1   19th meeting. Who are they going to come from?

2   Once again, we have lots of --

3   MS. RATH: We'll -- we'll walk that

4   through with Antonio, but they'll be officially,

5   you know, they will be posted, and presumably they

6   will come from Antonio as the DFO. But -- and

7   he's nodding for those of you not in the room. So

8   it looks like that is the way that we'll do it.

9   And again, what you've got in front of you are

10   draft recommendations for all the subcommittees

11   and a draft report from one of the subcommittees.

12   So you've already -- you already got work to do,

13   and we've already gotten a number of comments on,

14   you know, this afternoon, so I think this has been

15   very helpful. Any other comments before we move?

16   Paul?

17   SPEAKER: That's okay.

18   MR. MARGIE: I'm sorry. I said process

19   point. I'm taking it that means that if somebody

20   has a big picture or substantive issue with

21   something here, this is the time to tell the

22   subcommittee chair rather than waiting until they

1   get a final report right? So just try to front

2   load some of that.

3   MS. RATH: Well, if you'd like it to

4   actually be in the report and not have to vote no

5   because you don't like --

6   MR. MARGIE: Right.

7   MS. RATH: -- to take it in. You need

8   to be commenting now on this. This is the whole

9   point of having the draft period. Jennifer, you

10   look like you have a question, our longtime member

11   here.

12   MS. MANNER: Okay. So, I think that's

13   true. On the 6G. On whatever report has been

14   distributed. But to the -- to have your comments

15   included in the report, you've got to wait till

16   you get the draft --

17   MR. MARGIE: --.

18   MS. MANNER: -- that you have to raise

19   any issues based on the charts. That's all.

20   Yeah.

21   MS. RATH: No, that's fair. And I think

22   you've still got a lot of opportunity right now to

1   comment on everything, but that's fair. But there

2   is a distinction between, you know, having a full

3   draft report in front of you right now versus you

4   still have an opportunity to get comments in to

5   the draft report so you can have double time. You

6   know, you have opportunity to get comments in to

7   the draft reports of two of the subcommittees, and

8   then you have opportunity to comment on the draft

9   reports. Does that make sense to everybody? All

10   right, questions for Scott next.

11   MR. HARRIS: And do not feel obliged.

12   So it was very clever of me putting questions to

13   the end. All right, good for me.

14   MS. RATH: We'll keep that in mind. Any

15   questions from the phone, though? Those of you on

16   the phone?

17   MR. MICHAEL: Michael. I was just

18   curious for a clarification. Scott, of what you

19   mentioned about the CBRS heartbeat change and

20   Louis, thanked you for. Is that now final, or did

21   you -- did NTIA just approve? --?

22   MR. HARRIS: I think it was sent to the

1   commission. That's a good question.

2   MS. MCARTHY: Yeah, this is Jennifer

3   McCarthy. The FCC put out a public notice.

4   MR. HARRIS: That was today, wasn't it?

5   MS. MCARTHY: Yeah.

6   MR. HARRIS: Oh, okay. I didn't see it.

7   Thank you. Yeah.

8   MR. SPEAKER: It two days ago.

9   MS. RATH: It was Tuesday. We released

10   the --.

11   MS. MCARTHY: Yeah, I think it came in

12   yesterday, but at any rate, it's available.

13   MR. HARRIS: Whenever. It's a good

14   thing.

15   MS. RATH: It's a good thing. All

16   right. Anything else before we move to the next

17   segment of the meeting? Okay, terrific. Now we

18   have an opportunity for public comment. Antonio,

19   hang on a second.

20   MR. SPEAKER: It's just a process

21   question. If the government does shut down, do we

22   continue to meet or are we not allowed to since

1   we're special government?

2   MS. RATH: I am not able to answer those

3   sorts of questions. So, what's the answer?

4   MR. AREFI: No, they're not allowed to

5   if the government shuts down.

6   MS. RATH: You know, I don't know.

7   We'll take that under advisement. Oh, great.

8   Well, this is this has been a lively group here.

9   Okay.

10   MR. SPEAKER: Sorry, just to follow up

11   on that, but just to understand whether it's

12   because of the government shutdown or any other

13   reasons. What is the process that if we say, hey,

14   we can't make it by December, we need extensions?

15   MS. RATH: Why don't we cross that

16   bridge when we come?

17   MR. SPEAKER: Okay.

18   MR. HARRIS: Yeah. Because I can't

19   answer that question. I think we have had things

20   slide to the next session, but ideally, I think,

21   you know, that used to happen a lot more than it

22   does now, and I think NTIA would prefer to have

1   the questions not have that happen. But I should

2   not speak for NTIA unless NTIA would like to

3   address that.

4   MR. AREFI: It would be advised --

5   should be done by the end of this year, the

6   charter runs out.

7   MS. RATH: All right, are we now

8   settled? Anybody else from the CSMAC want to say

9   anything? I will try again. Opportunity for

10   public comment, I think, Antonio, you have unmuted

11   the non-CSMAC members, and we do have some public

12   in the room.

13   MR. ANTONIO: Yes, it's open. The mic's

14   open. Anyone from the public can speak. Anyone

15   from the public in the room can also speak. Go

16   for it.

17   MS. RATH: No? Nothing? Anyway, since

18   I'm not hearing anything and there's been plenty

19   of time for, I think we're able to move on to the

20   next segment. And let me just start out by making

21   a few remarks. First off, again, these three

22   committees and then the committee that has, you

1   know, produced its work, Dennis and Paul's

2   committee earlier in very quick turnaround time.

3   I really, you know, I don't want to overuse the

4   word impressed, amazed, or whatever. The

5   collaboration, the level of engagement, the number

6   of interviews that you all have been doing. Which

7   brings up just a slight thing that for future

8   CSMAC, we should actually probably coordinate in

9   advance when we do these interviews, because you

10   probably noticed a fair amount of overlap.

11   And just a point to make, it's not any

12   kind of, you know, there's nothing wrong with it.

13   We're sort of learning. I don't think we've ever

14   had this many committees do this many interviews

15   at once, but I think as a result, we're -- I'm

16   already seeing that, I think, we're going to see

17   very robust reports and the recommendations, as

18   we've seen, are incredibly good. I do take to

19   heart, you know, what both Donna and Jennifer were

20   talking about earlier. That anytime you make a

21   recommendation, you know, keeping full in mind

22   that there are a number of different agencies that

1   have different missions, they have different

2   goals. And also just this idea of, you know, and

3   I'm not quite sure how we do it, but it's good

4   advice is, you know, how do we make

5   recommendations that we then know can be

6   implemented or at least attempted to be

7   implemented?

8   And I think that's a hard thing. And we

9   can learn by, you know, many previous years of

10   experience among, you know, some of the

11   subcommittee members who have been with us for a

12   while, as well as former OSM heads who have been

13   through this as well. But I also just want to

14   say, again, thank you to NTIA for the incredible

15   level of engagement of the liaisons and to the

16   FCC. Because I know you're covering a lot of

17   different bases, Jessica, but it has been terrific

18   to have the FCC very engaged. You know, we always

19   thank the committee members, but we can't do it

20   without your help.

21   And you've been great at getting

22   questions answered, at helping us define things

1   better. So again, just wanted to say that and

2   turning it over to my Co-Chair for her remarks.

3   MS. MANNER: I've used the word in awe.

4   MS. RATH: There you go. That's to add

5   another word.

6   MS. MANNER: But I won't spend much

7   time. I've already said how impressed we are, but

8   want to thank you all. I also want to thank

9   Antonio. Antonio is our heart and soul. And so,

10   we know that -- him, you know, he goes -- Charla

11   and I talk to Antonio quite a lot and logistically

12   and just keeping getting everything set up and

13   make sure everything works well and that all the

14   people are writing him and getting Scottie here on

15   time. You know, takes a lot of. So, we appreciate

16   it. And with that, and I can tell you, you can

17   blame me for choosing the late December meeting

18   because of the WRC, so I apologize. I don't know,

19   Jennifer just mailed something to me which

20   hopefully wasn't evil. But I do want to say thank

21   you all and wish you a good rest of the afternoon.

22   And we look forward to working with the

1   subworking group chairs and all the committee

2   members on bringing this to a successful

3   conclusion in December 19th, and hoping that the

4   U.S. Government stays working. So, with that, I'd

5   like to adjourn the meeting. Antonio, I don't

6   know if you have anything else you want to add.

7   Okay, so thank you, everyone. Bye.

8   (Whereupon, at 2:56 p.m., the

9   PROCEEDINGS were adjourned.)

10   *   *   *   *   *

11   I Charla Rath and Jennifer Manner do hereby certify this

12   transcript as Co-Chair of the Commerce Spectrum

13   Management Advisory Committee.
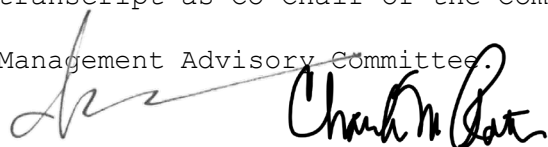
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 1              CERTIFICATE OF NOTARY PUBLIC

 2              COMMONWEALTH OF VIRGINIA

 3              I, Stephanie Kern, notary public in and

 4    for the Commonwealth of Virginia, do hereby certify

 5    that the forgoing PROCEEDING was duly recorded and

 6    thereafter reduced to print under my direction;

 7    that the witnesses were sworn to tell the truth

 8    under penalty of perjury; that said transcript is a

 9    true record of the testimony given by witnesses;

10    that I am neither counsel for, related to, nor

11    employed by any of the parties to the action in

12    which this proceeding was called; and, furthermore,

13    that I am not a relative or employee of any

14    attorney or counsel employed by the parties hereto,

15    nor financially or otherwise interested in the

16    outcome of this action.

17

18     (Signature and Seal on File)

19     Notary Public, in and for the Commonwealth of

20     Virginia

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