

UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL TELECOMMUNICATIONS AND INFORMATION
ADMINISTRATION

COMMERCE SPECTRUM MANAGEMENT ADVISORY COMMITTEE
(CSMAC) MEETING

Via Teleconference
Tuesday, July 18, 2023

1 PARTICIPANTS:

2 ANTONIO RICHARDSON

3 ALAN DAVIDSON

4 SCOTT BLAKE HARRIS

5 JENNIFER MANNER

6 CHARLA RATH

7 MARIAM SOROND

8 PATRICK WELSH

9 CHARLES COOPER

10 ANTONIO RICHARDSON

11 KEN KENNEY

12 DALE HAFIELD

13 DAVID WRIGHT

14 ROBERT "BOB" WELLER

15 HILARY CAIN

16 MICHAEL CALABRESE

17 MARK GIBSON

18 CAROLYN KAHN

19 PAUL MARGIE

20 KARL NEBBIA

21 ANDREW ROY

22

1 PARTICIPANTS (CONT'D):

2 JENNIFER WARREN

3 TOM DOMBROWSKY

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

2 (3:05 p.m.)

3 MR. RICHARDSON: Good afternoon,
4 everyone, and welcome to the Commerce Spectrum
5 Management Advisory Committee meeting. Of course,
6 my name is Antonio Richardson and I'm the
7 Designated Federal Officer of this committee. I'd
8 like to put out a couple of housekeeping notes.
9 For those on the phone who are using the Teams, by
10 all means, use *6 to unmute yourself if you need
11 to speak or want to speak. And if not, I need
12 everyone to put their phones on mute if you're not
13 talking that way we don't have any interruptions.

14 Second, this meeting is being recorded
15 to assist with the drafting of the minutes and
16 attendees volunteered participation in the meeting
17 demonstrates consistent to this recording. And
18 now, I will turn this over to our CSMAC co-
19 chairs, Ms. Charla Rath and Ms. Jennifer Manner.

20 MS. MANNER: Thank you so much, Antonio.
21 And I just want to welcome everyone to the
22 Tuesday, July 18th meeting of the Commerce

1 Spectrum Management Advisory Committee. We wanted
2 to first, before we give our opening remarks, we
3 wanted to turn the floor over to Alan Davidson,
4 who's Assistant Secretary of Commerce for
5 Communications at the National Telecommunications
6 and Information Administration for some opening
7 remarks, please.

8 MR. DAVIDSON: Well, thank you,
9 Jennifer. And good afternoon and welcome to this
10 meeting of the Commerce Spectrum Management
11 Advisory Committee. And it is really great to see
12 you all and to be here together with so many of
13 you in person. And I had not realized, actually,
14 until we were headed over here, I was surprised at
15 how many folks were here in person and I didn't
16 realize this was the first meeting in person since
17 before the pandemic. So, it is really nice to be
18 able to reconvene and to see so many of you and
19 folks who've traveled in.

20 And I want to start by just first of
21 all, thanking our co-chairs for your leadership
22 and your service here in gathering this group and

1 corralling all of us. And also, whether you're
2 here in person or joining remotely, I'm grateful
3 to all of you for your ongoing work for the
4 subcommittee reports that we're going to be
5 talking about today and really looking forward to
6 a productive meeting.

7 Actually, I apologize, I have to leave
8 at the bottom of the hour but I was reviewing the
9 reports last night. And I said to Coop that I
10 should have really should have blocked out more
11 time because (inaudible) -- there we go. We were
12 talking about the hybrid meetings. They're
13 wonderful. And let me just also say a quick thank
14 you to our host today Bryan and the folks at
15 Wilkinson for our private venue today and the La
16 Croix.

17 So, to start I thought maybe just a very
18 quick update on what NTIA has been up to lately.
19 And this is a busy time for us, really busy time.
20 And this summer slowdown that people talk about in
21 Washington, D.C. we have yet to really experience
22 it. We're hoping for August, but we'll see. We

1 continue to make progress on a number of different
2 major policy efforts. I'll just update you on a
3 few of them.

4 First, I just wanted to say we're, you
5 know, a top priority for us in this space, we hard
6 at work on developing a national spectrum
7 strategy. We're deep in it now. I think you know
8 that. We received a lot of input from both within
9 and outside the federal government. We're making
10 sure to, you know, we're working to make sure that
11 that (inaudible) -- we're working very closely
12 with the White House, OSPP, NEC, the National
13 Security Council. I would just say people are
14 deeply engaged right now.

15 And we've actually teased this up in
16 some ways, you know, we are committed to -- we
17 said we were going to get this report out this
18 year. We really wanted to make sure we're
19 surfacing issues early in our own internal
20 processes, and the good news is we are. The bad
21 news is we are. You'll hear more about this from
22 Scott. And we're working very closely I should

1 say with our partners, the FCC, the other
2 agencies, the other Federal agencies who have
3 equities here. And it's a very -- it's a full-on
4 discussion right now.

5 Scott Harris has been our fearless
6 leader in this effort. He's going to give you a
7 much deeper dive on our current status and some of
8 the big issues that are coming up. But I just
9 want to say it is a top priority for us and we
10 intend to complete this report by the end of the
11 year. That is our commitment.

12 My second big update is just I wanted to
13 mention the exciting, a new initiative at NTIA,
14 exciting initiative which is the \$1.5 billion
15 Wireless Innovation Fund that we're managing and
16 have just launched this year. As many of you
17 know, this fund will promote development of open
18 and interoperable wireless networks. Last month,
19 we received grant applications for our first
20 notice that has gone out earlier in the spring.
21 More than 120 applications requesting over \$1.3
22 billion in this first round of awards. For us,

1 that's really overwhelming interest. We had
2 planned to give out -- I said we are planning to
3 give out awards of up to about 10 percent, \$140
4 million in this first round of awards. So, we're
5 kind of almost 10X oversubscribed, which is both a
6 good problem to have and it's going to make our
7 job difficult.

8 I will say, we are on track. We have
9 said we're going to do a first set of grants, a
10 first tranche of grants in early August. And then
11 a second round of the grants for this first round,
12 first NOFO after that. And I'll just say, the
13 grant applications are terrific. It's an
14 important effort to drive competition, strengthen
15 the supply chain, improve our resilience and
16 really ultimately we are looking towards
17 innovative choices for wireless equipment and
18 excited about the possibilities here.

19 And third and finally, I feel like I
20 would be remiss if I didn't mention the major
21 milestone that NTIA has reached in our mission to
22 connect everyone in America with an affordable,

1 reliable, high speed Internet service. It is a
2 once in a generation project. We were at the
3 White House just last month with the President.
4 The President announced how much each state and
5 territory we're going to get in our \$42 billion
6 state grant program. And it was an exciting
7 moment. I have to say a real milestone in that
8 program and in our execution of that program in
9 partnership there again with the FCC and their
10 mapping efforts, with a huge number of
11 stakeholders at the state and local level across
12 the federal government and we delivered on it five
13 days earlier than we had announced that we would.
14 So, that's always good to see the team executing
15 well.

16 Now, the hard work actually begins on
17 this project in the states. The attention will
18 turn to the states. We've told the states how
19 much money they're going to get. Nineteen states
20 will get over \$1 billion in this grant program.
21 And they have to put together initial plans, which
22 they will be submitting to us to show how they're

1 going to use this funding to connect everyone
2 within their borders.

3 So, we're really excited about reviewing
4 those plans, moving this closer this dream of the
5 Internet for all are closer to a reality. And I
6 really do believe we will look back on this 10
7 years from now, 20 years from now and say this is
8 really the moment that we've stepped up as a
9 generation to close the digital divide, finish the
10 work that was begun, and it's a turning point in
11 this long effort around digital equity and
12 connectivity. So, we're very, very excited about
13 the progress there.

14 And by the way, I should say I wanted to
15 mention it here because we really do believe that
16 the conversations here are an important part of
17 understanding how we're going to meet the need out
18 there, how we're going to connect everybody. We
19 fully expect that across the states, fixed
20 wireless is going to be -- and other technologies
21 are going to be part of the solution for many,
22 many states. And we want to make sure that we're

1 thinking with all of you about where the
2 technology is going and thinking about the future.

3 So, I shared about where we've been. I
4 want to give you a quick preview of where we're
5 going. Top of mind for us is the upcoming World
6 Radio Communication Conference, or WRC, as you all
7 know, this fall in Dubai. As you know, this will
8 help set up the global framework for spectrum
9 allocations to come and use for years to come in
10 key markets such as broadband wireless and NGSO
11 satellites. The final CITEEL preparation meeting
12 will held in Ottawa late next month. The other
13 regional groups also will make their final
14 proposal decisions during and after the meetings
15 that are being held in August and September. And
16 then WRC itself will kick off in just over four
17 months from today.

18 So, we really are in the homestretch. I
19 know many of us are spending a significant amount
20 of time and effort on preparations as we approach
21 the conference and I'm just saying now is the time
22 to buckle down on that work as we are doing.

1 So, in conclusion, I'll just say we have
2 a ton going on, a lot is going on. It's only
3 going to get busier as the fall approaches. With
4 that in mind, I want to thank you all again for
5 your time this afternoon, for taking time out of
6 your busy schedules, the work that you're doing,
7 for your dedication to this work here at CSMAC
8 helping us helping the country think about the
9 future in this important space.

10 So, we rely on your work and I want to
11 thank you for all that you're doing and I look
12 forward to hearing more from you all today. I
13 think we might have a couple minutes for
14 questions. It's sort of I'll defer to the chairs
15 if they want to -- if we want to do a couple. We
16 can move on or I'm available and do some questions
17 from the committee.

18 MS. RATH: If you have questions, just a
19 reminder since it's been a while since we've been
20 here, tent up if you have questions. But also,
21 since several of the members are on the phone, we
22 will also just break in and ask you at the end if

1 there are questions when we're finished here. So,
2 I don't think there are any questions here.

3 MR. DAVIDSON: Yeah, they're no
4 requirement for it.

5 (Laughter) It was just like I was
6 just sort of feeling I'm here, I'm
7 with you. If anybody had any
8 comments or questions, I didn't
9 want to --

10 MS. RATH: Just double checking if there
11 is if anyone -- any of the CSMAC members on the
12 phone have questions.

13 MR. RICHARDSON: No.

14 MS. RATH: Great.

15 MR. DAVIDSON: I think with that I'm
16 turning it back over to you.

17 MS. RATH: Thank you. Thank you very
18 much, Assistant Secretary Davidson, for your
19 remarks. I listened to it and I'm a little scared
20 to hear what Scott has to say because it already
21 sounds like we've got a lot on our table. So, you
22 know, I've spent a good portion of my career in

1 this field and I keep thinking that someday, you
2 know, spectrum world will quiet down and it --

3 SPEAKER: The conference is now in
4 silent mode.

5 MS. RATH: (Laughter) That scared me.
6 Yes, it did. I think a voice from above.

7 So, before moving into just a couple of
8 housekeeping type things, I just want to say how
9 nice it is to be sitting here in person. As you
10 just mentioned, it has been over three years since
11 we were here and I was actually co-chair with a
12 different Jennifer at that point. (Laughter) But
13 it is -- and a couple of you who are sitting here
14 in the room have actually never done an in-person
15 meeting. So, welcome to the -- I think it's just
16 the two of you and there are several new people on
17 the phone. So, we'll have to wait for you to join
18 us the next time to get the real feel of what it's
19 like to be in the mix in the CSMAC meeting.

20 I almost feel like I have to welcome the
21 new members again. But so welcome, thank you.
22 Thank you for being here. Just a couple of quick

1 housekeeping items maybe only one, which is if you
2 need the restroom, Bryan it's out right -- right
3 through the lobby and then through the door, yeah.
4 And somebody at the front desk can help you if you
5 get lost.

6 And I'm trying to think. I think that
7 was it for housekeeping. So, we're nearing the
8 end of our session. So, we've already actually
9 heard from one of the subcommittees and we've got
10 three more by the end of the year. And needless
11 to say, as you will hear in a few minutes, and I
12 know many of you are sitting at this table have
13 been involved in multiple subcommittees, it has
14 been a very, very active year with a lot of work
15 that's being done by, you know, both the
16 subcommittee co-chairs, as well as the members.

17 So, right now, we continue to be little
18 bit in the gathering phase, but we're moving into
19 the analysis and getting ready for
20 recommendations. The first set of draft
21 recommendations, as everybody knows, will be at
22 our next meeting, which I don't know whether can

1 we announce when the next meeting is? Or would
2 you rather hold off?

3 MR. DAVIDSON: Yeah, maybe identify it
4 as tentative.

5 MS. RATH: Tentative.

6 MR. DAVIDSON: Yes.

7 MS. RATH: Tentatively set for September
8 21st also the same timeframe 3:00 to 5:00. So,
9 what we're, you know, we're going to be moving
10 into the states pulling together the
11 recommendations for NTIA, which of course is when
12 the real fun begins and you get to see, you know,
13 just where everybody stands and how we work that
14 out. And it is a very -- it's -- it is a very
15 consensual type of process but it also, you know,
16 it can get kind of interesting sometimes, so.

17 I also wanted to mention in a slightly
18 unusual move because the CBRS committee,
19 subcommittee has a pretty daunting task and only
20 started in January, we made an additional -- we've
21 actually asked Jennifer McCarthy to join as a
22 co-chair. So, we'll have three co-chairs. She

1 will be joining Mariam and Patrick as co-chair.
2 Jennifer, I think is on vacation so she's not able
3 to join us today. So, thank you, Jennifer.
4 I've already thanked her but I just wanted to make
5 sure people knew that that was going to happen.

6 So, I've already reminded you to, you
7 know, use your tent card and we will, you know,
8 pick people in order that they've actually
9 responded. It's actually easier on Teams to do
10 that because you can see the order that people
11 responded. But we'll keep an eye on it. Over to
12 you, Jennifer, for your remarks and roll call.

13 MS. MANNER: Thank you. And I want to
14 thank Wilkinson as well for hosting us, and the
15 Assistant Secretary for his remarks. And once
16 again, it's a thrill to see folks who are here in
17 person in person. It's nice to be in the room
18 where it happens. I think that's the quote I was
19 just in Schuler's House this weekend in upstate
20 New York, so I feel a special akin to Mr.
21 Hamilton. I won't sing though, I promise. Thank
22 you.

1 So, with that just want to take our
2 attendance to see who's here. So, I'll start if
3 you can just say aye including for the folks on
4 the phone if you can say aye that would be
5 helpful. Jennifer Alvarez? Okay. Reza Arefi?
6 Donna Bethea-Murphy? All right, are people muted?

7 MR. RICHARDSON: No, they shouldn't be
8 muted.

9 MS. MANNER: Okay. So, I'll just try
10 one more time. Are Jennifer --

11 MR. RICHARDSON: A couple of those
12 already sent me an email telling me they won't be
13 able to make it.

14 MS. MANNER: Okay. So, I don't have
15 Jennifer, Reza, or Donna, all are not on. Okay.
16 Hilary?

17 MS. CAIN: Aye.

18 MS. MANNER: I saw Michael Calabrese.

19 MR. CALABRESE: I'm here.

20 MS. MANNER: I saw Thomas Dombrowsky --

21 MR. DOMBROWSKY: Aye.

22 MS. MANNER: -- in here somewhere. Mark

1 Gibson?

2 MR. GIBSON: I'm here.

3 MS. MANNER: I saw that. Dale Hatfield?

4 Dale? Okay. Carolyn Kahn, I saw here. I'm here.

5 Paul Margie, are you on the phone?

6 MS. RATH: May I interrupt? Apparently

7 some people are trying but cannot hear on the

8 phone.

9 MR. RICHARDSON: Yeah, I just got a --

10 MS. RATH: Just so you know. Sorry to

11 interrupt.

12 MS. MANNER: They can't hear?

13 MR. DAVIDSON: They can them --

14 MS. RATH: Well, what I --

15 MR. DAVIDSON: -- or they just can't

16 see?

17 MS. RATH: -- well, what was texted to

18 me was trying to respond but cannot hear on either

19 the phone or Teams.

20 SPEAKER: Yeah, I'm dialed in. I don't

21 hear anything from this room.

22 MR. DAVIDSON: Oh, really?

1 MS. MANNER: We'll wait to see what
2 Antonio tells us.

3 MR. DAVIDSON: Make sure the mic is on.

4 MS. MANNER: Yeah, I have my mic on.

5 MS. RATH: Mic on.

6 MS. MANNER: So, Antonio, should we take
7 a two- minute pause while you -- or do you want me
8 to keep going? What would you prefer?

9 MR. RICHARDSON: Tell you what, let's
10 just keep going.

11 MS. MANNER: Okay.

12 MR. RICHARDSON: I'll have them let me
13 know if they're on here while I'm troubleshooting.

14 MS. MANNER: Okay. Thank you. So, I'll
15 keep track of who we have to go back. Jennifer
16 McCarthy I believe isn't here. Karl Nebbia, I saw
17 Karl. Louis Peraertz? He would be on the phone
18 so he may not be able to speak. Danielle Piñeres?
19 Also, on the phone. I know Charla's here since
20 she's sitting next to me. Glenn Reynolds, yes.
21 Okay. Dennis Roberson? Okay. Andrew Roy?

22 MR. ROY: Yep.

1 MS. MANNER: Yeah. Jesse Russell?

2 Steve Sharkey?

3 MS. RATH: He may not be here.

4 MS. MANNER: I know Mariam Sorond is
5 here. Rikin Thakker? Okay. Bryan Tramont, I
6 know is looking very dapper. And Jennifer Warren.
7 Bob Weller, yes.

8 MR. WELLER: Yes.

9 MS. MANNER: Patrick Welsh?

10 MR. WELSH: Here.

11 MS. MANNER: Yes. And David Wright?
12 So, Antonio, I've gone through and tell me if you
13 want me to do anything, redo anything with other
14 people. Oh, who is that?

15 MR. WRIGHT: This is David Wright. I
16 just got a text from NTIA. They could hear us but
17 they can't speak.

18 MR. RICHARDSON: Yeah.

19 MR. WRIGHT: Which is better than the
20 other way around. (Laughter)

21 MR. RICHARDSON: Okay. Can you guys
22 here us on the phone?

1 MR. WRIGHT: Hello? Can you hear me?

2 MS. MANNER: I can, but I don't know who
3 it is.

4 MR. RICHARDSON: Who was that?

5 MR. WRIGHT: It's Dave Wright. I am
6 present and you have to hit *6 to speak if you're
7 dialed in.

8 MR. PERAERTZ: Louis Peraertz is here.

9 MS. MANNER: Okay, thank you.

10 MR. RICHARDSON: Thank you. I'll say it
11 one more time. Again, for you all on the Teams,
12 please hit *6 to unmute and talk.

13 MS. MANNER: Okay. So, I'm going to
14 call again for the people who I didn't have as
15 present. Jennifer Alvarez? Reza Arefi? Donna
16 Bethea-Murphy?

17 MS. RATH: I know she's on.

18 MS. MANNER: Okay. So, I don't know
19 what is --

20 MR. RICHARDSON: Yeah, she's on.

21 MS. RATH: Based on the texting.

22 MS. MANNER: Dale Hatfield?

1 MR. DAVIDSON: Dale I know is on also.

2 MR. RICHARDSON: Yeah, he's on.

3 MS. MANNER: He's on? Okay.

4 MR. DAVIDSON: Lily says I hit 6 and it
5 didn't work, so.

6 MR. RICHARDSON: *6.

7 MS. MANNER: Yeah, *6. Paul Margie?

8 MR. MARGIE: I'm here. Can you hear me?

9 MS. MANNER: Okay. We, can. Yay.

10 (Laughter) Jennifer McCarthy?

11 MS. RATH: Jennifer is not.

12 MS. MANNER: On vacation I believe.

13 MR. RICHARDSON: Dave Wright said *6
14 worked for him.

15 MS. MANNER: Okay. Danielle Piñeres?

16 Danielle? Okay. Glenn Reynolds? Dennis

17 Roberson? Jesse Russell?

18 MR. RUSSELL: I'm here.

19 MS. MANNER: Oh, great. He's here.

20 Steve Sharkey?

21 MS. RATH: I think he's out of the

22 office.

1 MS. MANNER: Okay. And then I have --

2 MR. DAVIDSON: No, Steve is here.

3 MS. RATH: I think he's out.

4 MS. MANNER: Okay. Steve's here?

5 Thanks. Okay. So, I think I have everyone now.

6 Okay. So, with that, a very complex roll call. I
7 apologize. So, with that without further ado, I'd
8 like to turn the floor over to Scott Blake Harris
9 who's a senior advisor -- Senior Spectrum Advisor
10 -- I'm sorry -- at the National Telecommunications
11 and Information Administration and has been
12 running development of the National Spectrum Plan.
13 And I think we're all very interested to hear what
14 you have to say, Scott, so, over to you.

15 MR. HARRIS: Well, after the lengths
16 (inaudible) (Laughter). So, I can't tell you guys
17 how happy I am to be back downtown, particularly
18 at WBK where they apparently name conference rooms
19 after former partners. I've walked around Bryan
20 and I'm just saying.

21 MR. TRAMONT: We're working on it.

22 (Laughter) You weren't here either, Scott.

1 (Laughter)

2 MR. HARRIS: Open the door, counselor.
3 So, maybe I'm going to look forward to going back
4 to commerce again. One of the things I've learned
5 in my year at NTIA is how many successes there are
6 that pass relatively unnoticed, or at least NTIA's
7 role goes largely unnoticed. And so, with your
8 indulgence, I'd like to take a moment, if you
9 don't mind, to note just a few matters where my
10 OSM colleagues played what I think was a critical
11 role in important spectrum developments.

12 You will notice particularly if you were
13 traveling on July 1st, the date on which wireless
14 carriers could expand into the upper portion of
15 the C-band, there was no discernable disruption
16 either to cell service or to airplanes. That
17 wasn't random. OSM worked with our colleagues at
18 the FAA and the FCC, as well as our friends in the
19 private sector, to help find the solutions that
20 address the issues that arose over the use of that
21 band.

22 And the OSM team also worked with our

1 colleagues at DOT, and the other executive branch
2 agencies, and our friends in the private sector,
3 enabling the FCC to move forward on CV2X smart
4 transportation technology. Similarly, the OSM
5 team worked with the Commission and the executive
6 branch agencies allowing the FCC to put in place
7 new rules at 60 gigahertz enabling the development
8 of short-range radar systems, including onboard
9 UAVs.

10 We talk a lot about the spectrum
11 strategy, which is great. And we talk a lot about
12 spectrum reallocation and we talk about the WRC
13 which is necessarily. But the OSM team is quietly
14 helping resolve tough spectrum sharing issues
15 every day, every day. They are amazing. And I
16 just wanted to take a couple minutes to say so
17 publicly, particular with Charles and Derrick and
18 John here. (Applause)

19 SPEAKER: If you don't mind me, I would
20 say Ed Drocella and Nick LaSorte too. (Applause)

21 MR. HARRIS: Yeah, hiding behind the
22 column. I didn't see them but absolutely.

1 So, turning briefly to the spectrum
2 strategy, I think you all know about the outreach
3 we did. The RFC, with 140-plus comments, two
4 listening sessions, two tribal consultations,
5 endless one-on-one meetings, which by the way are
6 still going on, additional supplemental filings by
7 just about everybody. And I have to say, we were
8 surprised, not to mention a little bit gratified
9 by all of the public interest in what we are
10 doing.

11 The other thing I want to say, it has in
12 fact had a substantial impact on our thinking. We
13 thought we knew everything going into this. Maybe
14 that's an overstatement. We didn't know nearly as
15 much as we thought we did. And hearing from the
16 public really made a big difference. And as I'm
17 sure everyone in this room understands, our
18 interaction with the public is only half the
19 process. We are spending a lot of quality time
20 with our friends in the interagency community.
21 And we are going to continually be doing that for
22 the next few months.

1 So where are we now? Even as we
2 continue to solicit and receive input from the
3 public, we are busy drafting and already
4 redrafting the strategy. We have a discussion
5 draft, which we continue to work on. As Alan
6 said, we intend to complete and release the
7 strategy by year end. We expect the strategy to
8 have four pillars. First, we hope to focus on
9 improving long-range planning, communication, and
10 coordination among the government agencies, which
11 is sort of the minimum. But also, critically,
12 between government agencies and the private
13 sector. We need a better system for the private
14 sector and the government to communicate on these
15 issues.

16 One goal is to avoid the reactive crisis
17 management that has sometimes followed piecemeal,
18 uncoordinated efforts to address spectrum
19 allocation and related issues. Another goal is to
20 avoid waking up every two years and say, oh, my
21 God, we have to do something to start a new
22 process for spectrum reallocation. It should be a

1 continuous open transparent process not something
2 every two years go oh, my God, we got a problem.

3 We are also giving a significant amount
4 of thought, and if anyone feels they have
5 something to say about this, we're still open to
6 comment as I mentioned. A significant amount of
7 time to figure out how we can leverage the CSMAC
8 to work as part of this process.

9 Second, as I've said many times and I'm
10 sure all of you have heard, we intend to identify
11 at least 1,500 megahertz of spectrum for study in
12 the near term, to see what repurposing is
13 possible. Obviously, it does not mean we can or
14 will repurpose all 1,500 megahertz of spectrum
15 that we study. But study we will.

16 We also want to note this isn't a
17 one-off exercise. We're not going to identify the
18 1,500 megahertz of study and stop. We are
19 definitely not doing that. We are going to
20 identify opportunities for repurposing in the out
21 years to begin the process such that the spectrum
22 pipeline we hope never runs dry.

1 Third, we're going to focus on
2 leveraging technology to achieve more effective
3 spectrum management and more efficient spectrum
4 use. We believe that we are in just the beginning
5 stages of utilizing dynamic spectrum technologies
6 and tools to boost sharing and opportunistic
7 access to spectrum. And finally, we have heard
8 from many commentators, and I don't think we
9 expected this, that we need a strategy for
10 workforce development and professional
11 empowerment. So, we plan to focus on that as
12 well.

13 So, that's it for now. I don't want to
14 delay any further you getting on with your work
15 and your reports. But I appreciate the
16 opportunity to catch you up on OSM and the
17 spectrum strategy and I will be here at the end if
18 you all or folks on the phone have additional
19 questions. But in the meantime, I'll turn it back
20 over to you all and you can get on with the
21 business of the meeting. Thank you.

22 MS. RATH: Thank you. Thank you, Scott.

1 I'm looking forward to seeing that at the end of
2 the year. And actually, am particularly
3 interested in the workforce development because
4 that has continued to come up in a lot different
5 places. So, I'm glad to see that you're going to
6 be looking at that as well. You're here so you
7 can take questions later --

8 MR. HARRIS: Yes.

9 MS. RATH: -- if you want? Okay, great.
10 So, we'll move on to the reports of the
11 subcommittees. The first one up is the CBRS
12 Subcommittee. And I just wanted to mention
13 because I don't think the reports were sent around
14 to folks. So, we here in the room can actually
15 see them up here but if you're -- wait a minute,
16 Antonio has his hand raised, so.

17 MR. RICHARDSON: Sorry, I don't have a
18 tent card.

19 MS. RATH: Do you have a microphone
20 though so you?

21 MR. RICHARDSON: No, I think you guys
22 can hear me. I'm pretty loud.

1 MS. RATH: But I don't know whether the
2 people on the --

3 MR. RICHARDSON: I think they do. When
4 you guys get ready to talk in the room or on the
5 phone, please announce your name before speaking
6 so that way we can capture it in the minutes,
7 please.

8 MS. RATH: Thanks. Thanks, Antonio.

9 MR. RICHARDSON: Thank you.

10 MS. RATH: Charla Rath. I just wanted
11 to -- what I was trying to tell people on the
12 phone, is you can actually look up the reports on
13 the CSMAC website. They have been posted on the
14 website. So, if you want to follow along on the
15 phone. And, yes, now I'm going to turn it over to
16 Mariam. And when the questions come up, Mariam
17 and Patrick, afterwards when -- usually when we're
18 on the -- on a Zoom call or on a Team call,
19 Jennifer or I will manage it. But I think here
20 it's if you want to just manage the questions that
21 come up to your report, that would be great. And
22 turn it back over when you're done.

1 MS. SOROND: The reports were not
2 distributed?

3 MS. RATH: Apparently not, no. They
4 were not distributed. So, people who are on your
5 subcommittee have seen them. And those people who
6 are on the phone can actually just log onto the
7 CSMAC website. Antonio has another comment.

8 MR. RICHARDSON: Yeah, the other thing
9 is I'm actually sharing the slides out on Teams as
10 well.

11 MS. RATH: Oh, okay, good. Thanks. So,
12 you'll be able to see them there too. Thank you.
13 Now, over to you, Mariam.

14 MS. SOROND: Okay. Well, thank you,
15 Charla, Jennifer, the NTIA, WBK. On behalf of
16 myself and Patrick, great to see everybody in
17 person. I'll start and then, Patrick, feel free
18 to chime in to add to what I will be presenting
19 today.

20 So, let's start actually with our first
21 slide talking about our CBRS Subcommittee Members.
22 Co-chairs of the subcommittee are Mariam Sorond

1 and Patrick Welsh. We have our wonderful NTIA
2 liaisons with Nick LaSorte and Ed Drocella. Our
3 FCC liaisons are Kevin Holmes and Jessica Quinley.
4 I will not go through all subcommittee member
5 names but we have a really fantastic subcommittee,
6 very active, very passionate topic, and really I
7 think looking forward to getting to the final
8 report.

9 If we could move over to the next slide,
10 please. As a background for the NTIA question,
11 there were four main questions posed to the
12 subcommittee. The first one was about general and
13 specific lessons learned both positive and
14 negative from the CBRS framework of sharing
15 between commercial and federal incumbents. Second
16 question was actually, you know, looking at those
17 positives and negatives, how could the sharing be
18 improved in CBRS bands? Third question was
19 actually looking at other bands and use cases for
20 the CBRS spectrum sharing experience. And
21 finally, what should be avoided in this
22 experience?

1 The subcommittee did take these
2 questions and create more detailed sort of created
3 scenarios of asking the specific lessons learned.
4 So, there was a lot of sub-bullets created under
5 these questions that were then distributed to a
6 group of folks that we were going to -- we will --
7 we have and will be interviewing.

8 If you can go to the slide, I could talk
9 about that a little bit. We kicked off the
10 subcommittee in January 2023. We have had monthly
11 meetings since. We have not cancelled any of
12 them. We have, through these meetings, we
13 identified a list of 47 entities to talk to. And
14 these were across federal sort of new to the
15 bands. It was also across licensed, unlicensed,
16 operators, private enterprise, vendors. So, it is
17 a very good and comprehensive sort of list that we
18 have as a target.

19 The subcommittee members have been
20 actively looking to schedule these meetings since
21 these 47 entities were identified. So, far I think
22 we have had eight -- actually I want to say nine

1 because when these slides were prepared, we did
2 have one interview after that, have been
3 completed. These are in-person interviews on Zoom
4 calls. However, we've also had several of these
5 entities submit answers to the questions and some
6 of them we may go back to interview. So, it's a
7 little bit more than eight. And some of them
8 we'll just have to rely on the answers, the
9 written answers provided. Our goal is to deliver
10 the final recommendations still on target of
11 December 2023.

12 If you can go to the next slide, please.
13 Thank you. So, here's our observations so far.
14 Actually, except probably most of the interviews
15 actually that we do except for one, were all with
16 commercial users. We very much look forward to
17 talking to federal users. Actually, the NTIA is
18 also on the list of the interviews to be able to
19 get it. There has been a little bit of challenge
20 in scheduling with federal users of the bands.

21 Our subcommittee members have been
22 diligent reaching out. It's been pretty hard to

1 get some of these identified members on the phone
2 to talk to us. So, but that's underway. I think
3 we've got our first one probably next week. So,
4 looking forward to that.

5 So, what you're seeing here as
6 observations has been primarily from a commercial
7 standpoint. And I'll go through these bullets
8 because they're pretty good learning. I wanted to
9 kind of highlight this is not a recommendation of
10 any sort at this point. This is observations. We
11 still have some work to do on the subcommittee to
12 kind of go back and turn these into
13 recommendations.

14 But observations so far that we've
15 heard, the propagation model needs to be updated.
16 It needs to use clutter. It needs to use a lot of
17 the other factors that don't look at such
18 worst-case unrealistic scenarios. That's what
19 we've been hearing. Implementing an automated IIC
20 solution to eliminate or reduce the ESC whisper
21 zones. Reducing complexity of aggregate
22 interference protection. Reducing DPA

1 neighborhood sizes. Reducing heartbeat in non-
2 DPA areas. Reducing DPA activation timer.
3 There's an observation made about restrictive
4 power limits imposed for a higher above ground
5 CPEs. There's also there's an observation about
6 reserving more spectrum than expected during
7 federal events, particularly with one with China
8 Lake. There's also a request on advanced
9 notification of events as some of the events did
10 not have much of a notification, especially to
11 commercial entities we're trying to make the
12 business work.

13 So, that was the observations we've
14 collected so far. There's also with respect to
15 sharing. But in general, there's also the second
16 bullet is highlighting what the licensees are
17 seeing as a benefit to the band, particularly with
18 their own use and other users of the band whether
19 light and power or GAA. They see a benefit in TDD
20 synchronization and increased power. Some may be
21 in specific areas. Some may be more in larger
22 areas. There's also an observation that in dense

1 urban cities, there's a congestion in GAA already.
2 And there needs to be better coexistent management
3 among the GAA users in these areas.

4 Finally, there's also an observation
5 that the sharing process administered by the SASS
6 is overly conservative. So, providing more
7 protection to the incumbents than is necessary and
8 therefore resulting in commercial access being
9 excessively restricted and interrupted.

10 That is our final slide on observations.
11 I'll hand it over to Patrick and then we can take
12 questions after that.

13 MR. WELSH: Thank you, Mariam. I think
14 the only observation I would have from our work so
15 far is we did a -- I think we've done a very good
16 job of casting a broad net to talk to as many
17 stakeholders as possible so we're not focusing on
18 any particular use case or a particular service.
19 We're trying to listen to all of them. So, we
20 can, you know, get the recommendations, and
21 hopefully come back to you.

22 MS. SOROND: Name? (Laughter)

1 MR. WELSH: Okay, Jennifer Warren.

2 MS. WARREN: Yeah, I just wanted to
3 comment as a member of the committee,
4 subcommittee.

5 MS. SOROND: There should be --

6 MS. WARREN: Oh, gotcha. I was
7 wondering why (inaudible) I think I was. Okay.
8 Now, can you all hear me? Okay.

9 MS. SOROND: Very good.

10 MS. WARREN: So, I just wanted to say as
11 a member of the subcommittee, I think the -- I
12 wanted to echo kind of what they both said which
13 was about the range of identified participants.
14 And as someone who is not a CBRS participant, it
15 has been really interesting to listen to all the
16 different use cases. And I think there are some
17 observations -- there's many more observations we
18 can -- I mean, there are I'd a select subset. But
19 there are others that have expressed a great deal
20 of positivity about CBRS and been, you know, CBRS
21 modified the great -- there could be some
22 modifications that would enhance it. So, it's

1 been a really interesting learning particularly
2 for a lot of the enterprise activity those that
3 need trusted networks that they can access. So,
4 I've learned a lot.

5 So, I think, you know, that it's been
6 very valuable for the subcommittee members and
7 kudos for the structure that's been put in place
8 here. I think it'll be interesting to understand
9 the flipside of some of this. But one of my
10 takeaways in listening to a number of them, I
11 wasn't on online or (inaudible) calls but I was on
12 most of them, was also an acceptance that this was
13 a learning curve, right?

14 So, I'm fine for some of these
15 observations able to be made and that it's
16 realistic for it to -- I didn't -- I found it very
17 satisfying to hear that. So, thank you.

18 MS. SOROND: Thanks, Jennifer.

19 MR. WELSH: Karl.

20 MS. SOROND: Karl Nebbia.

21 MR. NEBBIA: Yeah, I also wanted to
22 mention that I think the agency participation

1 would be really helpful and important to our
2 overall discussion. This band was identified via
3 the fast-track process and Scott as has told us,
4 they are looking and identifying 1,500 megahertz
5 of spectrum for study. We were given three months
6 to identify a band to reallocate and that's how
7 CBRS came about. Using that kind of process, we
8 made a decision before we really knew all of what
9 we were going to get into led to a lot of the work
10 being redone in order to make it useable. And I
11 think we've got, you know, the discussion with the
12 agency so I think we've kind of fleshed that out a
13 little bit.

14 And also, as Jennifer was saying, as the
15 process is going through an evolutionary path, the
16 question always comes back to the federal agencies
17 how do we pay for this? How do we fund our
18 participation? Because we thought the decision
19 was made and the deal was done and now we find
20 ourselves in this constant process. And as this
21 becomes the path for future bands, once again,
22 they need to know how do they get appropriations

1 to support it or does somehow money come out of
2 the spectrum fund, reallocation fund, and so on.
3 So, I think their participation is certainly very
4 important.

5 MR. WELSH: Mike Calabrese.

6 MS. SOROND: Actually, hang on a second.
7 Charles?

8 MR. WELSH: Thank you, Charles, over
9 here.

10 MR. COOPER: Appreciate the comments.

11 (Laughter)

12 MS. SOROND: And actually, just a
13 reminder to those of you who, CSMAC members on the
14 phone, we -- sorry to have to do it this way, but
15 we're going to take the folks here first and then
16 we'll move to you on the phone. And are you
17 seeing anybody raising their hand down there?

18 MR. WELSH: Dale.

19 MS. SOROND: Yeah, no, I knew Dale.

20 Dale has actually reached out to us --

21 MR. WELSH: Oh.

22 MS. SOROND: -- separately. So --

1 MR. WELSH: Yeah, move on to --

2 MS. SOROND: -- yeah, great. So, we --
3 we'll just let him ask his question after Michael
4 is done. So, Charles.

5 MR. COOPER: So, before Michael, yeah,
6 just to quickly chime in here, Charles Cooper,
7 NTIA, OSM, to address, you know, for the comments
8 from the subcommittee chairs and also from
9 Jennifer and Karl. Yeah, I'm delighted you got 47
10 entities that are going to talk to you guys. I
11 can't imagine the immense support to the
12 scheduling just in that. But I'm confident that
13 we'll be able to get the agency participating in
14 that. So, we'll work with you on that as needed.

15 And with regard to Jennifer's comment
16 about this being a learning process, absolutely
17 right. You know, this is kind of a novel spectrum
18 sharing platform and I think there are going to be
19 lessons learned. Not only for this band what we
20 can do in improvements, even though understanding
21 that this is ultimately an FCC process, right,
22 regarding to the non- federal access. But we're,

1 you know, with our MOU that we've executed almost
2 a year ago now, where we are working very well
3 with the Commission and look to continue that.

4 And then also, Karl, with your comment
5 about, you know, who's going to pay for this,
6 right? Especially on the encumbrances on the
7 federal agencies to support that. You know,
8 that's absolutely right. I hear from agencies
9 pretty regularly on this. It's not only on
10 repurposing issues, but, yeah, the ongoing
11 spectrum support that it's going to take and who's
12 -- and again, who's ultimately going to pay for
13 that. So, I'm glad to hear you articulate that
14 point as well. Thank you, Karl. And Michael.

15 MR. CALABRESE: Yeah, Michael Calabrese.
16 Yeah, so I won't repeat what Jennifer -- as
17 another committee member, I won't repeat what
18 Jennifer and Karl have said. You know, I totally
19 endorse that. I did want to point out something
20 that struck me even more when we compiled these
21 observations. Is that this isn't -- and I think
22 this was part on purpose hopefully, but this isn't

1 just about how do we make CBRS better. I mean, it
2 seems that all of these things, all of these
3 observations so far would apply in great part to
4 the next band that is shared, federal, commercial.

5 And so, I think for Scott's purposes,
6 you know, that list right now because your
7 process, National Spectrum Strategy, is running
8 ahead of ours. But, you know, that list may be
9 good to take into your process as well or what we
10 come up with in the next draft in the next round
11 before you're completely done. Because I think
12 some of these things need to become explicit.

13 But one thing that is worrisome is the
14 pay for I don't think -- I don't know if our
15 committee -- I haven't been in all of the
16 interviews, it would be somebody like John
17 Leibovitz, for example, who would bring this up,
18 is that it was very purposeful at the FCC that
19 they combine PALs and GAA in the same band so that
20 if there were federal costs to reimburse, you
21 know, the PAL revenue is available for that. And,
22 you know, that could be an observation of a

1 challenge we have as Karl mentioned, is how do you
2 get the, you know, the federal users to believe
3 they'll be whole and to not be doing this out of
4 the goodness of their hearts, so.

5 MS. SOROND: Thank you. Thanks for
6 bringing that up, Michael. Yeah, absolutely the
7 intention is as part of the questions is future
8 bands is the specific question we're asking in the
9 interviews. And you're absolutely right that
10 these would be interesting points for future
11 bands. And thank you, Charles. Any help that you
12 could give our subcommittee members for getting
13 some of these federal agencies to schedule calls
14 would be much appreciated. Mark Gibson.

15 MS. MANNER: Now, with Mark Gibson.

16 MS. SOROND: Mark Gibson.

17 MR. GIBSON: I'm not sure this thing's
18 working because it's flashing.

19 MR. WELSH: You have to press the button
20 first.

21 MR. GIBSON: I did press the button and
22 it's flashing off of red and green, so. Okay. I

1 just want to identify -- this is my rock star
2 impression.

3 There are three things on the list that
4 are actually already under review that -- but with
5 the interactions between the SASs and in the
6 industry joint working group that's worth noting.
7 And I probably should have mentioned this because
8 I'm on the committee. One of them is reducing the
9 heartbeat interval. And in fact, that is all but
10 done. We're waiting for a public notice from the
11 Commission to finalize that. So, and again, I
12 think that's thanks to Nick and Ed and a lot of
13 the work that's been going on within the ITWG.

14 The other thing is the DP activation
15 timer. This is the two-hour timer that sits at
16 the end of any DP activation. That's working too.
17 Although it has been tabled until later use to get
18 some testing considerations. And then finally, I
19 think we're working on interactions with some of
20 the updating propagation models to address the
21 neighborhood.

22 So, CSMAC is working in real time. This

1 stuff is already being dealt with. So, I think,
2 you know, we'll add more to the list as we go
3 through. But again, I'd like to just thank Ed and
4 Nick for their work on a lot of this stuff that's
5 coming out of the ITWG.

6 MS. SOROND: So, sorry. Can I before
7 you go to Dale. So, can I ask you, Mark -- this
8 is Mariam -- the real time aspect and with the
9 work that's going on, what's your recommendation
10 on making sure we're in sync? When you said these
11 things have been identified, so, what is that?

12 MR. GIBSON: I think that's my fault.

13 MR. SOROND: Okay.

14 MR. GIBSON: So, I'm at fault.

15 MS. SOROND: Because you're a
16 subcommittee member. Okay.

17 MR. GIBSON: I think it's mostly there
18 was sort of a frenzy of activity yesterday trying
19 to get this done. And I had some changes that got
20 lost in translation. So, I'll take the
21 responsibility for that. But I also think that I
22 and Jennifer McCarthy, who are both in the middle

1 of this, can probably provide more feedback. I'm
2 not throwing Jennifer under the bus, but I think
3 we're the two that are more involved with this.
4 So, I think we can add more to what's going on.
5 Also, like Nick's involved. He's a liaison from
6 the NTIA. And we can bring that in. So, I think
7 that's the best way to do it is just be more
8 aware. So, that's my fault I think.

9 MS. SOROND: So, move over to Dale.

10 MR. HATFIELD: Can you hear me?

11 MS. SOROND: Yes.

12 MR. WELSH: Yes.

13 MR. HATFIELD: I actually had a comment
14 for later. I was just trying to be set so that
15 when I wanted to make a comment, I could. So, I
16 apologize for the interruption.

17 MS. SOROND: That's it? Okay. Good,
18 well, it worked. Good, Dale. So, I think we're
19 done. That's it. Okay, great. So, over to you
20 Jennifer.

21 MS. MANNER: Okay. Well, thank you so
22 much and thank you for all your work and 47 is a

1 big number. So, I'm in awe. So, with that, we
2 want to -- I want to turn the floor over to
3 Carolyn Kahn who's going to give a report on 6G.

4 MS. RATH: We're bringing you the --

5 MS. MANNER: And you're getting the
6 official microphone.

7 MS. KAHN: Great. Well, thank you so
8 much. Again, great to be here in person. And
9 I'll be presenting the work that we've been doing
10 on the 6G Subcommittee on behalf of our
11 subcommittee. And we'll be presenting a status
12 update and some observations that we have so far.
13 So, the next slide shows a list of our
14 subcommittee members. If you can switch to the
15 next slide. Thank you.

16 Thanks to all of our subcommittee
17 members, really appreciate all the diverse input
18 that we've had some great discussions and it's
19 thanks to the subcommittee's participating in
20 that. We've also had some really great outreach
21 that I'll talk about. So, that's been going well.
22 Also, special thanks to Rich Orsulak, our NTIA

1 Liaison and Antonio Richardson, our Designated
2 Federal Officer. We've also been working with the
3 FCC to facilitate collaboration between NTIA and
4 FCC. Kevin Holmes has been included as an FCC
5 Observer and Jessica Quinley as an FCC Liaison.

6 The next slide. This shows our study
7 question from NTIA. So, again it's two parts.
8 The first part is on use cases, what sort of use
9 cases 6G may entail. And importantly, NTIA would
10 like to consider use cases beyond traditional
11 wireless communications including safety, sensor,
12 radar, space, and other scientific applications,
13 and address 6G's impact on the federal government
14 users.

15 The second part is on spectrum bands,
16 what spectrum bands could be used for 6G. NTIA
17 has observed the terahertz band has been
18 identified. So, how that would impact government
19 users in the range, what recommendations could
20 help prepare for this. And then also, are there
21 other spectrum bands that might be appropriate for
22 6G. We also received subsequent clarification

1 that the scope should concentrate on 6G services
2 as opposed to future generations and consider the
3 benefits to the government.

4 The next slide is our schedule. We are
5 on track. We kicked off our subcommittee work
6 about a year ago, almost a year ago. We've have
7 regular subcommittee meetings since so have had
8 them every couple to few weeks. We've also been
9 conducting interviews and are wrapping that up and
10 have been preparing, analyzing what we've been
11 finding on developing our draft report. And we'll
12 be delivering our draft report and recommendations
13 at the September -- at our next full CSMAC
14 meeting. Then we'll do some interim work to
15 iterate on that and deliver our final paper and
16 recommendations in December.

17 Next slide. So, these are the
18 organizations that we've reached out to in order
19 to collect additional information on 6G use cases
20 in spectrum. They range across federal agencies,
21 commercial industry, and academic, and other
22 non-profit organizations. Those indicated in bold

1 are the ones that we've received responses from.
2 We've given these organizations options of
3 providing either written and/or verbal responses,
4 and really appreciate the input that we've
5 received so far. So, thank you.

6 The next slide shows 6G use cases and
7 applications. So, the material on this slide was
8 presented at our last full CSMAC meeting. What's
9 new here is that indicated in bold are those use
10 cases and applications that are expected to be
11 most relevant to federal agencies based on
12 interview responses and surveys that we received.

13 And so, some points to note is 6G use
14 cases and applications are expected to broadly
15 benefit federal users similarly to how they
16 benefit commercial industry users. In some cases,
17 there will be use cases we expect that will evolve
18 to meet unique needs of government or industry
19 users. And also, we expect there to be a lot of
20 cross pollination between industrial and federal
21 agency use cases.

22 There also will likely be some blending

1 between traditional, which we define as mobile
2 broadband wireless communications use cases and
3 non-traditional, which also can integrate into
4 with non-traditional use cases -- or non-
5 traditional can integrate with traditional use
6 cases.

7 So, for instance, traditional
8 terrestrial cellular communications are expected
9 to evolve into hybrid terrestrial space ariel and
10 underwater networks. And federal agencies and
11 other users can use the link best suited for a
12 given application. 6G is expected to enable
13 seamless connectivity across. So, this will
14 improve global communications coverage regardless
15 of the location of the federal agency user. It
16 will also provide resiliency during extreme
17 conditions. And this benefits, for instance,
18 public safety and closing the digital divide.

19 The next slide shows additional
20 non-traditional use cases specifically in the
21 categories of safety, sensor, radar, space, and
22 other scientific applications. Again, we expect

1 federal users to benefit broadly from these use
2 cases. And those, again, indicated in bold are
3 the ones from the surveys that were identified as
4 most relevant to federal agencies.

5 So, federal agencies are expected to
6 benefit for instance from massive data, immersive
7 technology, AI machine learning. They can
8 establish digital twinning for instance in areas
9 of national security, transportation,
10 environmental forecasting, health, and education.
11 So, in these digital twin environments, you can
12 analyze with the BF analytics this massive amount
13 of data to provide better information and enable
14 improved decision making in real time.

15 The next slide shows 6G unlicensed and
16 shared spectrum use cases. This is an updated
17 slide that Danielle presented at our last full
18 CSMAC meeting. You can see here all the use cases
19 and applications are bolded because these did all
20 come out in the surveys and interviews as relevant
21 to federal agencies. So, things from
22 environmental sensing, Internet of Things,

1 wireless, and local personal area networks
2 providing this information showers of high
3 bandwidth activity. And In-X subnetworks for
4 instance where a network can operate within an
5 application within a robot or a vehicle or even
6 within the human body.

7 The next slide, turning over to the
8 spectrum area, Reza had prepared this on looking
9 at spectrum and spectrum needs are going to be
10 dependent on systems and deployment
11 characteristics. So, this is still being studied
12 but some general observations is suitability of
13 spectrum. So, from a technical point of view, the
14 amount of spectrum that's needed for 6G is going
15 to be dependent on application KPIs, data rate
16 spectrum efficiency. And then also, will be
17 dependent on the range or types of spectrum, which
18 will depend on deployment models and propagation
19 characteristics. So, there are still being sorted
20 out and studied.

21 Also, there's what is suitability from a
22 regulatory point of view. So, this will depend on

1 incumbent protection, service rules, sharing
2 models, different types of sharing, whether it's
3 time-based, location-based, frequency-based, or a
4 mixture of these, which can be enabled by more
5 intelligent sharing approaches, and what sort of
6 power restrictions and indoor restrictions are in
7 place or necessary.

8 The next slide shows some observations
9 that we've made as a subcommittee. So, we've
10 observed that carriers are still very much focused
11 on deploying 5G and moving onto 5G- Advanced. We
12 expect this to take a few more years. On the
13 other hand, the RAN vendors are aggressively
14 working to define 6G technology elements and
15 spectrum for 6G. And the carriers and network
16 infrastructure vendors see open networks and ORAN
17 is dominant in 6G.

18 The next slide shows some observations
19 from use cases. And so, where we're at right now,
20 and our subcommittee did take a very intentional
21 approach to be realistic in looking at 6G, and
22 where we observe we are right now is in between

1 this clash of visionary ideas that are put out
2 there and to look at the future and ideas of how
3 the future can or should be. But at the same
4 time, practical realism. What is possible
5 economically. What can actually be done within
6 various timelines. And that's normal, especially
7 where we're at now. It's a normal part of the
8 process.

9 So, there needs to be -- we need to
10 address the challenges of 6G in order to have it
11 to feel better. And part of addressing these
12 challenges are filling the gaps of 5G. So, this
13 in particular includes the business case ROI,
14 economies of scale, which is even more difficult
15 when we've got multiple deep verticals that are
16 included across the use cases, a convergence of
17 different visions, and the path forward, risk of
18 fragmentation of different approaches and
19 different ideas, as well as regional divergence.

20 We also noted at a subcommittee the
21 tradeoffs that we've been seeing between economies
22 of scale, economies of specialization, and

1 economies of scope. And this is something that
2 will need to be worked through. We've noted other
3 tradeoffs as well between open architectures and
4 diverse specialized systems. So, there's a lot
5 going on here head-to-head that are all really
6 important.

7 Also, we've noted that equipment
8 providers and researchers are driving the 6G
9 vision from what we've observed until MNOs provide
10 requirements. And again, this is a normal part of
11 the timeline that has been observed in the 5G
12 process as well.

13 Some indicators of use case viability
14 include investment in R&D, the progression of
15 technology readiness levels and maturation of
16 technologies, seeing proven business cases and
17 economic impact, seeing convergence of different
18 visions and approaches, lower barriers to entry,
19 and demonstrated impact.

20 The next slide shows observations on the
21 spectrum side. So, most of the focus for
22 terrestrial use now is on mid-bands and extending

1 them up to around 15 gigahertz versus millimeter
2 wave or terahertz, other bands are being
3 considered for non-terrestrial.

4 There's interest in sub-terahertz
5 limited to research areas mostly for short-range
6 communications with longer associated timelines
7 for commercial use. We observed that innovation
8 could be allowed potentially in the terahertz
9 spectrum for localized exploration of 6G. And
10 there is observed a lack of dedicated or shared
11 spectrum and the potential use of spectrum ranges
12 for 6G includes low-band, which has not been as
13 much -- thank you -- is not as much of a focus for
14 terrestrial 6G, but underutilized spectrum,
15 particularly in large geographic areas with
16 relatively few users, could be pieced together
17 with carrier aggregation or multi-radio
18 connectivity for more coverage. And the mid-band
19 the sweet spot between coverage, capacity, and
20 contiguity. Millimeter wave where you can have
21 these information showers via wireless local and
22 personal area networks. And hotspots in

1 Sub-terahertz and terahertz for fixed wireless and
2 backhaul, high bandwidth applications if feasible,
3 and passive services.

4 Some overall thoughts on our next slide
5 includes that federal agency engagement early on,
6 that is really important to help shape the use
7 cases. Getting in requirements early and into the
8 process identifying gaps and building it into a
9 national R&D strategy and roadmap, as well as
10 influencing standards and technology development
11 will help things from the beginning and really be
12 impactful.

13 It's also important to posture to
14 increase spectrum sharing opportunities, including
15 leveraging spectrum across the generations, and
16 having incentives in order to make that possible
17 and optimized. There's also a need for more
18 advanced spectrum sharing techniques such as
19 customizing sharing techniques to different
20 frequency bands and ranges of incumbents and
21 digitized more automated spectrum sharing
22 approaches. There's also benefits of

1 incorporating interoperability, open APIs, and AI
2 and machine learning, and need to invest in 6G
3 research.

4 So, that presents the status of our 6G
5 work and I welcome questions and comments from the
6 subcommittee.

7 MR. WELSH: Michael?

8 MS. KAHN: Andy?

9 MR. ROY: Is that working? Okay. I
10 guess this is a hint I need to work harder in the
11 subcommittees on this slide on the tables.

12 So, Andrew Roy. I had a question and I
13 missed this on the last update from the last
14 committee. Sorry, it's a clarifying question.
15 So, with radar, are we talking about actual radar
16 as in using the wave form properties to detect
17 things or is it more of a communicating the
18 position over 6G? I wanted to understand does it
19 get into that because it has radio determination
20 allocation considerations as well then. So, I was
21 curious what does radar for 6G mean?

22 MS. KAHN: Okay. So, it is as it's used

1 for more 6G types of integrated a lot with
2 different communications and sensing so to provide
3 more information incorporated into the system.

4 MR. ROY: Okay. So, like a multi-static
5 radar system we're talking about then potentially
6 that sort of thing?

7 MS. KAHN: That could be.

8 MR. ROY: Okay, all right.

9 MR. KAHN: Yeah, you have --

10 MR. ROY: Sorry, it's just that there's
11 been discussions in aviation about using TV
12 broadcast towers to do similar things with
13 detecting secondary signals, can detect positions.
14 I was curious if it was going down that line or
15 there was another means of doing it as well, so.

16 MS. KAHN: Mariam? Could you pass the
17 microphone down to her?

18 MS. SOROND: Thank you. So, I just
19 wanted to highlight the wonderful work the
20 subcommittee, specifically Carolyn and Reza has
21 done. A lot of lessons learned for me in also
22 doing the CBRS. And also, I wanted to highlight

1 but then how transformative 6G will be versus 5G,
2 that's still so much -- that's nobody here has
3 that -- well, maybe a couple here -- have that
4 understanding. But I think we can't expect too
5 much on the 6G use cases just simply because we're
6 just in the final times of looking at those 5G use
7 cases.

8 MS. KAHN: Yeah, there is still a lot of
9 focus on 5G, yeah. Dale, I think you've got a --
10 catching your comments online?

11 MR. COOPER: Talk about digital 20.

12 MS. SOROND: Oh, it's Charles.

13 MR. COOPER: Yeah, thank you, again.

14 Charles Cooper, NTIA OSM. Appreciate the interim
15 report that's done here. You know, to kind of cue
16 off what Jennifer was saying as well about the use
17 cases, I'm glad you bolded the ones that may be of
18 interest to the federal agencies based upon your
19 interviews.

20 And kind of flipping back between Slides
21 6 and 7, where 6 is, you know, the traditional,
22 non-traditional and Slide 7 deals with 6G with

1 kind of a little more the safety, the sensors.
2 I'm, you know, in hindsight not surprised to see
3 perhaps more potential for federal involvement in
4 use in those use cases with regard to the safety
5 and sensors in particular. So, I appreciate you
6 kind of differentiating those use cases and also
7 flagging those especially of interest to the
8 federal agencies potentially.

9 MS. KAHN: Thank you. Dale Hatfield?

10 SPEAKER: Go for it, Dale.

11 MS. KAHN: Dale, do you have a question
12 online?

13 MR. HATFIELD: Yes, can you hear me?

14 MR. KAHN: Yes.

15 MR. HATFIELD: Okay. I have -- Dale
16 Hatfield. Of course, I am on the subcommittee but
17 I'd like to, if I could, call the attention of the
18 full committee to slide -- I believe it's Slide
19 24, the very last slide in the deck. Yeah, I
20 think it's Slide 24.

21 MS. KAHN: What's the title of the
22 slide, Dale?

1 SPEAKER: I thought it was 20, Dale.

2 MR. HATFIELD: It was up there
3 momentarily. It's Slide 24. I think you're only
4 on 20 right now.

5 MS. KAHN: What's the title of the slide
6 because we don't have a Slide 24.

7 MR. HATFIELD: Well, I don't have it
8 either. The very last slide in the whole deck.

9 MS. KAHN: Is it the summary of the
10 responses on research or the subcommittee
11 thoughts?

12 MR. HATFIELD: No, it was, there was a
13 comment and this is my point regarding the
14 challenges associated with achieving five-nines or
15 even six-nines type availability and reliability.

16 MS. KAHN: Maybe five-nine, six-nine
17 challenges, back up.

18 MR. HATFIELD: Yeah, it's in this part
19 of the thing. It's actually the very last. There
20 it is right there. There it is, yes.

21 I just wanted to call the full
22 committee's attention to this because I have tried

1 -- only if somebody will let me say first of all,
2 of course, five minutes you're talking about --
3 five-nines you're talking only about five minutes
4 per year. And, of course, that could be scattered
5 over various incidents. And you go to six-nines,
6 you're talking about what, 60 seconds per year.

7 And I've been playing around with, if
8 you will, some flow diagrams. And I just can't
9 figure out how in a system that's subject to radio
10 propagation variability, to malicious jamming,
11 unintentional jamming, and so forth, how you can
12 possibly achieve that. And that goal we see all
13 the time.

14 Moreover, we see the issues we're having
15 with the power grid and so forth. And it's
16 unclear to me is this what's the availability that
17 people are achieving in that kind of environment?
18 In other words, what is included and what isn't?
19 And I think it's, if I could say, it underlies so
20 much of what people talk about, but I just can't
21 get there. I just cannot get there. And I just
22 wanted to maybe emphasize it for the full

1 committee's behalf.

2 And then finally, of course, now with
3 some private systems 5G, it'd be very interesting
4 to see, you know, what their service level
5 agreements are and to see whether they're actually
6 achieving these high degrees of reliability
7 availability. Thank you.

8 MS. KAHN: Okay. Thanks for those
9 comments, Dale. You've provided throughout our
10 subcommittee work really good helpful
11 observations. And it sounds to me like that's
12 getting at again kind of what visions are out
13 there and then what can realistically be achieved
14 by certain timelines and also as you point out,
15 what's needed and who needs it. So, thank you.
16 Other? Jennifer Manner. Oh, Mark Gibson, go
17 ahead.

18 MR. GIBSON: Just real quick on the
19 spectrum. I will just shout. So, on the spectrum
20 discussion, I think it's important to set
21 expectations because, you know, the activity was
22 to look at the spectrum bands in the 3.1 to 16 gig

1 and the 95 to 3,000 gigahertz. When you look at
2 that in detail, that's almost 191 gigahertz of
3 allocation, which comprises 127 band segments and
4 106 different allocations. And so, and I took --
5 so, I took that on and that was way more than I
6 thought it would be.

7 And I think what we need to -- and Reza
8 did a good job trying to figure out what use cases
9 would fit into what band segments -- but there's a
10 whole bunch of spectrum out there. Some of this
11 is part of the pipeline that's being discussed
12 that you referred to all but completely in the
13 national spectrum strategy stuff. So, in terms of
14 setting expectations, especially when we get to
15 the terahertz range because there's nothing
16 allocated above I think 300 gigahertz, I think
17 that we're a little ahead. I think that this is
18 what somebody said earlier where I think Jennifer
19 may have this, there's a lot of time between now
20 and when 6G's going to be relied. And the
21 spectrum is not -- there's just a ton of spectrum
22 out there and there's going to be a lot more work

1 needed for that.

2 One of the things that I tried to do in
3 this effort was to connect this back to some
4 previous CSMAC work that we had done, which was a
5 paper on how to characterize spectrum for sharing.
6 That was done I think it was 2017. And it was
7 interesting because I thought that was really
8 good. It didn't necessarily apply too well to
9 some of the radar bands or the terahertz, but in
10 terms of being able to look at spectrum for
11 repurposing, things like propagation
12 considerations, continuity, and something like
13 that. So, it's really always good to go back and
14 rely on some of our previous work. But anyway so,
15 there's a lot more work to be done here for
16 setting that expectation. And now this is
17 working.

18 MS. KAHN: Okay. Thanks, Mark.
19 Jennifer Manner?

20 MS. MANNER: So, thanks, Carolyn. I do
21 appreciate all you and Reza have done. It's a
22 huge process and I've been very pleased to be

1 around and part of it. But I forgot to give one
2 small edit on the slides. You have satellite.
3 It's the slide where you talk about the different
4 types of licensing, 2, I think. Satellite is not
5 just exclusive. Actually, a fair amount of it is
6 non-exclusive. So, just a clarification you may
7 want to do before you finalize the slides.

8 MS. KAHN: Okay, thank you, Jennifer.
9 Okay. That concludes the 6G Subcommittee.
10 Thanks.

11 MS. MANNER: Any other questions online
12 or comments? Okay. They say no. So, over to
13 Charla to introduce our last group.

14 MS. RATH: Great, thank you. And the
15 microphone is being passed as I speak, which is
16 turning it over to Tom Dombrowsky to give an
17 update on the Electromagnetic Compatibility
18 Improvements Subcommittee. So, thanks, Tom.

19 MR. DOMBROWSKY: Yeah, this is working
20 now? Everybody can hear me well?

21 MS. RATH: Yes.

22 MR. DOMBROWSKY: Doublechecking since

1 Gibson can't apparently make a microphone work.

2 (Laughter)

3 MR. GIBSON: But I did it. I can't hear
4 you either.

5 MR. DOMBROWSKY: That has nothing to do
6 with the microphone I was just going to say.

7 (Laughter)

8 For the ECI, the Electromagnetic
9 Compatibility Improvements Subcommittee slide
10 presentation, if you can go to the next slide. We
11 basically we have this question that's been
12 presented to us that has multi parts. Our focus
13 has been on radar and specifically radar from 5 to
14 16 gigahertz and figuring out how to make it
15 coexist better with co-channel and non-co-channel
16 interference or users. Trying to figure out how
17 we can look at statistical risk-based analysis
18 techniques to actually characterize the impacts of
19 these federal systems in the 5 to 16 gigahertz
20 range. Looking at propagation modeling, how can
21 we improve that? How could we increase the
22 accuracy of those propagation models that are out

1 there? The role that NTIA should play in ensuring
2 there's independent and timely analysis, and other
3 improvements suggested by CSMAC. And I'll note
4 that we have added sort of enforcement as a sort
5 of other improvements to the list.

6 If you can go to the next slide, we'll
7 have the list of members in the group. It's been
8 a very active group. Donna Bethea-Murphy and I
9 are co-chairing here. Donna's not here, hence I
10 get the lucky -- I know, but I'm here personally,
11 you know, so I get the lucky run through of the
12 slide deck. But Donna and I have been working
13 heavily with the NTIA and FCC liaisons. And all
14 the subcommittee members have been very active and
15 helpful.

16 If we go to the next slide to sort of
17 talk about what we've been doing here. We have
18 met at least monthly and some months it's been
19 more than once in the month. We had a series of
20 interviews similar to other groups. We've had
21 some struggle in getting federal agency interviews
22 done but we did get NASA and FAA to talk with us

1 as well as Garmin and Collins who are contractors
2 or vendors to the federal agencies.

3 We also had a couple of different
4 meetings with NTIA and the IIC effort to get a
5 better understanding of that to see how that would
6 play in this effort as well. All of that has led
7 to the drafting of a report that's probably 25 to
8 30 pages long at this point. It's really focused
9 on capturing the information from the interviews
10 as well as data from other federal agencies that
11 engage in statistical analysis. Even though not
12 related to spectrum, we think it actually has some
13 good correlation that we could use here.

14 We did have some initial draft
15 recommendations. We say under discussion, I will
16 just say they were presented but we really haven't
17 discussed them yet. So, that's why they haven't
18 been presented to the full committee yet. And the
19 goal is to complete the report and ensure that
20 these recommendations that are developed are based
21 on information within the report itself. And our
22 goal will be to provide a draft report and draft

1 recommendations at the September meeting. If it's
2 the 21st, it'll be -- we'll be ready on the 21st.
3 And we'll see where that goes from there.

4 I think just as a heads up to my
5 subcommittee members, we'll probably have to pick
6 up the cadence a little bit. I know everybody's
7 very excited to have lots of meetings in August
8 and September, but at least I forewarned you.

9 Onto the next slide there. I just
10 wanted to sort of provide a little bit of a flavor
11 of what we're working on in this report before
12 people actually see the draft in September. We
13 have a discussion on the radars, again focused on
14 aeronautical radar systems in the 5 to 16
15 gigahertz band. And Andrew Roy and Mark Gibson
16 have been the parties pulling that together with
17 some support from Jennifer Warren. We're hoping
18 to get that finalized and have a fairly
19 substantial amount of information about the radars
20 that are in those bands. We've also summarized
21 the responses and discussions with the
22 interviewees on the radar front. Shifting to

1 commercial wireless, we've got an overview of
2 parameters that could be used and some suggestions
3 in terms of using general values unless more
4 granular data is provided for these coexistence
5 analysis.

6 Onto the next slide. And then on the
7 coexistence analysis itself, when you look at
8 these sort of radar and commercial wireless
9 inputs, talking about the parameters that have to
10 be part of any coexistence analysis, types of
11 inputs that need to be gathered, use of
12 statistical analysis by other federal agencies and
13 how it could be applied to this sort of
14 coexistence modeling. Importance of propagation
15 modeling and the improvements that we could
16 possibly get in the existing propagation modeling,
17 especially for that 5 to 16 gigahertz range. And
18 then potential approaches for coexistence
19 analysis. We do have an appendix that sort of
20 walks through issues on coexistence analysis. And
21 I think the goal of the next month, month and a
22 half is to sort of build that out a little bit

1 more through discussion in the subcommittee level.

2 And then finally, as systems will evolve
3 over time both commercial and federal systems,
4 suggesting that any of this modeling coexistence
5 analysis be iterative and allow all the affected
6 parties the opportunity to update technical
7 parameters and innovate and move forward.

8 We have an extensive section on the role
9 of NTIA. Importance of the NTIA providing the
10 independent analysis for coexistence and what sort
11 of process is needed to facilitate federal
12 agency/commercial user collaboration. And then
13 finally on the enforcement front, really talking
14 about having reasonable assurance and interference
15 protection of systems and having mechanisms to
16 identify and mitigate interference are going to be
17 critical if you're going to actually have some
18 trust in the sort of coexistence analysis.

19 And I believe that was my final slide,
20 yes. So, open it up to questions from the full
21 committee or from my subcommittee members. It's
22 always good to be last.

1 MS. RATH: Anybody on the phone? I'm
2 checking with our guys down there. Nope, nothing
3 there.

4 MR. DOMBROWSKY: Okay.

5 MS. RATH: Well, thanks. Another huge
6 amount of work that's going on among all of the
7 subcommittees but thanks for that report. And I
8 think at this point, we can turn it over for --

9 MS. MANNER: Public comment, okay.

10 MS. RATH: Yeah, if the --

11 MS. MANNER: So, thank you, yeah, a
12 fantastic amount of work. Keep it up, we only
13 have a little bit more to go. So, and a lot more
14 work to do. With that, we have on the agenda time
15 for public comment. So, Antonio, I don't know if
16 there's anyone on bridge who's asking for public
17 comment? Yes, Jennifer Warren, please.

18 MS. WARREN: I thought before we got to
19 public comment, we were going to be able to ask
20 Scott questions.

21 MR. HARRIS: Oh, I thought you forgot
22 me.

1 (Laughter)

2 MS. MANNER: We can do that first. So,
3 we'll do ask questions first.

4 MR. HARRIS: And I was just going to
5 remind you.

6 MS. MANNER: I know. And then we'll
7 turn to public comment. So, does anyone have a
8 question for Scott?

9 MS. WARREN: Yes.

10 MS. MANNER: Oh, that might be Jennifer
11 Warren. What a surprise. Jennifer, please.

12 MS. WARREN: So, both you and Alan
13 emphasized by the end -- sorry, Jennifer Warren.
14 Both you and Alan emphasized by end of year --
15 thank you -- you expect, you're planning on having
16 the strategy done. Can you talk a little bit how
17 you foresee rolling that out and what that will
18 look like? Thank you.

19 MR. HARRIS: No.

20 SPEAKER: Now, you're open to questions.

21 MR. HARRIS: So, to be perfectly candid,
22 we are -- we have a timeline in place that if all

1 goes well, we actually hope to have it released
2 pre-WRC. But we've set an absolute deadline for
3 ourselves at the end of the year. We have not
4 actually focused on sort of the roll out process,
5 if you will. We're still focusing on substance.
6 I would love to just talk about this. But we're
7 working on substance right now and we do have this
8 timeline with basically two dates built in.

9 And, you know, given that half of the
10 spectrum world is going to be in Dubai for a
11 month, we really -- that's one of the reasons we
12 are hoping to get it done before WRC. But if we
13 can't, our deadline is for ourselves is the end of
14 the year.

15 MS. MANNER: Thank you.

16 MR. HARRIS: Isn't the old saying, if
17 you can't answer the question you're asked, answer
18 a different question.

19 MS. MANNER: So, I have Mark Gibson
20 next, please.

21 MR. GIBSON: All right. I'm going to
22 throw this thing out the window. You mentioned in

1 one of -- in the leveraging -- it's working now?

2 MR. RICHARDSON: Yeah, just hold the --

3 MR. GIBSON: You mentioned one of the
4 things you were looking at is how to better or
5 have a different leveraged CSMAC. Can you
6 elaborate on that a little bit? What are you --
7 yeah.

8 MS. RATH: Go on mute folks.

9 MR. RICHARDSON: Make sure you stay on
10 mute.

11 MR. HARRIS: So, we're just trying to --
12 started to think about this issue. We are
13 convinced we need some better way to regularly
14 have the private sector and the government
15 agencies talk about spectrum issues, long-term
16 spectrum planning, the reallocation issues,
17 one-off kinds of issues that arise from time to
18 time. We think there should be a continuing
19 process. We think it should be open and
20 transparent. We think it should have parts of it
21 that can be in a classified basis, if necessary.

22 And we're trying to think about how to

1 do this, right? We don't think that there is a
2 mechanism today for this to take place. One of
3 the mechanisms we think where the private sector
4 interacts really well with the government is the
5 CSMAC. So, we're looking at that and trying to
6 come up with ways based upon that or somehow
7 taking off of that to create some kind of
8 continuing forum for interaction between the
9 private sector and the government.

10 MS. MANNER: Thanks.

11 MR. HARRIS: And I wish our ideas were
12 better formed but we really are working on this
13 stuff day to day.

14 MS. MANNER: I guess anyone on the
15 phone, any members on the phone who would like the
16 floor. Antonio, is there anyone asking for the
17 floor?

18 MR. RICHARDSON: Give me one second,
19 please.

20 MS. MANNER: Yeah, please.

21 MR. RICHARDSON: Did you say Paul? Paul
22 Margie.

1 MS. MANNER: Paul, please go ahead.

2 MR. RICHARDSON: Unmute.

3 MS. MANNER: Paul?

4 MR. HARRIS: Yeah, I'm not answering any
5 questions from him. (Laughter) That scares me.

6 MS. MANNER: Anyone else, Antonio, or
7 can we move on to public comment?

8 MR. RICHARDSON: Are we all lit up to
9 the public now?

10 MS. MANNER: Yeah, so let me first thank
11 Scott for taking those questions and thank you,
12 Jennifer, for keeping us honest (inaudible).
13 Yeah, now I guess we'd like to open up the floor
14 for any public comments.

15 MR. RICHARDSON: Okay, the phones are --
16 say your name again, please?

17 MR. KENNEY: Yes, Ken Kenney. Our
18 question for Carol is on her I think, Carol, in
19 your Slide number 12 you're using the acronyms TN
20 and NTN, what do those stand for?

21 MS. KAHN: Sure, it stands for
22 terrestrial networks and non-terrestrial networks.

1 MR. KENNEY: Gotcha, thanks a lot.

2 MS. KAHN: Sure, thanks.

3 MS. MANNER: Thank you, Ken. Antonio,
4 anyone else?

5 MR. RICHARDSON: Anyone else from the
6 public, questions? Anyone?

7 MS. MANNER: I have someone in the room
8 who wants the floor if possible. Oh, you're
9 trying to fix the microphone, okay. Same person.

10 MR. WELLER: Hello? How are you?

11 MS. MANNER: Bob Weller, please.

12 MR. WELLER: Since Scott is evading
13 questions, I thought I would ask one. There's
14 1,500 megahertz to be identified as part of the
15 national spectrum strategy identified through
16 study. Can you narrow the field from DC to
17 daylight, what sort of spectral range you're
18 talking about?

19 MR. HARRIS: I can but I won't.

20 (Laughter) I also want to say it's at least 1,500
21 that's sort of the minimum. If we can do more
22 than that for the first tranche, we will. But I'm

1 not in a position publicly to talk about the range
2 yet. I can say that we are looking at mid-band
3 spectrum among other spectrum.

4 MS. MANNER: Okay, thank you. So, any
5 other -- I don't see any other public comments.
6 Any other comments in the room especially for
7 Scott since he really likes them.

8 (Laughter) Okay. Well, with that
9 I want to say we've had a very
10 productive meeting. We're looking
11 forward tentatively to meeting
12 September 21st at the same time.
13 We still haven't confirmed that but
14 please at least put that tentative
15 plan on your calendar. And I think
16 Charla and I are very much looking
17 forward to the next meeting and the
18 progress has just phenomenal. So,
19 thank you all for all your hard
20 work. And with that I'll turn it
21 over to Charla for a final five.

22 MS. RATH: Yeah, sure. Thank you,

1 everyone. It has been certainly challenging and
2 interesting work from each of the subcommittees.
3 I don't think I've ever been with a CSMAC where
4 we've had so many subcommittees doing so many
5 interviews at the same time. It seems it's very
6 challenging. So, but I appreciate that, you know,
7 how that's going on.

8 And I continue to be in awe of the
9 dedication of everyone involved in the process.
10 There's just a great level of participation of
11 principals, which is really important in this.
12 But also, want to thank the NTIA liaisons, the FCC
13 liaison, subcommittee co-chairs, and of course,
14 our Designated Federal Officer sitting down there,
15 Antonio Richardson, who also happens to be a
16 liaison to one of the committees. And clearly is
17 our AV god too. So, I really don't know how you
18 do it all, Antonio, but we really do appreciate
19 it.

20 And, you know, I think we're all looking
21 forward to our next session in the fall where we
22 get a chance to review all the draft

1 recommendations. For those of you who are new
2 this committee, we've gone through it once. I
3 guess I have to give a shout out to Dennis and
4 Paul since, you know, they are also -- they've
5 already produced something which is terrific. And
6 looking forward to seeing the draft
7 recommendations in September. And again, you
8 know, our sincerest thanks for all the work that
9 you all put into this.

10 And I think with that we're done.
11 Unless, Jennifer, do you have something?

12 (Laughter) No, okay. Thanks, everybody.

13 (Whereupon, at 4:48 p.m., the
14 PROCEEDINGS were adjourned.)

15 * * * * *

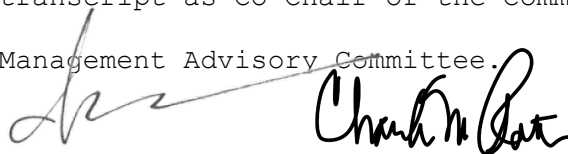
16 I Charla Rath and Jennifer Manner do hereby certify this
17 transcript as Co-Chair of the Commerce Spectrum
18 Management Advisory Committee.

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Handwritten signatures of Charla Rath and Jennifer Manner. The signature on the left is a cursive signature, and the signature on the right is a cursive signature that reads "Charla Rath".

1 CERTIFICATE OF NOTARY PUBLIC

2 COMMONWEALTH OF VIRGINIA

3 I, Kendra Hammer, 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

21

22

