

UNITED STATES DEPARTMENT OF COMMERCE

NATIONAL TELECOMMUNICATIONS &
INFORMATION ADMINISTRATION
OFFICE OF SPECTRUM MANAGEMENT

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COMMERCE SPECTRUM MANAGEMENT
ADVISORY COMMITTEE (CSMAC)

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MEETING

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FRIDAY

MARCH 18, 2016

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The Advisory Committee met in the
Wiley Rein Conference Center, 1776 K Street,
N.W., Washington, D.C. at 1:00 p.m., Larry Alder
and H. Mark Gibson, Co-Chairs, presiding.

PRESENT:

LARRY ALDER, Co-Chair
H. MARK GIBSON, Co-Chair
MICHAEL A. CALABRESE, Member
MICHAEL S. CHARTIER, Member
MARTIN COOPER, Member (by telephone)
MARK E. CROSBY, Member
THOMAS S. DOMBROWSKY, JR., Member
DAVID L. DONOVAN, Member (by telephone)
HAROLD FELD, Member
HAROLD FURCHTGOTT-ROTH, Member
DALE N. HATFIELD, Member
PAUL KOLODZY, Member
ROBERT KUBIK, Member
MARK A. MCHENRY, Member
JANICE OBUCHOWSKI, Member
ROBERT PEPPER, Member
CARL POVELITES, Member
CHARLA RATH, Member
RICHARD L. REASER, JR., Member
JEFFREY H. REED, Member
DENNIS A. ROBERSON, Member
MARIAM SOROND, Member
BRYAN TRAMONT, Member (by telephone)
JENNIFER WARREN, Member

ALSO PRESENT

LAWRENCE E. STRICKLING, Assistant Secretary of
Commerce for Communications and Information,
Department of Commerce
PAIGE R. ATKINS, Associate Administrator, Office
of Spectrum Management, National
Telecommunications and Information
Administration, U.S. Department of Commerce
MATTHEW HUSSEY, Associate Chief of Policy,
Office of Engineering and Technology,
Federal Communications Commission

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

2 1:00 p.m.

3 CO-CHAIR GIBSON: Good afternoon,
4 everyone. Welcome to the March 18th CSMAC
5 Meeting. I will say it again.

6 The agenda has this being kicked off
7 with remarks from Larry Strickling, so without
8 any further ado, I will turn it over to Larry. I
9 believe in an agenda.

10 MR. STRICKLING: Great. I hope
11 everyone has noticed Bruce Washington's tie this
12 afternoon. So we want to -- yes, we want a
13 hearty "Go Terps!" for this afternoon, and
14 somebody I assume will be providing us every 15
15 minutes with score updates from inside the Wiley
16 Conference Center? We'll see what we can do in
17 that regard.

18 But welcome, and thanks for all of you
19 to come out even on a -- on a typical TV-viewing
20 afternoon to spend your time here on CSMAC. But
21 we know how important this issue is, even during
22 March Madness, and I'm glad everyone was able to

1 get over here this afternoon.

2 I wanted to give you an update on a
3 few things. First off, for each of you, all of
4 you have now been reappointed to the CSMAC for
5 another six-month term. You will remember that
6 we decided to extend everyone's term to get
7 through the current work cycle.

8 Shortly, we will be releasing the
9 solicitation, the invitation for people to sign
10 up for the next version of CSMAC, and so we'll
11 let all of you know when that comes out, and I
12 encourage all of you who are interested in
13 continuing on to be sure to come back and reapply
14 through that process, and I think the goal is to
15 have that team constituted, ideally, before the
16 end of this year, and up and running.

17 But we'll see how things play out over
18 the course of the summer and fall. But be
19 looking for that notice, and again, we'll make
20 sure that that information is supplied to you
21 when it's filed.

22 Also in that regard, with respect to

1 administrative details, I am very pleased to
2 announce that Dave Reed, who is heading up our
3 Spectrum Policy Division, has now been designated
4 by me as the Designated Federal Officer for
5 CSMAC, so Dave, I think people know you, but
6 stand up and be recognized. I think folks know
7 he has a -- you know, people would have spotted
8 you sooner if you had followed Bruce's lead and
9 worn a Terp tie, but we'll -- we won't beleaguer
10 that issue.

11 Anyway, Bruce is still going to stay
12 involved and help transition Dave into the new
13 position, so I would also ask that everybody
14 recognize Bruce for his years of service with a
15 nice round of applause.

16 (Applause.)

17 MR. STRICKLING: In terms of other
18 events, I think folks know we're still working to
19 implement the Spectrum Pipeline Act. We're
20 looking forward to some of the first applications
21 from agencies for monies from the Spectrum
22 Relocation Fund to help them better understand

1 and better prepare for accommodating commercial
2 broadband services in their spectrum, and so
3 we're looking forward to getting some of those
4 first applications through the process this year.

5 Congress has been active,
6 notwithstanding the Spectrum Pipeline Act being
7 enacted last year. The Senate Commerce Committee
8 just last week passed out from committee the
9 Mobile Now Act, which has a comprehensive set of
10 provisions regarding Spectrum, including their
11 effort to tailor the President's 500 megahertz
12 broadband goal.

13 It calls for some studies on certain
14 bands -- is this a score update coming in, Mike?
15 Yes, Syracuse now down to Dayton I guess.

16 I -- on the 500 megahertz goal,
17 Chairman Wheeler and I have been talking about
18 what we can do to try to be able to announce
19 before the end of the year that we have
20 identified 500 megahertz a spectrum to meet the
21 President's goal, and we'll be updating people
22 over the upcoming months in terms of how we do

1 that, but I would just say now that we'll get
2 this done only with the cooperation of industry,
3 so I hope all of you are able to help support
4 these efforts, particularly in the two bands and
5 five gigahertz that are of great interest for
6 unlicensed use.

7 But this is an area where industry
8 support will help us greatly in terms of getting
9 our analyses and testing conducted this year to
10 hopefully be able to reach some conclusions on
11 those bands before the end of this year.

12 In that regard also, we will hear more
13 today from Matt on the FCC's Frontiers
14 proceeding, Spectrum Frontiers proceeding, but
15 that is a very important proceeding for this year
16 as we look at how to -- the FCC in particular,
17 with support from us, how to meet the needs of
18 the new 5G services.

19 Throughout all of this, CSMAC will be
20 an important component in terms of providing
21 advice to us and providing guidance to us as to
22 how to navigate through the -- these very

1 important issues, so I am looking forward today
2 to hearing your latest set of recommendations and
3 issues based on the questions that you've been
4 working on.

5 And with that, I will turn it back to
6 the Co-Chairs to get going on that. Thank you.

7 CO-CHAIR GIBSON: Thanks Larry.

8 The only opening remark I'd like to
9 make is to thank Tom and the folks at Wiley Rein
10 for hosting us yet again for CSMAC. It's nice to
11 be at a place where we can eat at the table, so
12 take advantage of the food there. Not that NTI
13 is not a great place to meet, but we can't have
14 food.

15 And I'd also like to say thanks for
16 all the work being done. I have been on most of
17 the calls, and there is a lot of work being done
18 behind the scenes to get to this place where we
19 are now, and then the recommendations at the
20 meeting in Boulder in July/August time frame, so
21 thanks to everybody for all the work they have
22 done.

1 I would also like to join Larry in
2 thanking Bruce for his work. I have really
3 enjoyed working with Bruce. He is, you know,
4 notwithstanding that great tie, he has really
5 been very helpful in making the load a lot
6 lighter, so thank you again to Bruce.

7 Other than that, Larry, do you have
8 anything?

9 (No audible response.)

10 CO-CHAIR GIBSON: Okay. So now we'll
11 do the roll call, which is always fun.

12 Let's start with Bob. We'll go
13 counterclockwise around the table, and then we'll
14 do the phone.

15 MEMBER PEPPER: Robert Pepper, Cisco.

16 MEMBER FURCHTGOTT-ROTH: Harold
17 Furchtgott-Roth, Furchtgott-Roth Economic
18 Enterprises.

19 MEMBER POVELITES: Carl Povelites,
20 AT&T.

21 MEMBER CHARTIER: Mike Chartier,
22 Intel.

1 MEMBER REASER: Rich Reaser, Raytheon.

2 MEMBER CALABRESE: Michael Calabrese,
3 New America.

4 MEMBER OBUCHOWSKI: Janice Obuchowski,
5 FTI.

6 MEMBER WARREN: Jennifer Warren,
7 Lockheed Martin.

8 MEMBER REED: Jeff Reed, Virginia
9 Tech.

10 CO-CHAIR GIBSON: Hang on a minute.
11 Stand by, Jeff.

12 So we need a little tutoring on how to
13 use the mics. If the red light is on -- cool.
14 All right, so be sure, when you -- just I'll say
15 this because I always do. Since you're saying
16 your name, just get used to that, so when you say
17 your -- when you ask your question, say your
18 name, or one of us will try to remember that. So
19 starting back again, go ahead, Jeff. Thank you.

20 MEMBER REED: Okay. This is Jeff
21 Reed, Virginia Tech.

22 MEMBER DOMBROWSKY: Tom Dombrowsky,

1 Wiley Rein.

2 MS. ATKINS: Paige Atkins, NTIA.

3 MEMBER ALDER: Larry Alder with

4 Google.

5 MEMBER GIBSON: Mark Gibson with

6 Comsearch.

7 MR. STRICKLING: Larry Strickling. Go

8 Terps.

9 (Laughter.)

10 MEMBER RATH: Charla Rath, Verizon.

11 MEMBER HATFIELD: Dave Hatfield,

12 University of Colorado.

13 MEMBER ROBERSON: Dennis Roberson,

14 Illinois Institute of Technology.

15 MEMBER SOROND: Mariam Sorond, DISH

16 Network.

17 MEMBER MCHENRY: Mark McHenry with

18 Shared Spectrum Company.

19 MEMBER CROSBY: Mark Crosby,

20 Enterprise Wireless Alliance.

21 MEMBER KUBIK: Rob Kubik, Samsung.

22 MEMBER FELD: Harold Feld, Public

1 Knowledge.

2 CO-CHAIR GIBSON: Go ahead Matt.

3 MR. HUSSEY: Matthew Hussey, FCC.

4 CO-CHAIR GIBSON: Cool. And then what
5 I'd like to do, I'll call the names of the CSMAC
6 members that are not here to see if you're on the
7 phone. So is Marty Cooper on the phone?

8 MEMBER COOPER: Yes I am.

9 CO-CHAIR GIBSON: Hey Marty. Thank
10 you.

11 Dave Donovan?

12 MEMBER DONOVAN: Yes I am.

13 CO-CHAIR GIBSON: All right. Thank
14 you.

15 Kurt, are you going to make it?

16 (No audible response.)

17 CO-CHAIR GIBSON: I think Kurt is ill,
18 yes, so and then finally Bryan Tramont. Bryan,
19 are you on the phone?

20 MEMBER TRAMONT: Yes I am.

21 CO-CHAIR GIBSON: Great. Are there
22 any CSMAC members on the phone that I may have

1 missed? There shouldn't be.

2 (No audible response.)

3 CO-CHAIR GIBSON: Okay, cool.

4 Now what we'll do is we'll run around
5 the outside of the room for visitors, starting
6 back there in the corner with Paul.

7 (Off microphone introductions.)

8 CO-CHAIR GIBSON: Anybody I missed?

9 (No audible response.)

10 CO-CHAIR GIBSON: Okay. Everybody
11 else is working the meeting, so great.

12 Any -- I'd like to -- again, Matthew
13 Hussey is here representing the FCC, and he will
14 have a little bit of a brief. Are there any
15 other visitors I should mention?

16 (No audible response.)

17 CO-CHAIR GIBSON: If you're a visitor
18 that I should mention, let me know.

19 (Laughter.)

20 CO-CHAIR GIBSON: Okay. Having -- I
21 think we're through the --

22 PARTICIPANT: Paul Kirby?

1 CO-CHAIR GIBSON: Yes, there's Paul
2 still, yes, right. Careful.

3 So now we're at the OSM update, so
4 we're already 15 minutes ahead. Go ahead, Paige.

5 MS. ATKINS: Paul, thanks.

6 (Laughter.)

7 MS. ATKINS: Just kidding.

8 CO-CHAIR GIBSON: Just think about the
9 game.

10 MS. ATKINS: So we were hoping our
11 efforts would have slowed down a little bit over
12 the holidays, and that didn't happen, which is
13 actually a good thing because it shows and
14 reaffirms the important interest in visibility
15 that Spectrum has across the -- speak up? --
16 across the legislative and executive branches and
17 industry at large.

18 We're making progress on all fronts,
19 and as CSMAC -- or as Larry said, CSMAC has
20 played a key role in our success and will
21 continue to do so. Still not loud enough? Okay.

22 And I wanted to say thank you to all

1 the members around the table -- is that better,
2 Pepper?

3 MEMBER PEPPER: Yes.

4 MS. ATKINS: Okay -- for your
5 dedication and support. You know, being on a
6 federal advisory committee is not a very
7 glamorous job, and I do appreciate folks
8 volunteering their time and participating and
9 engaging across these important issues. It
10 really helps us do a better job, so thank you to
11 everyone in this room and on the phone. And we
12 sincerely appreciate your commitment and the
13 collective wisdom that we're deriving from these
14 discussions.

15 Now at our last meeting, we spent some
16 time discussing the actions that NTIA had
17 identified in response to the recommendations
18 during the last cycle, and we finalized some new
19 actions that we're in the process of either
20 initiating or will initiate in the future.

21 This session, we're going to focus on
22 the current set of questions, and that will be an

1 initial discussion to a large degree on some of
2 the preliminary recommendations coming out of the
3 subcommittees, and we're hoping to have a really
4 robust dialogue as we move into the next meeting,
5 where we're hoping to have the final
6 recommendations presented and approved by the
7 membership here.

8 So I want to remind everybody, we're
9 on a compressed schedule, and that was on
10 purpose, because we want to be able to close out
11 these current set of questions as we move into
12 the new term, and as Larry said, we'll be
13 soliciting nominations for new members. I know
14 many of you will be back, but we wanted to wrap
15 these questions up before we bring new members
16 into the fray, and then we will address a new set
17 of questions at that time.

18 And the -- the key for bringing in the
19 final recommendations and approving them at our
20 next meeting in May is that will give us the
21 following meeting in August to do something
22 similar that we did with the last cycle where

1 NTIA will tell you what we're going to do in
2 response to those recommendations and have that
3 dialogue before we close out this term.

4 Now given this timeline, and I've said
5 this before, but it will be very important to
6 prevent scope creep and to focus on the questions
7 at hand and on practical -- practical and
8 actionable recommendations so for the ones that
9 we will accept we can move forward relatively
10 quickly based on resources and priorities.

11 Now, those actions may include topics
12 that you think are critical to tee up for the
13 next cycle within CSMAC, and that is okay as
14 well. But if we can focus on NTIA actions, that
15 would be preferable, but also teeing up actions
16 for the next CSMAC cycle may be relevant since
17 we're in a compressed cycle right now.

18 So before we dive into the
19 subcommittee updates and the deliberation around
20 the preliminary recommendations, I want to give
21 you a quick update as I normally do on Spectrum
22 activities, and I am pleased to have Matthew here

1 as our FCC liaison who will go after me and give
2 an update based on the FCC perspectives and
3 activities that are ongoing, so we appreciate
4 your participation, Matthew.

5 So the first item I wanted to touch on
6 is just to reaffirm that NTIA and the agencies
7 are very focused on continuing a successful
8 transition for AWS-3. Formal coordination, as
9 you know, started the beginning -- end of
10 October, beginning of November, with the
11 coordination portals going live for both the 1755
12 to 1780 MHz band as well as the 1695 to 1710 MHz
13 band.

14 The most intensive activity has been
15 on 1755 to 1780, which we expected. And there
16 have been over 150 coordination requests
17 submitted to date, so quite a lot of activity,
18 and I think things are progressing, and there's
19 good dialogue between the licensees and the
20 agencies that are involved, so I appreciate that.

21 And as you know, CSMAC played a
22 critical role to get us to where we are, and that

1 is important not only for setting the stage for
2 successful AWS-3, but it also was important in
3 terms of solidifying and strengthening the
4 collaboration between industry and the
5 government.

6 Now at the last meeting, we also had
7 an update on the World Radio Conference for 2015,
8 and it was a pretty extensive update since the
9 conference had just closed. During the last
10 meeting, we still had people in Geneva, and that
11 was for the conference preparatory meeting for
12 2019.

13 As I think most folks know, this is
14 like a Spectrum Olympics. Even though there is a
15 culminating event, you know, there is a four-year
16 intensive cycle leading up to it, and it starts
17 immediately after the last conference.

18 So I can assure you that the
19 conference for -- or the preparatory activities
20 for WRC '19 are under full swing, and that
21 includes the completion of the first
22 international meeting of Working Party 5D, and

1 for those not familiar with 5D, that is focused
2 on international mobile telecommunications, so
3 wireless broadband, which is very important to
4 all of us at the table as -- as consumers and
5 citizens.

6 And a reminder, for WRC '19, the focus
7 for IMT predominantly millimeter wave bands, so
8 very aligned with our -- our topic of looking at
9 unique challenges with 5G here and actions we
10 should take to facilitate success I'll say.

11 Now I did want to take a moment and
12 talk a little bit about 5G and my observations,
13 and this includes many meetings that we've had
14 over the last few months as well as the Spectrum
15 Frontiers Workshop that FCC hosted last Friday, I
16 believe.

17 But G5 is not one thing, and I think
18 that is important to realize. It is envisioned
19 as a breadth of technologies, an ecosystem of
20 capabilities that will satisfy a very diverse set
21 of requirements and require a very diverse set of
22 characteristics and capabilities to satisfy those

1 requirements.

2 And as we all know, all spectrum is
3 not equal, so you have to apply it appropriately
4 in those conditions. And as such, and we've
5 talked about this here and in many of the forums
6 that I have attended, you need a mixture of low,
7 mid, and high bands to satisfy this ecosystem of
8 -- of 5G.

9 One thing we have heard consistently
10 over the last few months from industry is that a
11 key gap is at the higher bands, and not that you
12 don't think you need more at the low and mid, but
13 one of the key gaps is at the higher bands, and
14 that at this time, technology has matured enough
15 that it could be leverage for things that we
16 wouldn't have even imagined a few years ago, so
17 the timing is right.

18 And we are very excited about Spectrum
19 Frontiers, not only to fill that gap that
20 industry has identified, but to offer even more
21 opportunities for a mix of licensed and
22 unlicensed use spectrum sharing among industry as

1 well as between federal and non-federal users,
2 and potentially dual-use technologies, and that
3 is really to better satisfy both public and
4 private sector requirements.

5 Several of the questions this cycle,
6 to include 5G, will inform both domestic and
7 international activities. I talked about Working
8 Party 5D a little earlier, but there are multiple
9 topics that we're addressing to include the
10 sensing and measurement focused on 5 GHz. 5 GHz
11 is another topic that we're focused on
12 internationally.

13 So a lot of the advice that we're
14 getting here is important not just domestic, but
15 as we look at our international activities. And
16 we'll look forward to Matthew talking more about
17 Spectrum Frontiers specifically in a few minutes.

18 Now as we look toward spurring
19 innovation, the NTIA and the FCC's Office of
20 Engineering and Technology are drafting a joint
21 public notice inviting proposals for
22 participation in the new Model City Program, and

1 this initiative builds on the President's Council
2 of Advisors on Science and Technology, PCAST, as
3 many of you know, their recommendation that the
4 Secretary of Commerce establish a public/private
5 partnership to facilitate the creation of an
6 urban test city that would support real-world,
7 rapid experimentation and development of
8 policies, technologies, and system capabilities
9 for advanced and preferably dynamic spectrum
10 sharing.

11 The goal of the PCAST report, the
12 Model City Program is intended to bring together
13 forward-thinking cities with key wireless
14 innovators from industry, academia, and all
15 levels of government to demonstrate, evaluate,
16 and advanced spectrum-sharing technology and
17 policy solutions needed to increase spectrum
18 access and grow wireless services and
19 applications, and wireless being I'll say a
20 broad, encompassing wireless description, not
21 just wireless broadband specifically.

22 And we think the model city will act

1 as a catalyst and accelerator for advanced
2 spectrum sharing technology by providing greater
3 scalability of deployment trials than is possible
4 with indoor labs, anechoic chambers, or limited
5 testing environments, even outdoor environments.

6 And real world applications at real
7 world scale, and in challenging urban
8 environments in particular, will enable
9 examination of the technical, policy, and
10 institutional mechanisms needed for realizing the
11 potential of these spectrum-sharing technologies,
12 so we think this is a key enabler for the future,
13 and we are really excited about that, so you
14 should be seeing this joint public notice in the
15 I'll say near term, next few weeks we anticipate
16 it being out.

17 And just for a little bit of
18 background, this follows an initial joint public
19 notice that was published last year seeking
20 comment on the creation of the model city as well
21 as an NTIA and FCC workshop that was held last
22 year as well, so we have taken that input and

1 have integrated that into this next public notice
2 that will be going out.

3 And we did have quite a bit of
4 interest in the first public notice and the
5 workshop, so we think we will garner quite a good
6 participation when we go out for proposals.

7 So Larry mentioned the Spectrum
8 Pipeline Act, and we talked about that a little
9 bit last time. As Larry mentioned, this is a
10 great step forward. It gives us more flexibility
11 to apply SRF funds to advance spectrum planning
12 as well as research and development in support of
13 making additional spectrum available for
14 commercial access, so that is all good.

15 We are moving very quickly to put
16 mechanisms in place so we can execute against the
17 provisions of the Pipeline Act. That includes
18 recently updating our regulations. So the
19 technical panel who will receive the proposals
20 and approve the proposals as appropriate, they
21 will be ready and in a position to start
22 accepting these nearer term, and that will be

1 over the next few weeks as well, so we're looking
2 forward to that.

3 And as -- as Larry also mentioned, it
4 isn't over. There's still a lot of congressional
5 interest as we've seen with the Mobile Now Act
6 and other activities, so we are obviously
7 watching and engaged in those discussions.

8 So last but not least, I want to
9 highlight that we will be publishing our sixth
10 interim progress report on the ten-year plan, and
11 I don't know if folks are familiar with our
12 interim progress reports. This reports describes
13 the annual progress toward achieving the
14 administration's goal to identify and make
15 available 500 MHz of federal and non-federal
16 spectrum by the end of 2020.

17 And this is a -- though it's an NTIA
18 report, it is very closely coordinated with the
19 FCC, obviously, as well as the federal agencies.
20 And as we've discussed in prior meetings, we are
21 about halfway there, 245 MHz at this time, and we
22 are very confident that we'll reach the goal by

1 the end of 2020.

2 Now this report identifies the related
3 major activities and accomplishments for the
4 prior year as well as the initiatives being
5 pursued for the future year, and it's -- the
6 timing, as you can imagine, it takes us a little
7 while to get the report out, so it will be
8 somewhat skewed on dates, so keep that in mind as
9 you read it, but it's a great summary of what is
10 occurring and the progress we continue to make.

11 It also includes the running tally
12 that we have, and that is in terms of bands that
13 are made or have been made available, those that
14 are in the queue, to include things like the
15 incentive auction as well as those that are
16 currently under study, so that is laid out in
17 this in-progress review or report as well.

18 And if you haven't had a chance to see
19 one before, they are all posted on our website.
20 This one will go up once it is published, and I
21 encourage you to read it and read each one as it
22 comes out.

1 And again, I can't emphasize enough
2 that this represents collective progress. It is
3 not just NTIA's activities, but FCC's and the
4 agencies' as we work this goal as a team.

5 Now there are many other efforts. I
6 could go on probably another few minutes, but I
7 am not going to. I'd like to go ahead and turn
8 the floor over to my colleague, Matthew Hussey,
9 to give us an update on some of the FCC
10 activities and priorities at this point in time.
11 Thank you.

12 MR. HUSSEY: Thank you, Paige.

13 CO-CHAIR GIBSON: Hang on a minute, I

14 --

15 MS. ATKINS: Oh, do you want
16 questions?

17 CO-CHAIR GIBSON: Well yes.

18 MS. ATKINS: Oh yes, sure.

19 CO-CHAIR GIBSON: So are there any
20 questions?

21 Yes, Jennifer.

22 MEMBER WARREN: Hi Paige. Jennifer

1 Warren.

2 On the model city, do you expect it to
3 also allow for testing of the bidirectional
4 sharing?

5 MS. ATKINS: Absolutely.

6 MEMBER WARREN: Okay.

7 MS. ATKINS: Yes.

8 MEMBER WARREN: Thank you.

9 MS. ATKINS: Yes, it is spectrum
10 sharing in general, and it may also include
11 sharing not only between federal and non-federal,
12 both ways, it could be non-federal against non-
13 federal, you know, commercial-to-commercial,
14 federal-to-federal, so it's absolutely open in
15 terms of really demonstrating and accelerating
16 sharing technologies that then we can quickly
17 implement, or as quickly as possible.

18 MEMBER WARREN: Thanks.

19 CO-CHAIR GIBSON: Actually, I had a
20 question.

21 Do you -- do you expect also to
22 entertain testing for things like spectrum access

1 systems and that type of thing as well?

2 MS. ATKINS: Yes --

3 CO-CHAIR GIBSON: Okay.

4 MS. ATKINS: -- again, spectrum
5 sharing --

6 CO-CHAIR GIBSON: Okay, cool.

7 MS. ATKINS: -- so anything that
8 enables us to get to a better end state related
9 to spectrum sharing.

10 CO-CHAIR GIBSON: Thanks. Okay, any
11 other --

12 MS. ATKINS: And these -- I'll also
13 add, so the model city activities is not just
14 about the technology, it's also about processes,
15 policies. We want to use this to inform how we
16 institutionalize, to include things like
17 enforcement.

18 CO-CHAIR GIBSON: Okay.

19 MS. ATKINS: Can we use this as an
20 experimentation test bed for enforcement as well
21 as, again, feed our policy development?

22 CO-CHAIR GIBSON: Okay, great.

1 Any other questions for Paige on the
2 report?

3 MEMBER ROBERSON: Really don't want to
4 make this a model city discussion, but I think
5 there really are a lot of questions around the
6 model city. Given that it's a coordination
7 activity, there's effectively no funding involved
8 in it, and it's very hard to see how it's
9 actually going to proceed.

10 The cities were really expecting some
11 money to flow, and in the absence of money, I am
12 seeing -- and I talked to not only Chicago, but
13 other cities' representatives in Boston and so
14 on, and their interest has really declined given
15 that there's no money, so --

16 MS. ATKINS: Okay. And I will confirm
17 there is no money.

18 MEMBER ROBERSON: Yes, yes.

19 (Laughter.)

20 MS. ATKINS: But -- and not that there
21 may not be other funding vehicles to fund certain
22 elements, but based on the feedback that I've

1 gotten, I think there is still a lot of interest,
2 and folks are potentially ready to come forward
3 with I'll say collaborative teams --

4 MEMBER ROBERSON: And maybe we can
5 talk off the record.

6 MS. ATKINS: Okay, yes. But part --
7 part of this public notice is to solicit
8 proposals, and we'll have to see what that looks
9 like, and that will help shape how we move
10 forward.

11 CO-CHAIR GIBSON: All right. Thanks.
12 Any other questions for Paige on her report, and
13 whatever?

14 (No audible response.)

15 CO-CHAIR GIBSON: Okay. One thing,
16 just for the purposes of the roll call, Paul
17 Kolodzy is now with us. He waves.

18 Okay. Matthew, thank you very much
19 for waiting.

20 MR. HUSSEY: Sure, certainly.

21 So I'll just give a brief overview on
22 three particular areas of interest: the

1 activities of the TAC, 3.5 GHz, and then also
2 Spectrum Frontiers.

3 The timing is pretty good here given
4 that last week, the FCC held its first TAC
5 meeting of 2016, and some of the items discussed
6 included the FCC implementation of past
7 actionable recommendations, also current progress
8 of TAC work initiatives, and then also kind of
9 some of the 2016 goals for the working groups.

10 And just -- Julie kind of highlighted
11 some of the activities that the FCC, in taking
12 the actionable recommendations -- just to give
13 you an idea, for 2015, there were over 40
14 recommendations from the TAC alone, just for
15 2015, and so it touched on a lot of areas
16 including, you know, activities and initiatives
17 in unlicensed spectrum use, cybersecurity, mobile
18 device theft prevention, and then also future
19 technologies including Game-Changing as well as
20 3.5 and Spectrum Frontiers. So there has
21 certainly been a significant impact that the TAC
22 has made on the work that the FCC has moved

1 forward with.

2 And then in regards to the TAC working
3 groups, I will just touch, highlight, you know,
4 highlight a few of them.

5 Obviously the Mobile Device Theft
6 Prevention, it's pretty straightforward what
7 they're focusing on. Some of the key activities
8 for 2016 will be really focusing on next-gen --
9 exploring next generation anti-theft features,
10 and then also how to kind of look into more
11 effective consumer outreach efforts and education
12 on mobile device theft prevention.

13 Cybersecurity, another working group,
14 kind of one of the areas it's really focusing on
15 is G5 security, and I think the plan for them
16 moving forward in 2016 is really looking,
17 exploring and possibly drafting a set of key
18 security principles that could be implemented
19 into the standards development process for 5G,
20 primarily high-priority Internet of Things
21 applications, and that's expected to be produced
22 in the summer of 2016.

1 The Next Generation Internet Working
2 Group is focusing on a couple different areas,
3 primarily exploring the measurement of quality of
4 service; encryption, which has obviously been a
5 very big issue recently, both in the industry and
6 on the Hill; and then also internet efficiency.

7 The Future Game-Changing Technologies
8 is really looking to kind of identify the
9 technical challenges in developing 5G and what
10 can be done -- be done to ensure the rapid
11 deployment in the U.S. They are planning several
12 white papers on 5G adoption and programmable
13 networks for 2016.

14 Then also, a new working group, the
15 Mass Deployment of Aeronautical and Space
16 Transmitters, that working group is really
17 looking at spectrum and interference analysis,
18 and is -- also a goal for 2016 is to develop a
19 framework and recommendations for spectrum
20 allocation and spectrum coexistence given, you
21 know, the just explosion of popularity of drones
22 and other type of aeronautical radio

1 transmitters.

2 And then finally, the Spectrum and
3 Receiver Performance working group is focusing on
4 recommendations to improving access to and making
5 efficient use of radio spectrum. That has kind
6 of been the main mission of that working group
7 since the onset. And two of the goals are really
8 to continue to develop recommendations on next-
9 generation systems, architecture for radio
10 spectrum interference resolution, which is near
11 and dear to a particular member on the CSMAC
12 here.

13 And then also, they are planning to
14 conduct analysis and make recommendations related
15 to risk assessments and the statistics of
16 interference in a rapidly changing RF
17 environment.

18 And if you want to look at the
19 presentation in more detail or the actual TAC
20 meeting itself, it is video archived on the FCC
21 TAC website.

22 And now moving on to the 3.5 GHz.

1 Currently, the second report and order on
2 reconsideration is currently on circulation on
3 the eighth floor. The Wireless Bureau and OET
4 held a 3.5 GHz SAS workshop last month with
5 prospective SAS administrators and environmental
6 sensing capability operators to discuss the
7 proposal submission process and address any
8 questions that the participants had.

9 In December, the Commission, as many
10 of you might know, the Commission released a
11 public notice announcing the application window
12 for the first wave proposals. Those applications
13 are "due," and I do that in quotes, April 15th.
14 And I do it in quotes because even though April
15 15th is kind of a deadline, it's a soft deadline
16 in the sense that applications will continue to
17 be accepted, but priority will be given to those
18 proposals that are submitted prior or on that
19 date of April 15th.

20 And the -- obviously, the FCC will
21 consult with NTIA and DoD with applications as it
22 does consider them and moves forward with those

1 applications.

2 And -- and then the next one, the next
3 steps that was planned, so for applicants that do
4 meet the requirements which were outlined in the
5 December public notice, those applicants will
6 then be invited to bring in their systems to demo
7 and to be evaluated, and that will be determined
8 on the process of how that will be accomplished.

9 So now moving on to the Spectrum
10 Frontiers: the Commission adopted its Spectrum
11 Frontiers NPRM in October 2015, which proposed
12 new rules for flexible use services in
13 frequencies above 24 GHz, and that includes
14 specifically service rules for 28 GHz, 37 GHz, 39
15 GHz, and then also 64 to 71 GHz spans.

16 The Office of Engineering, or OET,
17 excuse me, and the Wireless Bureau as well as the
18 International Bureau, hosted a workshop exploring
19 the concepts raised in the Commission's NPRM,
20 actually, just last -- last week, on March 10th,
21 and there was a lot of really interesting
22 discussions regarding that and the state of

1 technical developments in the millimeter wave
2 band.

3 One thing that should be reiterated
4 that the chairman has been pretty vocal on and
5 insisted on saying is that the Commission's
6 intention is to create a flexible framework that
7 will allow technologies to evolve, and in
8 addition, a further notice of proposed rulemaking
9 and rules will be -- are expected to be
10 considered this summer by the commissioners and
11 chairman.

12 And -- and then also, I think Paige
13 requested that, given that we have just a minor
14 auction coming up at the end of this month, to
15 read an anti-collusion statement, so I'll start
16 that statement right now:

17 "All participants in today's meeting
18 are reminded that the FCC's anti-collusion rules
19 are in effect for companies that have submitted
20 short-form applications for the 600 MHz auction.
21 Accordingly, any discussions that take place must
22 not involve any disclosure directly or indirectly

1 of bids, bidding strategy, or the post-auction
2 structure of the 600 MHz market. For additional
3 guidance, please consult with your own counsel."

4 So thank you. I am happy to answer
5 any questions, or attempt to, at least.

6 CO-CHAIR GIBSON: Thanks for leaving
7 us with that final statement.

8 So are there any questions for
9 Matthew?

10 Oh, Harold.

11 MEMBER FELD: I did have a question.
12 Maybe you're not somebody who can advise on this.
13 Maybe it's more of an OGC question, or a Wireless
14 Bureau question.

15 But with regard to that last statement
16 -- excuse me -- not as a participant in the
17 auction by any means, but as somebody who does
18 advocacy work on a number of related matters,
19 does discussion of advocacy regarding either the
20 issues that are still live in the TV white space
21 or overall auction present an issue with regard
22 to the non-disclosure rules, just so that we

1 don't talk to people we shouldn't be talking to?

2 MR. HUSSEY: I am not -- I can't
3 answer that --

4 MEMBER FELD: Yes.

5 MR. HUSSEY: -- so certainly -- you
6 know, but we'll certainly reach out, work with
7 you to talk with OGC --

8 MEMBER FELD: Thanks.

9 MR. HUSSEY: -- to answer that
10 question.

11 MEMBER FELD: Thank you.

12 CO-CHAIR GIBSON: Yes, I think since
13 Matthew can't answer that, I think that goes back
14 to the final point he made, contact your counsel.

15 (Laughter.)

16 MEMBER FELD: I am my counsel.

17 (Laughter.)

18 CO-CHAIR GIBSON: Well you know what
19 they say about a lawyer who has his own counsel.

20 MEMBER FELD: I think it's totally
21 okay.

22 (Laughter.)

1 CO-CHAIR GIBSON: I'm not going there.
2 Okay. Now we're back to the -- to the
3 meeting.

4 All right, Matthew, thank you, and
5 thank --

6 MR. HUSSEY: Sure.

7 CO-CHAIR GIBSON: -- you Harold for
8 your question. Any other questions for Matthew?

9 (No audible response.)

10 CO-CHAIR GIBSON: So I think based on
11 Matthew's feedback, let's just keep it within the
12 NTIA.

13 Okay. I think for that, we're ready
14 to go to the committee out briefs. Gary?

15 CO-CHAIR ALDER: But before we get to
16 the committee updates, so we've got today five
17 subcommittees that are going to be reporting, and
18 as Paige mentioned, our goal is to present draft
19 recommendations, and I think many of the
20 committees have achieved that and produced draft
21 recommendations.

22 This is really the meeting to have a

1 substantive discussion, so we've allowed quite a
2 bit of agenda time for that discussion. Get the
3 points out on the table, and then the hope is
4 that in the next meeting, which is scheduled for
5 May, exact date to be determined, we will have
6 final recommendations.

7 So again, this is kind of a great time
8 to get the full committee input. So I am going
9 to chair this part of the working group because
10 my colleague Mark has been doing yeoman's work
11 actually attending almost every subcommittee
12 meeting, which is -- I can't even get my head
13 around that.

14 So -- and I know he's going to have
15 lots of input, so I volunteered to chair this
16 meeting, and what we'll do is we'll start off
17 then with our first subcommittee, and so what
18 we're thinking is you have roughly 20 minutes, so
19 we're hoping that, you know, the chairs can give
20 an overview on the order of five minutes, we can
21 have about 15 minutes for robust discussion and
22 debate.

1 So we will start off with Federal
2 Access to Non-Federal Bands. I think Charla is
3 going to lead that.

4 MEMBER RATH: Thank you, Larry.

5 So rather than -- the first two pages,
6 we know the first page, it's a question that NTIA
7 asked us, and then the list of subcommittee
8 members. The meat begins on the third page.
9 Just wanted to review the progress we've made.

10 We've had a number of meetings, both
11 meetings of the subcommittee, which Mark did
12 attend I think every single one of them, but also
13 we had meetings with representatives of the
14 public safety community, and also with DoD's
15 CIO's office.

16 So that is what we've, you know, that
17 we've been doing to take a look at the series of
18 use cases that -- that we have before us.

19 The last meeting, what we mentioned to
20 everybody is we split them into, even though
21 there is, you know, there is some overlap among
22 them, but we -- we took those that dealt with the

1 public safety agencies and dealt with them
2 separately from the DoD's, and we have actually
3 -- the recommendations we have are right now only
4 recommendations on the public safety side because
5 we will be having another meeting with the CIO's
6 office.

7 We had -- you know, we received -- we
8 got the use case, had to go through some
9 additional efforts, so we really didn't even have
10 it until December and weren't able to meet the
11 first time with them until February.

12 So -- so the -- the next page is
13 basically the preliminary recommendations, and
14 what I'm going to do is Mark Crosby has been
15 instrumental in this for obvious reasons, and I
16 would like to turn it over to Mark to sort of
17 walk you through the recommendations and start
18 the discussion on this piece.

19 MEMBER CROSBY: Thank you, Charla.
20 This is Mark Crosby. Hope it's not that obvious
21 why I have to do this.

22 We -- and listen, there was great

1 feedback from all the members of the
2 subcommittee, so these preliminary
3 recommendations are a product of the
4 subcommittee, not just one or two people.

5 You know, I think to start, I think we
6 asked what are some typical use cases? And of,
7 you know, sharing or potential sharing or needs
8 for sharing, and we actually received some very
9 helpful use cases around DOT, DOE, DOJ, DOI, and
10 Tennessee Valley Authority, and there were some
11 very, very good requests for sharing.

12 But what we learned rather quickly,
13 the subcommittee, looking at this, is some of the
14 federal agencies were very good at and had
15 already secured and were operating under
16 memorandums of understanding with public safety
17 people, state, local, for a variety of
18 technologies.

19 And so they were like ahead of the
20 curve. There were other agencies that were
21 behind the curve. So saying, well how can we do
22 this? And so it was sort of interesting and sort

1 of, you know, it sort of comes to you quickly:
2 wouldn't it be great to have some sort of
3 reference document that embodies, you know, best
4 practices and procedures and instances of how
5 memorandums of understanding and other
6 collaborative arrangements could be worked out,
7 which we thought would be of a benefit to the
8 federal agencies?

9 So that was I think our first
10 recommendation, you know, some sort of book or
11 guidance or somewhere that they could find it and
12 go oh, wow, this has been done before, this is a
13 well-worn path, and I have this need, and let's
14 see if we can go down there, so that was the --
15 sort of our first recommendation.

16 Of course, the other recommendation,
17 so there's the next logical step: if you have all
18 these MOUs and other collateral arrangements,
19 there is a benefit to have, and there isn't -- I
20 don't think there's anyone now, at least we don't
21 think so -- to have a database of these
22 agreements where the feds are sharing with non-

1 federal public safety people, and I think there's
2 two purposes.

3 One, because if you're a federal
4 agency, you go oh, wow, this is one here, and
5 maybe I can join this collaborative effort, which
6 would save time, perhaps money, and maybe there's
7 some commonality on the solution. So that was a
8 good idea, you know, to have a database so that
9 they can see that.

10 And the reverse, the non-federal folks
11 who are coordinating non-federal systems in the
12 spectrum, it would be good to know where these
13 are before you do another public safety, or
14 before you certify or coordinate another entity
15 in an area that may be in the way of an existing
16 MOU between a federal agency and -- and a public
17 safety entity.

18 So to have a database, it is
19 beneficial for a variety of reasons, and -- but
20 it's not only to help the federal agencies, but
21 also to help the non-federal so they know where
22 they are, and so that you can protect them and

1 maybe, you know, actually promote -- for all we
2 know, someone could come in and go I need this,
3 and if you have the database, they go well, we
4 happen to know that there's already one there
5 between, pick one, DOE and, you know, the Wyoming
6 public safety community or state police. And so
7 there is this knowledge base that would
8 facilitate this type of sharing at these levels.

9 And of course then the third
10 recommendation after you have a reference
11 document and a database is, well, what's the next
12 logical step? And the next logical step is well,
13 do I have to do an MOU? Do I have to do an
14 agreement with a public safety entity, state,
15 local, or whatever? Can I get my own
16 authorization from the Federal Communications
17 Commission to use non-federal-government
18 spectrum?

19 Now I don't know whether that's a
20 bridge too far or not, but at this point, it's a
21 recommendation of the subcommittee that's been
22 raised by some of the federal agencies I think in

1 some of our discussions, is would it be possible,
2 and under what circumstances, could we perhaps
3 secure our own authority from the FCC to have a
4 federal agency system on the non-federal-
5 government spectrum?

6 And so that is briefly the three
7 recommendations we have at this point in time for
8 this type of sharing.

9 MEMBER RATH: What I was thinking is
10 then just to quickly say what our next steps
11 would be and then circle back to have any of the
12 subcommittee members who might want to add any
13 comments.

14 But just so you know, we did say that
15 we're going to have another meeting with the
16 CIO's office, DoD CIO's office. There also is a
17 short paper that we are working on. It is very
18 short, one- to two-page white paper that will
19 actually define the current process, and then,
20 you know, obviously the full draft
21 recommendations that would include the part
22 dealing with the DoD request as well.

1 Any comments or -- to come from,
2 first, what I'd like to do is just ask members of
3 the subcommittee first who were involved, any
4 comments specifically on what is here or wishing
5 to add any additional?

6 (No audible response.)

7 MEMBER RATH: Okay. No? Guess not.
8 Janice?

9 MEMBER OBUCHOWSKI: While these came
10 up in the context of public safety use cases,
11 bullet 1 very much addresses that, but bullets 2
12 and 3 potentially could apply to other kinds of
13 federal --

14 MEMBER RATH: Yes.

15 MEMBER OBUCHOWSKI: -- commercial
16 sharing, bi-directional sharing. But no, Charla,
17 I wanted to compliment you, as you and Audrey as
18 chairs, and also observe that, you know, when you
19 get into it, the federal/FCC relationship is
20 strong, and when you look at the specifics of
21 these kind of informal agreements, they happen,
22 but they're very personality-dependent.

1 And we did experience on these calls
2 with people discussing the use cases that to the
3 extent the individuals have been at it for a
4 while, they work these things out, but then some
5 of them were like on the phone saying, well,
6 really you can do that.

7 So some of this in bullet 1 is
8 transparency.

9 MEMBER RATH: Yes, and Janice, you're
10 referring specifically to the call that we had
11 with --

12 MEMBER OBUCHOWSKI: Well, we had
13 multiple --

14 MEMBER RATH: -- the agencies --

15 MEMBER OBUCHOWSKI: -- public --

16 MEMBER RATH: Yes.

17 MEMBER OBUCHOWSKI: -- safety --

18 MEMBER RATH: Yes.

19 MEMBER OBUCHOWSKI: -- individuals.

20 MEMBER RATH: Any other comments from
21 the -- I guess, yes. This is your meeting.

22 CO-CHAIR ALDER: Oh, keep going, I

1 mean you can go ahead, Charla.

2 MEMBER RATH: Yes.

3 CO-CHAIR ALDER: So we have a comment
4 from Rick Reaser here, I think he had a question
5 for non-committee-members?

6 MEMBER REASER: Rick Reaser. Who do
7 you think should maintain the database of these
8 MOUs? Have you thought about that? Should that
9 be like a third party, or is that the federal
10 government, or -- just curious.

11 MEMBER CROSBY: Mark Crosby. It ought
12 to be, if you're a federal agency, you ought to
13 be able to look at it through NTIA, and if you're
14 a non-federal, you ought to be able to look at it
15 through the FCC, so maybe there's one, and you
16 look at it from both -- you have the ability to
17 look at it no matter what side you're on.

18 I -- I would not -- well personally,
19 EW would not advocate more than one database,
20 right? Wouldn't be an advocate for that, that
21 would be a little messy.

22 MEMBER RATH: Harold?

1 CO-CHAIR ALDER: Is that good, Rick?
2 Okay. And Harold?

3 MEMBER FURCHTGOTT-ROTH: Harold
4 Furchtgott-Roth.

5 Thank you, Mark, for the presentation.
6 I just had a question of clarification on the
7 third point.

8 In the notes, it specifically says
9 look at whether a federal agency can hold an FCC
10 license. There's certain language to that
11 effect. And in your oral description, it was
12 more authorization. And I didn't know if there
13 was any magic or nuance between holding a license
14 and authorization, or --

15 MEMBER CROSBY: They are synonymous to
16 me, an authorization or a license. My day-to-day
17 vernacular, it's -- I use them as the same.
18 Perhaps for clarity, it would be better to say
19 license, perhaps, in this thing --

20 MEMBER FURCHTGOTT-ROTH: Which is a
21 much narrower --

22 MEMBER CROSBY: Yes.

1 MEMBER FURCHTGOTT-ROTH: -- concept.

2 MEMBER CROSBY: But again, I -- a lot
3 of other folks can weigh in on that.

4 CO-CHAIR ALDER: Michael?

5 MEMBER CALABRESE: I don't know that
6 we've discussed it, but yes, I was certainly
7 assuming we meant in that third preliminary
8 recommendation, you know, literally a license, in
9 other words, a right, because some form of
10 opportunistic sharing or use would be an entirely
11 different, you know, matter, yes.

12 MEMBER CROSBY: Of course.

13 CO-CHAIR ALDER: Dale?

14 MEMBER HATFIELD: You already know
15 what I'm going to say, so --

16 (Laughter.)

17 MEMBER HATFIELD: -- but --

18 CO-CHAIR ALDER: So say it clearly in
19 the microphone.

20 MEMBER HATFIELD: Yes. This is Dale
21 Hatfield.

22 Obviously, changing the bilateral so

1 the sharing goes the other direction raises
2 interference enforcement issues: who is
3 responsible for detecting interference or
4 remediating it and resolving it and so forth?

5 So that may be band-specific, of
6 course, but -- but nevertheless, it is something
7 we probably should think about earlier rather
8 than later.

9 CO-CHAIR ALDER: I had a question.
10 Charla, in your conversations with these folks,
11 what are -- can you summarize like some of the
12 key use cases that really came up? Is that easy
13 to summarize, or is it just too diverse?

14 MEMBER RATH: Actually, can I -- Mark,
15 can I refer you, too? Because you spent a lot of
16 time talking to them.

17 It struck me is they were very similar
18 --

19 MEMBER CROSBY: Day-to-day --

20 MEMBER RATH: -- across the board.

21 MEMBER CROSBY: -- day-to-day mission,
22 critical activities of agency personnel on the

1 street, on the road, in forests. You know -- you
2 know, the voice and data and I need a response
3 now, and it's like day-to-day blocking and
4 tackling of what they use, you know, to -- to
5 support their missions and their activities.

6 So it was very hands-on, very very,
7 you know, day-to-day, I need responses, and the
8 telecommunications systems provide that to us.

9 CO-CHAIR ALDER: And just as a quick
10 follow-up, and what bands -- what kind of non-
11 federal bands would they typically want access to
12 in order to fulfill that?

13 MEMBER CROSBY: Most of the requests
14 were 800, and -- and there were some at VHF,
15 which we said that's unlikely given the
16 difficulty with that band, but most of them were
17 800 and 700, and -- and there's a lot of
18 technology. It's a great band. It propagates
19 well for -- and there's a lot of -- of course the
20 other benefit is there's a lot of product being
21 developed at both 700 and 800, which helps
22 federal agencies as well.

1 CO-CHAIR ALDER: All right, Paul, I
2 think you had a question?

3 MEMBER KOLODZY: Yes, yes I do. Paul
4 Kolodzy.

5 When you saw some of these examples
6 that are going on, was there any distinction
7 between is it mostly in smaller areas or less
8 populated areas that we're able to make these
9 things, or did you actually see any examples that
10 were in highly populated areas?

11 MEMBER CROSBY: Both.

12 MEMBER KOLODZY: Both, that is
13 excellent.

14 MEMBER CROSBY: Would you agree? I am
15 sorry to -- Mark Crosby again, Janice and
16 Jennifer, the conversations, it was both, both
17 urban and --

18 PARTICIPANT: Yes.

19 MEMBER CROSBY: -- non-urban areas?

20 CO-CHAIR ALDER: Mark? Mark McHenry?

21 MEMBER MCHENRY: So is the presumption
22 that everybody wants to share? What if you

1 wanted to share, and the other guy was
2 unresponsive or kind of said no? Do you have the
3 presumption that he's got to prove no, or -- I am
4 not quite -- you made it sound like everyone
5 wants to do this paperwork, but what if they're
6 not responsive or they don't want to?

7 MEMBER RATH: Yes, I think in part
8 what, and this is, you know, getting back to what
9 Mark was saying earlier, in part this was almost
10 us saying there's a process, and you, you know,
11 it was really trying to call attention to the
12 process for the organizations that didn't know
13 it.

14 And I am not even sure you got to that
15 -- that stage with this particular set of use
16 cases. That may be a little bit different when
17 we start to talk about the DoD use case, but --
18 although I don't think it's usually non-
19 responsive, it's usually, you know, not
20 available.

21 So, but this, with the public safety,
22 it seemed at least from what I heard from what

1 was reported back to us on the calls, it was
2 really that they didn't necessarily know how to
3 actually go about getting access. It wasn't that
4 they couldn't get access. It was in large part
5 that they didn't know how to do it.

6 MEMBER CROSBY: Mark Crosby. Mark
7 McHenry's question is very good, though.

8 MEMBER RATH: Yes.

9 MEMBER CROSBY: So federal agency
10 goes, wow, this is a need, there is a system
11 there, I have a database, I found it, there's a
12 mechanism how I can participate. May I
13 participate?

14 And the non-federal go, uh, no.

15 (Laughter.)

16 MEMBER CROSBY: Wait a minute, what
17 are you going to do --

18 MEMBER RATH: Yes.

19 MEMBER CROSBY: -- what are you going
20 to do if the non-federal person goes, uh, no. I
21 go well what do you mean? So that we haven't
22 worked out. It's -- we haven't worked that

1 detail out yet, but it would seem to be a
2 legitimate question that deserves -- I mean, is
3 it -- are you obligated to say yes, or -- or --

4 MEMBER MCHENRY: Yes, who has the
5 presumptive right?

6 MEMBER CROSBY: Well --

7 MEMBER MCHENRY: Share unless you
8 prove a no.

9 MEMBER CROSBY: Yes, it is a great
10 question.

11 CO-CHAIR ALDER: All right. We will
12 go to Janice, and then Paige wanted to have some
13 comments. Jennifer, excuse me.

14 MEMBER WARREN: That's the second time
15 --

16 CO-CHAIR ALDER: I have done that
17 before --

18 MEMBER WARREN: Yes --

19 CO-CHAIR ALDER: -- I know, I
20 apologize.

21 MEMBER WARREN: That's okay, I have
22 been complimented at another meeting earlier

1 today the same way, so that's okay.

2 So I think it was -- I think it's fair
3 to -- so Jennifer Warren, for clarity.

4 I think it was fair to say on the
5 calls though, because the use cases are very
6 similar, I mean, we're not talking about a great
7 deal of difference in how these -- how the
8 spectrum is going to be used, that you didn't run
9 into as many likelihoods of no as you might with
10 other federal non-users.

11 And I have never found a federal non-
12 user who felt that I had the burden -- or it has
13 always been on me of I've wanted access to -- to
14 demonstrate why I should be given access.

15 So just as a personal aside, from a
16 corporate perspective. But on the calls, I mean,
17 I don't think we're running into the dichotomy
18 that we may run into when we're talking about two
19 less similar types of uses.

20 CO-CHAIR ALDER: Paige?

21 MS. ATKINS: I just wanted to add that
22 in our discussions prior to the CSMAC picking

1 this up, we saw public safety as low-hanging
2 fruit because in general, everybody wants to do
3 the right thing, and they -- if they can
4 accommodate the requirement, they are willing to
5 do that. Now whether we need something more
6 formal in place that answers your question, Mark,
7 I think we need to look into that.

8 And in some cases, it also may be for
9 instance a law enforcement requirement that may
10 not align necessarily purely with public safety
11 that may want to leverage first in that spectrum,
12 or there may be other use cases. I am not sure
13 if you had any discussions in that vein as well.

14 But I think in general, formalization,
15 so we understand what the rule sets are, is -- is
16 something that should be addressed, but overall,
17 in the public safety community, if they can do
18 it, they want to do it, so -- .

19 CO-CHAIR ALDER: Is there any other
20 comments, feedback for this subcommittee? I know
21 you said you still have some work to do with the
22 meeting with the DoD CIO's --

1 MEMBER RATH: And this is helpful too.
2 I think we have added a couple of things here
3 that we can talk about.

4 MS. ATKINS: And I know you didn't
5 have anything formally on the DoD side. Can you
6 give us any kind of insights on what you're
7 thinking there, or it's just really --

8 MEMBER RATH: I think --

9 MS. ATKINS: -- too premature?

10 MEMBER RATH: -- it's too hard to.
11 There is a fair amount of, you know, divergence
12 of opinion on the subcommittee on that issue,
13 particularly because the -- the DoD use case was
14 very different than the other ones in the sense
15 that it was looking for co-primary access to
16 auctioned frequencies, and, you know, the
17 possibility of doing things like aeronautical in
18 them, and so I think it just raised a lot of
19 pretty fundamental issues in the group, and we
20 did feel very strongly that we wanted to go back
21 and talk to Fred.

22 And, you know, there are some -- we

1 have been circulating some ideas about how we
2 might deal with it, but it really isn't baked
3 enough yet to I think -- you know, to put
4 something on the table. I don't think there's
5 one thing that all of us -- I'd feel comfortable,
6 but -- .

7 CO-CHAIR ALDER: Go ahead, Dale?

8 MEMBER HATFIELD: Oh, just one quick
9 clarification. It just dawned on me.

10 Are you looking -- limiting it to
11 spectrum sharing, or it can be infrastructure
12 sharing as well? And the reason is I happen to
13 be involved in a study in Alaska, I think in VHF,
14 where there was an agreement between the state
15 operation and the Coast Guard because they were
16 saving -- all serving very difficult to serve
17 locations, and it made sense to do
18 infrastructure, and they had some sort of an MOU.

19 So that jumped into my mind as to what
20 -- obviously, if you share everything, it's just
21 -- then you're sort of a customer of the other,
22 all the way to sharing the infrastructure, all

1 the way to getting access to the spectrum, non-
2 interference-based.

3 Did I make that -- is that very clear?

4 CO-CHAIR ALDER: So Charla, do you
5 want to respond?

6 MEMBER RATH: We didn't.

7 (Laughter.)

8 MEMBER RATH: So I mean, we really did
9 just look at it from the point of view that we're
10 all talking about, as, you know, sharing the
11 spectrum, not going back.

12 And we talked, actually the last go-
13 round, we really did talk more about gradations
14 of sharing in -- on the short-term side about,
15 you know, everything from, as you said, Dale, you
16 know, actually being a customer, to, you know,
17 sharing the spectrum and dealing with it that
18 way.

19 But we -- we -- in fact, I think in
20 part, one of the reasons why we asked NTIA to
21 give us particular use cases is we did not want
22 to go down that broad path again. We wanted to

1 actually have things to -- you know, explicitly
2 to comment on.

3 MEMBER CROSBY: If I may, I think --
4 Mark Crosby, I think the answer is both, and
5 everything in between.

6 MEMBER RATH: Yes.

7 MEMBER CROSBY: Sharing spectrum,
8 whatever works for the parties. I don't think
9 there should be any encumbrances --

10 MEMBER RATH: But in all fairness
11 Mark, we didn't really --

12 MEMBER CROSBY: No, we didn't.

13 MEMBER RATH: -- we didn't really talk
14 about --

15 MEMBER CROSBY: Right.

16 MEMBER RATH: -- some of these other
17 issues, yes.

18 CO-CHAIR ALDER: Jennifer, did you
19 have something that you wanted to add?

20 MEMBER WARREN: Jennifer Warren. I
21 was going to say I think it's important the
22 comment that Charla made, which was we had tried

1 to look at this issue in the Bi-Directional
2 Sharing group that Janice and I had the pleasure
3 of chairing, and there was no traction really on
4 that particular point.

5 And as Charla said, we came back and
6 asked for more definition on the one question in
7 part because it -- the longer-term sharing, which
8 would be kind of an infrastructure, you would
9 assume that would be longer-term, we just wanted
10 a lot more definition.

11 And I think that's what led to
12 actually -- or at least in part, I hope, led to
13 some of the use cases being shared, because we
14 needed that specificity. We weren't getting very
15 far.

16 CO-CHAIR ALDER: All right. Charla
17 and the rest of that committee, thanks so much
18 for the good work. I think it looks like very
19 good progress, and I know there's a little bit
20 more to do, but thank you.

21 So with that, we will move on to the
22 next subcommittee, which is the Agency in

1 Industry Collaboration. And I think Thomas is
2 going to take us through that.

3 MEMBER DOMBROWSKY: Yes, that will be
4 me. I apologize for not having a readout.

5 Our group has met and had discussions.
6 I will remind everybody of what the question we
7 were looking at was, which is how should
8 traditional regulatory approaches change to
9 better leverage and incorporate direct federal
10 agency to industry collaboration, negotiation,
11 and coordination to enable greater spectrum
12 sharing?

13 So to try and answer that question, we
14 have had a series of calls and meetings among the
15 group to sort of brainstorm issues that led to
16 some outreach to DoD, NOAA, a few other federal
17 agencies to sort of talk about best practices and
18 cases where collaboration has actually been
19 successful.

20 And I think the fundamental take-back
21 that we have at this point is we're not seeing a
22 lot of regulatory changes that are needed, but we

1 did have an interesting conversation on Monday
2 that I do think could be helpful to bring forward
3 in terms of recommendation, which is really
4 focused in on clearances and classified
5 information sharing.

6 And I think we will be able to in the
7 next -- in the May meeting time frame come
8 forward with a fairly discreet, focused
9 recommendation looking at that issue alone. And
10 the things that we were finding out is there's
11 vehicles put together by DoD and by other
12 agencies under the FACA provisions that may be a
13 way forward to at least investigate the sharing
14 of classified, or have clearances for folks to
15 discuss that kind of information.

16 And really, I am going to give a whole
17 bunch of time back to you guys because that is
18 really our report out, and that is why we don't
19 have slides, because we didn't have a lot to
20 report out.

21 CO-CHAIR ALDER: Throwing it open for
22 questions.

1 (No audible response.)

2 CO-CHAIR ALDER: I'll ask a question
3 if no one else has one.

4 So are you saying that you're really
5 focusing on that one area for the
6 recommendations? I know there was a --
7 initially, there was some debate about, you know,
8 trying to find a way for smaller working groups
9 to work. Did you guys work through that and
10 decide that was feasible, non-feasible, or is it
11 really the data --

12 MEMBER DOMBROWSKY: So what we did --

13 CO-CHAIR ALDER: -- is classified?

14 MEMBER DOMBROWSKY: -- that was the
15 last sort of committee group. We went forward
16 with the framework that NTIA presented, and I
17 know they are working hard to sort of figure out
18 a framework for those sort of small group
19 discussions.

20 What we're trying to do is focus in on
21 the thing that really stopped it, which was this
22 sort of clearance/classified information issue,

1 so it goes hand-in-glove, but we're really just
2 focused on just that one issue at this point.

3 CO-CHAIR ALDER: Okay.

4 MS. ATKINS: I have a question.

5 CO-CHAIR ALDER: Paige?

6 MS. ATKINS: When you spoke with DoD,
7 did you peel back what they're doing in 2025 to
8 2110 on --

9 MEMBER DOMBROWSKY: Yes.

10 MS. ATKINS: -- the collaboration with
11 broadcasters?

12 MEMBER DOMBROWSKY: Yes, we talked to
13 them about that --

14 MS. ATKINS: Okay.

15 MEMBER DOMBROWSKY: -- as well, and
16 we're hoping to bring some of that information
17 forward.

18 MS. ATKINS: Okay.

19 CO-CHAIR ALDER: Other questions,
20 comments?

21 (No audible response.)

22 CO-CHAIR ALDER: All right. We did

1 get a lot of time back, so that we can hopefully
2 use in some other discussions here.

3 So the next group that we have is the
4 Measurement and Sensing group in the 5 GHz band,
5 and I think Dennis is going to take us through
6 that.

7 MEMBER ROBERSON: Actually Paul, we
8 didn't have anything --

9 CO-CHAIR ALDER: Okay.

10 MEMBER ROBERSON: -- to say. I had
11 the opportunity --

12 (Laughter.)

13 CO-CHAIR ALDER: Okay, so it's going
14 to be Paul. Paul, please go ahead.

15 MEMBER KOLODZY: I usually don't have
16 trouble actually finding something to say, right?

17 I will try to go, as Charla did, I
18 think I'll try to go quickly.

19 We -- in the front side here, which is
20 the first pages, actually, the membership, which
21 has actually been very very -- has participated
22 quite a bit, and what the work plan was in the

1 sense that we actually got going by the end of
2 December, and we actually have been meeting once
3 weekly since then, so we've actually got a lot
4 done over the last eight, nine weeks.

5 So I actually have to say thank you to
6 everybody who has been participating because
7 that's taking a lot of time out of your
8 schedules, busy schedules, to help out.

9 What we have done in this group was
10 broke the measurements into three topic areas, in
11 a sense of asking the question what are the
12 strengths and weaknesses of the architectures,
13 measurement architectures, characterizing the
14 kind of measurements that need to be made,
15 meaning what are the kinds of systems you have to
16 measure? Are they very very powerful systems?
17 Very very distributed systems? Very weak systems
18 in the sense of power levels?

19 And also asking a question which may
20 not have been thought of by NTIA, but actually
21 trying to figure out what are the policy
22 implications in the sense in the workarounds for

1 measurements? Because you can't be -- you can't
2 know perfectly the entire environment, and so
3 therefore there is this trade space between how
4 you deal with policy issues associated with a
5 lack of information coming from the measurements.

6 And then we looked at what measurement
7 tasks did you actually want to try to take on?
8 And there's the classic case, which is before you
9 do sharing, is there a possibility to do sharing?
10 What is the utilization of the spectrum, and how
11 well is it being utilized? Who is using it, how
12 often, where at, and the like?

13 But it is also, the next step after
14 that is what kind of measurements might be needed
15 during sharing, and how are you going to actually
16 implement those types of systems? Are those
17 fixed systems? Are those systems that are going
18 to be actually done by the licensees? Or
19 whatever.

20 And then finally, the measurements
21 that need to be taken after sharing has gone on
22 to find out what the impact is of sharing, and if

1 it actually has any deleterious effects or the
2 like. We're actually looking at trending and how
3 well things are going on.

4 There was a fourth area that we were
5 looking at and are not addressing, but I just
6 wanted to put it in there just to be complete,
7 and that is enforcement: there's measurement
8 enforcements for interference mitigation and
9 actually looking at people who are actually doing
10 the sharing in an appropriate manner and the
11 like.

12 That has been covered by a couple
13 other -- I mean a couple subcommittees I think
14 last go-round, at least some of the pieces parts,
15 and it might be actually a topic in the future,
16 considering we've been talking more and more
17 about enforcement issues. And so that might be
18 something for the next session.

19 The status of it, and I'm going to go
20 walk through these quickly, are the first thing
21 we have done is we've actually done a list of
22 systems, and we've had some great help by -- by

1 Rick, in a sense of going out there and finding
2 all the different systems that are out there in
3 the government, in the federal bands, and trying
4 to characterize it as to what the application is,
5 and you'll see that in page 5, if it's currently
6 in use or what is actually being thought of it
7 being in use. There are some things going on and
8 WiMAX systems being deployed in airports and
9 things like that.

10 Trying to characterize it with respect
11 to how much power it is actually throwing out,
12 how much bandwidth is it using, is its footprint
13 a large footprint or a small footprint, is it up
14 very high, so it's a very, you know, much more
15 easily measured, is it continuous, is it
16 intermittent, is it fixed, is it mobile?

17 These are all the things, believe it
18 or not, you have to take into consideration when
19 you make measurements and actually figure out
20 what kind of architecture that you want to take a
21 look at.

22 And so we laid out this, this is just

1 showing you an example of that, but we've
2 actually had a good amount of discussion on
3 actually understanding what's out there in the 5
4 GHz band.

5 The other area was actually looking at
6 the architectures, and that's the next page, page
7 6, the architectures that might want to be
8 employed to actually make those measurements.

9 Now, no one architecture fits all the
10 problems that you may want to solve, in a sense
11 of sometime you may want to use distributive
12 systems, sometimes maybe only hitting it once in
13 a while and notice that that goes to continuous
14 transmission, then all you need to do is measure
15 it once and you now know it's there, right?

16 So there is all this kind of trade
17 space that needs to be looked at, and so we have
18 started this extremely high-dimensional matrix
19 trying to understand what architectures you may
20 want to take a look at, like fixed sites or from
21 pneumatic sites, meaning do you have a pneumatic
22 measurement system, a fixed measurement system,

1 or a mobile, and exactly what the pros and cons
2 of those are, compared to some of these options
3 that we're looking at.

4 So the column, before you make sharing
5 possible, actually you're doing sharing or post-
6 sharing, is trying to map out how well those
7 architectures map to those types of measurements.

8 And we're -- you know, obviously, we
9 have not finished this entire matrix up at this
10 point, but we have actually been trying to use
11 this as a methodology to understand where the
12 weaknesses are, or where do -- an architecture
13 needs to be used that's a lot different than what
14 you might want to think about using for
15 expediency.

16 So Dennis had a lot of very
17 interesting discussions going on on that. And so
18 what we have done is, and I -- the next page is
19 basically an outline for a report. Let me just
20 go to the draft recommendations, and these are
21 extremely drafty.

22 We have -- as we've been putting all

1 this material together, this is just sort of some
2 of the initial discussions that have gone on.

3 The first thing that has gone on
4 through our discussions were that there was a lot
5 of -- at least we had heard about a lot of
6 consternation of federal users having issues with
7 the measurements that have been made, and that
8 they did not capture in the past, did not capture
9 their usage of the spectrum.

10 So one of the possible recommendations
11 was to have a feedback between the federal
12 spectrum user community under study and the
13 occupant measurements, and that should be
14 strengthened, meaning you don't want to make
15 measurements in this typical way, take months and
16 months and months and months and months to do the
17 reporting, and then give it back to somebody
18 after a year and say oh, you remember last year
19 on Thursday, we made these measurements?

20 We didn't see anybody, and trying to
21 get that correlation of the user community trying
22 to understand did you measure us in a proper way

1 or not, and be able to actually do that just to
2 make sure that you get a better understanding of
3 the pros and cons of whatever you measured, okay?
4 So that was -- and that was one of our
5 recommendations.

6 Another was some of these systems are
7 extremely difficult to measure, and so the
8 question becomes can you use some kind of emitter
9 beaconing technologies on the federal side? Now
10 there's a lot of problems and questions
11 associated with that, with security and with
12 potentially for privacy issues and things like
13 that, depending upon if it's -- how it's being
14 used.

15 But it would actually aid considerably
16 in the sense of being able to make the
17 measurements properly, so you maybe want to take
18 a look at it for some cases, looking at beaconing
19 technologies that would allow you, you know, not
20 all the time, but enough that you could actually
21 make the measurements more precisely.

22 The third draft recommendation, okay,

1 was that we -- that if we don't finish this
2 spreadsheet that we actually put together, that
3 NTIA finish this spreadsheet in the sense of
4 understanding the different architectures, they
5 have become very knowledgeable about how those
6 architectures map into one of the systems that
7 are out there in 5 GHz.

8 The second -- I mean the fourth
9 recommendation is that we need to take a look at
10 the architectures, okay, for monitoring, and look
11 at the different architectures that are needed,
12 and then map those architectures appropriately to
13 the problem you're trying to solve.

14 The goal -- and then the idea is that
15 you should develop a technical criteria so that
16 the measurements have a high detection
17 probability. What are you trying to measure?
18 What are the characteristics? Make sure that's
19 reflected into the architecture, and then make
20 sure you employ that architecture when you do
21 your measuring processes.

22 It is not just somebody out with a

1 spectrum analyzer sitting outside and saying
2 okay, I've got a good detector, I'm going to run
3 around a lot and hopefully they'll pick up the
4 signals. You need to understand --

5 PARTICIPANT: That's so fun to do,
6 though.

7 MEMBER KOLODZY: Well yes, you -- both
8 of us have made a living doing that. It is fun,
9 but it is -- it may not be what you need to
10 actually get a good understanding of the
11 environment.

12 And last is maybe the NTIA and FCC,
13 which we've worked as panels not part of, but you
14 look at methodologies for how to make
15 comprehensive measurements on equipment. If
16 you're going to take a look at the equipment that
17 you're going to use for sharing is going to be
18 appropriate, and this is kind of a little bit
19 outside of our scope, so maybe you'll push back
20 at us and saying we shouldn't be thinking about
21 things like this.

22 But if you're going to have systems

1 that are going to adapt and have to measure the
2 environment and then adapt to that, how do you
3 measure all the possibilities? The space -- the
4 operational space is very large, and so you're
5 not going to be able to do an exhaustive set of
6 tests.

7 So the question has to become what are
8 you going to do to actually solve that problem?
9 Do you actually look at particular features and
10 then partial testing of all the rest of the
11 operational space, or are you going to try to do
12 completely comprehensive tests, or what is the
13 process?

14 And so the process is going to have to
15 actually be targeted to take a look at, and maybe
16 that's also something you push to a future
17 question, which is how do you make those
18 measurements? This is the old problem that the
19 FCC had at one point, which how do you do
20 software-definable radios, and how do you assess
21 them for security, right?

22 It is, you know, what are the

1 processes that you can use to make sure that you
2 -- that the system works properly across the
3 entire operational space?

4 And our -- I'll stop at that, but our
5 action from this point on is to kind of firm some
6 of these up, these recommendations up, and to
7 move forward in trying to fill out some of the
8 questions that we were trying to address since
9 the architecture slide.

10 CO-CHAIR ALDER: Great, and if no one
11 has questions, then I'd ask Paul to go line-by-
12 line through the matrix.

13 MEMBER KOLODZY: Oh, right.

14 (Laughter.)

15 MEMBER KOLODZY: If anybody has
16 insomnia --

17 (Laughter.)

18 CO-CHAIR ALDER: Thomas, go ahead.

19 MEMBER DOMBROWSKY: Thanks Paul.

20 Just a quick question on the -- I
21 guess it's the feedback discussion on slide 8.

22 MEMBER KOLODZY: Yes.

1 MEMBER DOMBROWSKY: I like the idea at
2 a concept level. I guess the question I have is
3 from an implementation standpoint, is the vision
4 that this would be something managed by NTIA in
5 order to get past sort of the classified
6 clearance issues? Because problems we've had in
7 the past with trying to get that feedback is
8 we're doing stuff, but we can't tell you what
9 we're doing.

10 MEMBER KOLODZY: Right.

11 MEMBER DOMBROWSKY: So the two
12 questions are sort of interwoven from my
13 perspective: if NTIA is managing it, that maybe
14 is a way to do it, but then how does that
15 information then flow too to the -- to the
16 commercial --

17 MEMBER KOLODZY: Right.

18 MEMBER DOMBROWSKY: -- industry?

19 MEMBER KOLODZY: And --

20 MEMBER DOMBROWSKY: Something we've
21 been struggling with for a while.

22 MEMBER KOLODZY: I think in the

1 discussions that we had had in the group, it was
2 thought of that NTIA would play that role. I
3 mean, it is not explicit in this recommendation,
4 and maybe we'll take under consideration as to --

5 MEMBER DOMBROWSKY: Yes --

6 MEMBER KOLODZY: -- making it more
7 explicit --

8 MEMBER DOMBROWSKY: -- well I think
9 that would help, yes.

10 MEMBER KOLODZY: But that was I think
11 at least the general conversation in the group,
12 was thinking that NTIA would be doing that,
13 having that role.

14 MEMBER DOMBROWSKY: And then how would
15 the information come from NTIA out to the public,
16 if you will?

17 MEMBER KOLODZY: Well, what the issue
18 here we're trying to find out was when NTIA or
19 any group is trying to measure the occupancy, how
20 do they tell the people who are being measured
21 how well they were being measured, right?

22 So I think the feedback, the other

1 side, I don't know where that actually comes into
2 play, unless you're talking about further on when
3 you're talking about -- when you're actually
4 doing sharing and trying to actually ask the
5 question how well are you doing the sharing.

6 MEMBER DOMBROWSKY: Well, I think it
7 kind of goes hand-in-glove from my perspective.
8 I mean, it's sort of hard, if you're not -- if
9 you're creating something and you give it to say
10 NTIA and they say you're doing great, that's
11 good, but if they say there was a problem, how
12 does that information come back to help improve
13 the next time around, if you can't share that
14 piece of information, which is what we've been
15 struggling with in some of the other groups?

16 MEMBER ROBERSON: If I could respond?

17 MEMBER DOMBROWSKY: Sure.

18 MEMBER ROBERSON: But that's not what
19 this is about. We're taking a recommendation
20 here. The recommendation here is that there are
21 issues. Ed and company do measurements. They
22 put out a result, tell you everything is clean.

1 And then somebody in the DoD for instance says
2 but I was there, and you didn't -- you didn't
3 indicate that I was there, so your measurements
4 are flawed.

5 So this is the way of closing that
6 loop.

7 MEMBER DOMBROWSKY: Yes --

8 MEMBER ROBERSON: That's what this is
9 about.

10 MEMBER DOMBROWSKY: I understand that,
11 but I am just suggesting to you that that's
12 useful, but then the next piece is what if -- how
13 do you get that information back to the folks
14 that are actually creating equipment? Maybe I'm
15 going down an endless loop here.

16 MEMBER ROBERSON: Yes, that is a
17 different point. I mean it may be a good point,
18 but it's not this point.

19 MEMBER REASER: Let me help you,
20 Dennis. This is Rick Reaser.

21 But basically, where you're going is
22 the next study, because to be honest with you,

1 what you really want to do is take this
2 information, expand it into what you're talking
3 about, and then go into things like enforcement,
4 and then maybe nationwide monitoring and those
5 kind of things for enforcement purposes, and
6 Dale's group at the TAC has been looking at those
7 things.

8 But the problem -- we started down
9 this path, but we're really limiting it to just
10 the question we were asked, and what you're
11 asking is the logical follow-on, it's something
12 that ought to be probably looked at in future
13 studies and so forth, because I think that is
14 kind of where the world is going to head
15 eventually, what you're talking about, but we do
16 have a short time period to finish our work, and
17 we're not going to get down that path because we
18 spent like a whole hour one time just talking
19 about what you're talking about, and then we
20 realized, well, that was not what our question
21 was.

22 MEMBER DOMBROWSKY: All right, thanks.

1 MEMBER ROBERSON: Actually exactly
2 what happened.

3 (Laughter.)

4 CO-CHAIR ALDER: So we'll go with
5 Jennifer.

6 MEMBER REASER: And I was the one that
7 took them down the rabbit hole, so I just wanted
8 --

9 (Laughter.)

10 CO-CHAIR ALDER: We got the queue,
11 we'll go Jennifer, Mark. Go ahead, Jennifer.

12 MEMBER WARREN: Okay, Jennifer Warren.

13 Paul, just two quick questions, at
14 least I think they are quick.

15 Given what you said about the timeline
16 that there's been between the occupancy reports
17 and then disagreement, et cetera, was there any
18 discussion of why not give the federal agency or
19 user that's being monitored same-day notice so
20 that they actually can bookmark that they're -- I
21 mean, same day, so they can't really change, you
22 know, anything, so that they at least can

1 bookmark and know when you come back three months
2 later? Because three months, nine months, it is
3 still difficult.

4 MEMBER KOLODZY: Right, okay, well
5 actually --

6 MEMBER WARREN: That's the first
7 question.

8 MEMBER KOLODZY: Okay. And you
9 reserve the second question.

10 MEMBER WARREN: Yes.

11 MEMBER KOLODZY: We actually did talk
12 about that, not in exactly the way you were
13 mentioning it, which we were saying should we
14 actually tell them we're going to make
15 the measurements before we make them so they're
16 all prepared? And the answer was no, we didn't
17 want to do that, because you want to get, you
18 know, naturally, you know, to figure out what the
19 exact characteristics are.

20 But to actually tell them right after
21 might be an interesting idea there, which is
22 actually to give them, okay, we made measurements

1 on this day. Just to let you know, mark it on
2 your calendars, you may actually want to do a
3 dump of your systems and keep it off to the side
4 so that way, when we come back with our
5 measurements, you are able to compare it.

6 MEMBER WARREN: Yes, okay.

7 MEMBER KOLODZY: So that is actually
8 a pretty good idea. I don't know about anybody
9 else in the group, but I think that was --

10 MEMBER WARREN: Score one.

11 (Laughter.)

12 MEMBER WARREN: Thanks Paul. I'll
13 leave --

14 CO-CHAIR ALDER: Did you have
15 something else, Jennifer, or --

16 MEMBER WARREN: I did. I had a second
17 question.

18 Then, when you go to page 9, and you
19 have a sub-bullet under the first bullet there
20 that the goal is to ensure basically that silence
21 is assent or consent, that the -- I mean, when I
22 read this to say and further that the signal is

1 not present rather than there's some other
2 problem, I mean, the goal is to get it right.

3 MEMBER KOLODZY: Right.

4 MEMBER WARREN: But I guess I am a
5 little confused by why is the burden on the one
6 side rather than the other? It seems to be --

7 MEMBER KOLODZY: Well actually, we
8 were talking about that the burden is on two
9 sides --

10 MEMBER WARREN: Okay.

11 MEMBER KOLODZY: -- as to how you
12 actually want to optimize your system --

13 MEMBER WARREN: Okay.

14 MEMBER KOLODZY: -- and so that's
15 actually a real problem. Sometimes you want to
16 make sure you miss nobody, okay? But then you --
17 you err completely on one side, right? And then
18 the other direction is no, you want to have as
19 much for sharing, and then you err obviously on
20 the opposite side.

21 So the idea was trying to figure out
22 where that balancing act was associated with some

1 of the -- so the goal is to ensure the lack of
2 detecting -- if the goal was intent to lack of
3 detecting of a signal infers that the signal is
4 not present, okay?

5 So the idea was if you didn't hear it,
6 does that mean it's not there?

7 MEMBER WARREN: And the answer here is
8 yes, according to the way this is written.

9 MEMBER KOLODZY: Well, if you -- if
10 you're using -- right, well that's the question,
11 is if -- well, okay, let me -- let me tighten up
12 that wording a little bit.

13 MEMBER WARREN: Okay.

14 MEMBER KOLODZY: Mark? Yes.

15 MEMBER MCHENRY: I think if you had
16 proven ahead of time measurement setup 14 is
17 effective against a, b, c, d, e, and f, you went
18 out there and you said oh, you didn't see me.
19 Well I say, well, we've proven the technique
20 works. Either you don't have one of these
21 signals or you weren't there.

22 I think if we had this dictionary

1 beforehand, it gets rid of all these arguments.

2 MEMBER WARREN: Well first of all,
3 they're not going to know that -- they're not
4 going to know because you're not giving them
5 notice yet.

6 But two, again, that's not the way
7 this is written. This is written --

8 MEMBER MCHENRY: That's what it was
9 intended to say.

10 MEMBER WARREN: Well, again, it --

11 MEMBER KOLODZY: Thank you. Good
12 point. They are drafts.

13 MEMBER WARREN: Can we -- so I'd like
14 to talk about -- I'll join the next call, if I
15 could.

16 CO-CHAIR ALDER: All right, thanks,
17 Jennifer.

18 Mark, did you have anything?

19 MEMBER MCHENRY: Well I think that
20 addresses Tom's issue. If you know the
21 measurement system is good, you've proven it, and
22 the guy comes up and says oh, you didn't see me,

1 you have the power over him now because we should
2 have seen you, we know you should have been
3 there, so you weren't there.

4 CO-CHAIR ALDER: Paige, you had some
5 comments?

6 MS. ATKINS: Thank you.

7 So the original question was initiated
8 by our endeavor to look at two 5 GHz bands in
9 particular, 5350 to 5470 and 5850 to 5925, which
10 was in the -- the question itself.

11 And the intent, if you recall, I
12 believe we discussed in the last meeting or the
13 one before, was to help us as we move down the
14 path of determining if sharing is possible,
15 either via various mechanisms, maybe DFS,
16 dedicated sensing, et cetera, if we were missing
17 something in terms of possible techniques that
18 could be used, and in particular, unlicensed
19 devices in those two 5 GHz bands.

20 And so I -- I want to ensure that that
21 is part of what we're explicitly looking at, and
22 in particular, as it relates to what the

1 discussions are in those two bands currently as
2 we move forward over the last -- or the next few
3 months.

4 So with -- if we're missing something
5 that is a good way to implement, or a slightly
6 different approach, we want to make sure we fold
7 that back into our activities for those two 5 GHz
8 bands in particular, but relevant to other --
9 potentially other 5 GHz bands.

10 MEMBER KOLODZY: Yes, I think we went
11 broad initially, just to try to understand the
12 waterfront, and what you're asking for is make
13 sure the narrowness comes back in the instance of
14 those particular bands.

15 MS. ATKINS: Yes, and that, right now,
16 that -- the narrowness is our priority, and
17 especially as we move forward over the next few
18 months, so getting something on that explicitly
19 at the next meeting would be very helpful.

20 MEMBER KOLODZY: Yes.

21 MS. ATKINS: Another piece to the
22 question was how could you identify and mitigate

1 before interference actually occurs?

2 So in terms of perhaps sensing, and
3 again, thinking an unlicensed environment as the
4 noise floor increases or whatever the case may
5 be, how can you understand what's going on and
6 trigger a mitigation --

7 MEMBER KOLODZY: Yes.

8 MS. ATKINS: -- before the
9 interference actually occurs to the incumbent, as
10 --

11 MEMBER KOLODZY: Right.

12 MS. ATKINS: -- an example?

13 So are you looking at that as well as
14 part of -- I am not sure I --

15 MEMBER KOLODZY: Yes, that trending --

16 MS. ATKINS: -- followed. Okay.

17 MEMBER KOLODZY: -- part, so the third
18 category there --

19 MS. ATKINS: Okay.

20 MEMBER KOLODZY: -- is the trending
21 part --

22 MS. ATKINS: Okay.

1 MEMBER KOLODZY: -- where you see
2 something occurring after sharing has started.

3 MS. ATKINS: Okay.

4 MEMBER KOLODZY: And how do you make
5 those measurements, which would be distinctly
6 different than prior?

7 MS. ATKINS: Okay. Okay.

8 CO-CHAIR GIBSON: Yes, I would add
9 something. It's Mark, by the way, Gibson.

10 That is actually possibly part of the
11 last bullet, which is the certification, so that
12 there can be some measurements occurring during
13 the certification process to ensure that you
14 don't have interference occurring because a
15 device has either not been properly certified or
16 there are spurious emissions that haven't been
17 caught or something like that, and we spent a
18 fair amount of time on the last call talking
19 about what some of the implications are, so you
20 might see some of that there as well.

21 MS. ATKINS: Okay.

22 Okay. Thank you.

1 MEMBER KOLODZY: Yes.

2 CO-CHAIR ALDER: Oh please, go ahead.

3 Dale?

4 MEMBER HATFIELD: I am on the
5 committee. What did we have in mind for
6 beaconing? Can you elaborate just a little bit
7 on -- is that out-of-band beaconing, in-band
8 beaconing? What were the --

9 MEMBER KOLODZY: Actually, this goes
10 out to some of the things you actually mentioned,
11 Dale, which was trying to understand is there
12 methodologies in there that help make it easier
13 to actually find the signals?

14 And so the beaconing is -- was just
15 like an identifier on the signals --

16 MEMBER HATFIELD: Yes --

17 MEMBER KOLODZY: -- that's --

18 MEMBER HATFIELD: -- because there's
19 the whole issue of reviewing within the TAC on
20 identifiers and on emission designators and a
21 whole bunch of other things.

22 MEMBER KOLODZY: Right. We were using

1 the word "emission designators" before, but that
2 sometimes gets confused by how the emission
3 designation terms are used in books, and so that
4 is why I used beaconing versus that term.

5 MEMBER HATFIELD: Maybe we should say
6 "in-band beaconing."

7 MEMBER KOLODZY: But it is in-band,
8 yes.

9 MEMBER HATFIELD: Yes.

10 CO-CHAIR ALDER: I personally had the
11 same, you know, feedback I think that Paige did
12 around, it felt like very broad, and getting into
13 the 5 GHz, I noticed that the specific bands that
14 were asked for weren't even -- there weren't
15 systems identified in those bands.

16 MEMBER KOLODZY: Actually, there are,
17 just that it -- you didn't see the whole list.

18 CO-CHAIR ALDER: Oh, you didn't
19 publish the --

20 MEMBER KOLODZY: I mean, I only gave
21 you the first page of the list.

22 CO-CHAIR ALDER: Oh, okay. Oh, those

1 are just examples, okay.

2 MEMBER KOLODZY: Yes.

3 PARTICIPANT: There are quite a number
4 of pages each in those slides.

5 CO-CHAIR ALDER: Okay. I stand
6 corrected then.

7 Other questions?

8 (No audible response.)

9 CO-CHAIR ALDER: No other questions?

10 (No audible response.)

11 CO-CHAIR ALDER: All right. Thank
12 you. And we'll move on to the next group.

13 And the next group is the Spectrum
14 Access System and Spectrum Databases for
15 International, and I think Jeff Reed is going to
16 take us through that.

17 MEMBER REED: Well, this is Jeff Reed,
18 and to begin with, let me reread the question.

19 What are the challenges in using
20 database and sensing approaches for international
21 spectrum management, and how can NTIA help
22 address these challenges?

1 And our methodology was to discuss,
2 interview, discuss, and we've gone through
3 several sets of interviews, and the
4 recommendations that you see here are very
5 preliminary. In fact, they don't incorporate
6 some of the input that we've gotten on the latest
7 round of interviews.

8 So for the preliminary
9 recommendations, the -- the first one is that
10 NTIA should establish priorities for
11 collaborative sharing internationally. In other
12 words, if we're going to negotiate with these
13 countries on how we share, then the first rule in
14 negotiating is knowing what you want, and having
15 NTIA prioritize what bands, what systems would be
16 best suited, and for which we would want to share
17 sooner than later.

18 Examples could be at 3.4 GHz or 3.8
19 GHz to correspond to sharing systems in the U.S.
20 Maybe, maybe not. But it is -- it is an example
21 of what might guide the priorities for NTIA.

22 NTIA should also study and develop

1 policies regarding privacy and security within
2 international sharing. And also, we felt that
3 other countries may need some help. They may
4 conceptually like this idea of collaboration
5 through some sort of database management, but
6 they may lack the resources or the technology to
7 be able to do that, so it may be in our best
8 interest to share that technology, and that also
9 brings up potential issues on export restrictions
10 for spectrum sharing technology.

11 The third preliminary recommendation
12 is that NTIA should expand its efforts to engage
13 internationally to best represent U.S. interest.
14 And that is somewhat of an educational process as
15 well as expanded visibility within the
16 international community to socialize some of
17 these concepts, perhaps through standards bodies.
18 Perhaps it is a peer-to-peer socialization.

19 And perhaps the best way to get
20 collaboration is to set the example. If we take
21 the leadership role, and we can show internally
22 how we share, it's going to make it an easier

1 sell for sharing internationally.

2 Okay. The next one is one that we
3 have -- we have heard before, and it -- it's
4 applicable here as well, and that is NTIA should
5 develop policies to facilitate disclosures of
6 waveforms and waveform parameters to facilitate
7 spectrum sharing.

8 If we're going to fit in within this
9 -- this spectrum sharing framework, international
10 spectrum sharing framework, we may have to reveal
11 certain parameters of the signals that we expect
12 to share, and we haven't quite worked that out
13 internally yet. And it -- it certainly could be
14 an important issue as we go forward and try to
15 accommodate some sort of international extension
16 of sharing.

17 And then finally, NTIA should become
18 more cognizant of shared spectrum R&D programs
19 and work to disseminate the information in the
20 government and the international community. This
21 somewhat gets back to the educational mission for
22 NTIA. NTIA can host workshops that could help

1 built this international collaboration. It could
2 ask for spectrum demonstrations that incorporate
3 technologies perhaps from other nations to help
4 facilitate that collaboration.

5 And we might want to think about,
6 given all of these numerous R&D programs that are
7 going on in spectrum sharing, between DARPA, the
8 National Science Foundation, and others, how do
9 we leverage that information and perhaps
10 disseminate it to the international community to
11 help facilitate a more collaborative spectrum
12 sharing management approach?

13 So our work plan is that we're going
14 to continue with some additional reviews. We
15 will probably hold a conference call soon to
16 discuss some of the more recent interviews that
17 we have had. And I think we are getting pretty
18 close to being able to start to draft text and
19 refine our final recommendations.

20 That's pretty well all I had. Other
21 members of the subcommittee, do you have any
22 comments that you'd like to add here?

1 CO-CHAIR GIBSON: Go ahead Janice.

2 MEMBER OBUCHOWSKI: So I'll start out
3 by a disclaimer saying I have kind of jumped in
4 and out of this particular effort.

5 Having been involved in I guess
6 yesterday's call --

7 CO-CHAIR ALDER: You might want to get
8 the mic a little closer.

9 MEMBER OBUCHOWSKI: Oh, sorry.

10 I was involved in yesterday's call,
11 and as always, I am educated by my peers. And,
12 you know, a lot of the discussion went to the
13 interesting question of before you even get to
14 sharing with the government, what about peer-to-
15 peer sharing? I mean, when you look at G5, it's
16 going to be a system of systems. People are
17 going to be sharing, you know, within the
18 industry, and, you know, you get into what I call
19 the free rider problem.

20 For sharing, it's a schoolyard thing.
21 I mean, sharing is a lot easier if everybody is
22 behaving. And, you know, about five years ago,

1 or maybe a little less, Cisco advanced this case
2 in -- in the 5 GHz band where because there was
3 interference with the federal incumbents, the FCC
4 out of courtesy to the feds closed down all
5 sharing for a period of time, and Cisco had a
6 lead to market with legit technology, and the bad
7 actor in that particular band was some Motorola
8 technology.

9 And, you know, Cisco I think quite
10 rightfully made the case that, you know, at least
11 -- well, I shouldn't judge, but I mean it seemed
12 that they made the case that we were ready to go,
13 we lost our first mover advantage because
14 somebody else in the playground wasn't behaving.

15 And Jennifer and I and others were
16 involved this morning in a session with the
17 Senate Committee, and Jennifer talked about I
18 think designing into systems sharing. I think
19 that is kind of a way forward, not just between
20 the government and people on the outside, but I
21 also think it's sort of high time for the FCC to
22 start addressing -- maybe they are -- the free

1 rider problem.

2 If you expect people to share within
3 a band, licensed, unlicensed, whatever, everybody
4 who comes to the party needs to have some skin in
5 the game, some commitment through their
6 technology to make this sharing more acceptable
7 all around, and then that also translates across
8 the federal/commercial divide.

9 And, you know, I am saying this in,
10 you know, non-lawyer speak -- I mean non-engineer
11 speak, lawyer yes, but non-engineer speak, but I
12 think there's this kind of schoolyard problem
13 that I found fascinating on yesterday's call
14 that, especially as you move into more advanced
15 forms of sharing among commercial users, how do
16 you address designing into the system the need
17 for people to all cooperate?

18 And then that translates of course
19 across the divide, but, you know, even that
20 second problem is, you know, no more complicated
21 than the first, it seems to me.

22 CO-CHAIR ALDER: Thanks Janice.

1 Mark, you had a comment?

2 CO-CHAIR GIBSON: Actually Jennifer
3 was up first.

4 CO-CHAIR ALDER: Oh, Jennifer was up
5 first? Go ahead, Jennifer.

6 MEMBER WARREN: Jennifer Warren.

7 So this was -- this group has been
8 really interesting and fun because it is dealing
9 with the technical side of issues, but also
10 cultural.

11 Because when we're talking about
12 international and international expansion, it is
13 to other regulatory bodies around the world, many
14 of whom are not in developed worlds, in
15 developing countries, and there is a cultural
16 question. There's some resource questions.
17 There's a lot of other questions than just what's
18 the technical answer?

19 And so it has been kind of interesting
20 to have that discussion because not all
21 regulators are -- they may be created equal, but
22 they're not staffed equally, they're not at the

1 same level of technology sophistication or
2 capabilities. There's a lot of differences.

3 So when I looked at the question, I
4 looked at the question what are the challenges
5 with a very different perhaps lens than an
6 engineer might look at the question, more
7 technical challenges versus policy and -- and
8 cultural.

9 And I still think we have to address
10 some of those as well, but one of the -- the -- a
11 major question that I had was in the first
12 recommendation, it's NTIA should establish
13 spectrum priorities for collaborative dynamic
14 sharing internationally. To me, integral to that
15 is how do you decide, what are the criteria for
16 deciding when an experimental regulatory model is
17 actually ready for export?

18 We don't want -- it's great to export
19 disruption, but it needs to be disruption that we
20 know works towards the U.S. advantage, not chaos
21 just for chaos's sake. I mean, some people might
22 like that, Paul.

1 PARTICIPANT: She points at Mark.

2 MEMBER WARREN: No, I pointed at Paul.

3 PARTICIPANT: Oh, okay.

4 (Laughter.)

5 MEMBER WARREN: Because he was

6 smiling.

7 Anyway, but I do think we need to talk
8 a little bit more about when is something ready
9 for that launch? Because once you launch it and
10 the U.S. launches something, it is taken to be
11 effective, perhaps, particularly if we don't sell
12 it with caveats, and we're not as good with
13 caveats as we are with promotion and
14 proselytizing.

15 So I -- I just think -- I think we
16 need to talk about that, and venues, and where we
17 can then have those kinds of discussions that
18 don't necessarily immediately have treaty
19 ramifications, would be perhaps the ITU and the
20 development sector, a role for which the
21 development sector might be ideally suited, but
22 again, after we've decided as a country, what is,

1 you know, what's right, but based on some
2 criteria that I imagine would be both FCC, NTIA,
3 and in conjunction with industry stakeholders and
4 other stakeholders, to put together.

5 But I think we'll have more discussion
6 perhaps about that in some of the follow-up
7 calls.

8 Thank you.

9 CO-CHAIR ALDER: Thanks Jennifer.

10 Any response, Jeff? Or I'll just go
11 to Mark.

12 CO-CHAIR GIBSON: It's Mark Gibson.

13 I was on the same call yesterday that
14 Janice was on, and I just was in the car, I
15 couldn't say anything. But I had a different
16 takeaway, but it's -- and I don't want to talk
17 too much out of school because we haven't had a
18 chance to process -- but the takeaway I got is
19 that, you know, my feeling on this international
20 sharing is the technology is kind of getting
21 there. This is really going to be mostly about
22 policy and regs.

1 The call yesterday was with a bunch of
2 folks from DoD, and these are all guys that have
3 been around this sharing thing for a long time.
4 They know this very well. And they were very --
5 it was a very productive discussion with the
6 silences, because there were a lot of questions
7 being asked about how do we do this, and no one
8 really knows.

9 So as we process this information, I
10 think one clear recommendation we're going to
11 need to work on, and maybe it's already in here,
12 is how do we work this in an international
13 process? Because that is what the, you know, the
14 crux of this subcommittee is, and we really don't
15 have a way to do SAS or any sort of dynamic
16 sharing like this internationally.

17 And I can tell you from just personal
18 experience working on a program where part of our
19 responsibility is to look at how you instantiate
20 a spectrum sharing machine in a foreign country,
21 there are a lot of issues that may get kicked to
22 a work -- or certainly, that have to be worked

1 through ITU.

2 So we'll talk about this when we get
3 a chance to process, but I just wanted to kind of
4 funnel into what Janice and Jennifer have been
5 saying. We've got some interesting work to do.

6 CO-CHAIR ALDER: Thanks Mark.

7 Mike Chartier?

8 MEMBER CHARTIER: So just to kind of
9 second what Jennifer said, I noticed that part of
10 the work is to discuss what the LSA community --
11 the LSA community, their first implementation of
12 -- of LSA, they would love to be something like
13 AWS-3. That's the poster child for -- for
14 sharing or getting access to federal spectrum.

15 And that's largely unknown outside of
16 the United States. So most of the world would
17 benefit much more from -- from understanding how
18 we implemented AWS-3, and mechanisms and
19 coordinations that are in there, before SAS, that
20 we haven't even deployed in this country.

21 So just to second what Jennifer said,
22 if the United States decides to go on a road trip

1 to promote sharing mechanisms, you know, the
2 first thing that the rest of the world would
3 benefit from would be our great successes with
4 AWS spectrum before SAS.

5 CO-CHAIR ALDER: Thanks. We'll go to
6 Michael, and then I'll come to you, Paige.

7 MEMBER CALABRESE: Sorry if I missed
8 this, but could someone I guess state, articulate
9 again, what would be the benefit -- what is the
10 purpose of this from NTIA's perspective, of this
11 international extension? I am wondering if it's
12 for -- to accommodate our agencies operating
13 overseas, or if it's mainly a harmonization of
14 market --

15 CO-CHAIR ALDER: Jeff, do you want to

16 --

17 MEMBER CALABRESE: -- or some other --

18 CO-CHAIR ALDER: -- respond to that,

19 or --

20 MEMBER CALABRESE: -- some other

21 purpose.

22 CO-CHAIR ALDER: -- as a member of the

1 committee, I will, but go ahead.

2 MEMBER REED: Sure.

3 You know, I think there are multiple
4 purposes. One is I think it would make it easier
5 for federal agencies such as DoD as they operate
6 overseas if there is some sort of standardization
7 internationally.

8 I also think that it could help the
9 U.S. economically if we are technology leaders in
10 this -- in this particular area.

11 And I think it could also help with
12 harmonization between countries along our border,
13 and how that we manage spectrum.

14 CO-CHAIR ALDER: So I'll just chime
15 in, respond.

16 My working assumption, and maybe I'll
17 stand corrected, is that we're really working on
18 the problem, if we do something in the United
19 States, say, 5 GHz band, and we protect the
20 radars or something, but there's radars
21 internationally. How are those -- there's the
22 worry that those devices will go out

1 internationally, and so that was my working
2 assumption, that the focus of the study group was
3 how do these people get the protection
4 internationally when we do something
5 domestically?

6 With that comment, I'm going to turn
7 to Paige, and she can correct me.

8 MEMBER REASER: -- comment before
9 Paige comments, though.

10 CO-CHAIR ALDER: What?

11 MEMBER REASER: I want to make one
12 comment before Paige comments.

13 CO-CHAIR ALDER: Okay.

14 MEMBER REASER: The other thing, we're
15 going to have a telecon with the -- the CPT
16 people, because they're already doing this. The
17 other thing you've got to worry about is there's
18 already models being implemented in the developed
19 countries overseas in terms of a two-tier system
20 that we don't know that much about.

21 And so then you have this issue about
22 device migration into our territory, or how

1 that's going to work. So you -- I wouldn't say
2 it's a competition or a race to the finish, but
3 there are people in the more highly developed
4 parts of the world that are already looking at
5 other kinds of sharing models, and so we're going
6 to have a conversation with them to find out what
7 they're doing because we're not the only ones
8 thinking about this, and they may be trying to
9 export their idea here, as far as we know, or to
10 the ITU.

11 MS. ATKINS: One of the primary
12 drivers of this question is looking at approaches
13 that we want to implement, potentially in the
14 U.S., that will enable sharing, that agreements
15 would be based on that sharing occurring under
16 those circumstances in which some agencies, for
17 instance, may not believe could be implemented
18 outside of the U.S. due to security or other
19 concerns.

20 So I think our approach is we don't
21 necessarily want to base our approach for sharing
22 in the U.S. and base agreements that may then be

1 carried internationally that couldn't be
2 implemented and prevent federal systems, DoD
3 systems, going overseas and they wouldn't be
4 protected or we would have no control over those
5 systems, whether they be SAS systems, databases,
6 et cetera.

7 So it's really all about helping us
8 make smart decisions domestically, and then how
9 we would carry that forward internationally to
10 protect our interests. Did that make sense?

11 Okay.

12 CO-CHAIR ALDER: Mariam.

13 MEMBER SOROND: Thank you. I just
14 wanted to highlight, I think Jeff is raising one
15 of the points -- is a really good point -- in the
16 standards participation. And I wanted to give an
17 example of that that's kind of relevant.

18 NTIA, through ITS, has been
19 participating in 3GPP for years. And for public
20 safety requirements related to FirstNet, they've
21 done an amazing job at getting those implemented.
22 And as a natural occurrence of that, what happens

1 is that they have to coordinate with the U.K.
2 home office. They have to coordinate with a lot
3 of the regulators who are showing up in the
4 standards body to essentially get these
5 requirements in.

6 So I think that, you know, just maybe
7 a question, have you contemplated expanding that
8 because standards are always a good ground for
9 going in and getting these agreements in outside
10 of the work process and things like that?

11 CO-CHAIR ALDER: Thanks. Do you want
12 to respond to that, Paige?

13 MS. ATKINS: And I think standards are
14 important and critical for enabling things
15 internationally, but going back to what Mark said
16 I believes it goes beyond technical concerns into
17 policy and other concerns as well. So we want to
18 make sure we're looking at it holistically.

19 CO-CHAIR GIBSON: First thing, Rick,
20 put your table tent down, please.

21 The other thing I wanted to say is to
22 Michael's point and I know a lot have tried to

1 address it, but I think I'd like to add to that,
2 too. If you look internationally to allocation
3 3100 to 35 or 36, depending, it's internationally
4 allocated to ready relocation, which implies
5 radar. And that's the band that a lot of us are
6 looking at for new technologies, whether it be
7 mobile or otherwise. And so the way we're doing
8 it in the United States is through a spectrum
9 access system or something that looks like that.
10 And so to the extent you want to put a spectrum
11 access system and have it work internationally,
12 there's going need to be some facility to break
13 those barriers down and a lot of that radio
14 location is military or is government.

15 So I think what we need is in this
16 discussion and I'm learning this from the talk we
17 had again yesterday is the role that NTIA can
18 play in that international realm, not for
19 commercial, but more for the sharing commercial
20 and federal governments. So I think that's one
21 of the asks that will be coming from this working
22 group is to better work those issues.

1 CO-CHAIR ALDER: Jennifer.

2 MEMBER WARREN: Jennifer Warren. I do
3 have a question though because I missed the call
4 where this was discussed and so my apologies.
5 But there's a reference here to red book changes
6 and the export of spectrum sharing technology.
7 And I'm wondering if what we're talking about
8 there is -- are we talking about export control
9 issues or are we really talking about NTIA
10 Redbook? Because I've been wondering if there
11 are export control issues that we do need to look
12 at as well, and I don't know the answer to that,
13 but I know that's not within NTIA's purviews.
14 But is it something that we need to flag as an
15 issue? I just raise that more broadly to the
16 community.

17 MEMBER REED: I think it's probably
18 beyond the scope of this group, but I think it
19 will be an issue because spectrum sharing could
20 be viewed as a military technology or it could be
21 viewed as a commercial technology that has
22 military ramifications and hence, subject to

1 errors.

2 MEMBER WARREN: Perhaps we should just
3 note that.

4 CO-CHAIR ALDER: Paige, did you want
5 to give any other feedback to this committee?

6 MS. ATKINS: So you talked about
7 interviews, conducting interviews, and again part
8 of the genesis of this is can we address the
9 concerns for things like security or other issues
10 well enough to even then bring these solution
11 sets internationally and be confident that we'll
12 be able to do what we need to do.

13 Have you generated a list of what
14 those major concerns are, based on the interviews
15 that you've done that then would be addressed
16 within the context of this subcommittee?

17 MEMBER REED: I don't think we have a
18 comprehensive list and we have noted that
19 certainly security is going to be an important
20 part of it, but yes, we need to come up with
21 that.

22 MS. ATKINS: And that's consistent --

1 these concerns are consistent in the 3.5
2 discussions and other ongoing activity. So I
3 think if we can at least summarize what those
4 major issues are because what we want to do is to
5 be able to try to address those major issues and
6 the recommendations in terms of how we would
7 overcome them.

8 MEMBER REED: You know, I'm not sure
9 that the committee will have the bandwidth on how
10 to overcome those issues because, for instance,
11 the security one is a very complex one. That's
12 probably going to take a lot of smart people
13 working --

14 MS. ATKINS: I agree, maybe not in
15 detail, but I think we need that definition of
16 what those major issues are as we look at
17 potential recommendations that we might want to
18 move forward with.

19 MEMBER REED: Sounds reasonable.

20 CO-CHAIR ALDER: Last call then for
21 questions on the spectrum access for
22 international group.

1 Thanks, Jeff, and to that
2 subcommittee. And then we'll move on to our
3 final subcommittee which is the 5G Exploration
4 Subcommittee and I'm not sure if it's going to be
5 Mariam -- Mariam, are you going to present? Or
6 Robert?

7 MEMBER SOROND: I was going to start
8 and then Rob will chime in.

9 So we have had very good participation
10 on our calls. The first page lists the co-
11 chairs, NTIA, and the members.

12 Second page is our study question. It
13 has been revised. We don't have the old revision
14 in, but this was with the approval and guidance
15 from the NTIA to make it more specific on related
16 on what aspects of 5G we're looking at.

17 And then moving on to the work plan,
18 we've met four times since December and we're
19 going to continue to have our regular meetings.
20 I think we also got feedback from the NTIA to
21 focus on differentiators between 5G and 4G and we
22 have a report that has been ongoing. So I just

1 wanted to highlight one of the things about 5G.

2 And I think Paige -- Jennifer,
3 everyone has been talking about how it's a system
4 of systems and I think the agreement right now in
5 the industry and also a lot of different
6 workshops and conferences and everything is that.
7 That's what it is. It's not just a 3G to 4G
8 evolution in terms of a fatter broadband pipe and
9 then it's going to include a lot of vertical
10 markets and everything else.

11 That's the only thing I think there's
12 agreement on. On how to get there, there's
13 definitely different views. And that's one of
14 the challenges that carries over to the work that
15 we're doing. The multiple views right now on it
16 is that there's one view that says, here's this
17 particular standard, here's a date that's defined
18 by it. Let's say 2020 is part of the IMT. Stuff
19 like the I2 and that's what 5G is. When you get
20 there, you call yourself 5G.

21 There is also a different view that
22 says it's going to come in phases. There's

1 Olympics sort of activities that are going on, so
2 you can say that some stuff is going to come in
3 2018. The rest of it in 2020 and there's a
4 progression.

5 There's also this final view that 5G
6 is here today. And machine type communications
7 are -- and that's a very true statement. So you
8 could kind of take this question and run with it
9 and just focus on MTC today and answer it and be
10 done with, but obviously, we understand that
11 there was this futuristic view of how to approach
12 this. But it is going to be challenging because
13 a lot of the things are not defined. So we're
14 hoping that, you know, NTIA would consider this
15 as a start and then ongoing as things come in
16 more and get defined.

17 So what we did is spend a considerable
18 amount of time on a report. We got input from a
19 lot of the subcommittee members, very good input
20 that outlines a lot of these different areas of
21 information, standards, bodies, regulatory and
22 everything to sort of like say hey, this is out

1 there and so we can kind of derive from that
2 because again, the unclear nature of how things
3 are going we have to be comprehensive and at the
4 same time same limit the scope of what we're
5 looking at.

6 And then just on our last two calls we
7 got close to kind of finalizing that report and I
8 think it's a 20 some page good report and got
9 close to the recommendations. Per the guidance
10 of NTIA and Paige, our recommendations are
11 focusing on differentiators. And if you go over
12 to Slide 5, it is just listing some concepts over
13 here, so obviously we were going to be more
14 specific about these concepts and give specific
15 recommendations around these, but just to
16 highlight the topics, you know, it's obviously
17 things like deployment scenarios. You can
18 envision that, you know, you're not just going to
19 be a macrocellular type architecture. You're
20 going to have OIT applications. You could
21 operate on a lot of spectrum, little slices as
22 opposed to big chunks, but then at the same time

1 you need all the big chunks because of the higher
2 throughputs, so it's a variety of sort of the
3 kitchen sink thrown in at this problem statement,
4 so you'll have to be specific about the
5 deployment scenarios and we're going to have
6 specific recommendations.

7 Frequency bandwidths is another thing
8 and sharing, we have talked about how like you
9 know, you have a 10 megahertz, you share that 10
10 megahertz, and there's a 10 megahertz next to you
11 and this is what's happening. Well, when you're
12 talking about 500 megahertz of spectrum, there's
13 going to be so many different types of operations
14 in there that it's going to have to kind of
15 engage a whole new look and dynamic because of
16 these large frequency spectrums that are coming
17 in.

18 Probability aspects, you know, I think
19 a lot of the studies so far have been a lot of
20 worse case analysis. I think this is an
21 appropriate time to bring in probability aspects
22 because that's why 5G is going to be special in

1 the sense of the types of operations that are
2 going to be in there, ranging from things that
3 are at all not like critical communications, or
4 not even -- they're not time-sensitive
5 communications like parking meters or whatever,
6 something you can push through during the night,
7 all the way to broadband. So obviously, the
8 probability aspect needs to be brought into this
9 whole picture.

10 And then, interesting, subcommittee
11 members brought up this next generation of
12 federal access. So as commercial systems are
13 going to 5G, there's the 5G of NTIA and federal
14 agencies as well, so that's also a good thing to
15 look at and maybe collaborate that as you are you
16 developing technology, both look at sharing or
17 other enablers for this technology development.

18 Those are some concepts. I just
19 thought I'd say some words so you'd know that
20 we've been doing work. And that is all I had at
21 this point.

22 Rob, did you want to add?

1 MEMBER KUBIK: The only thing I can
2 add is that Mariam did a great job of covering
3 where we're at right now. I think just to put a
4 finer point on things, for example, on the
5 probability aspects, you know, when you start
6 looking at these higher frequencies, 28, 39, 60
7 gigahertz bands, you have new possibilities with
8 phased arrays. So now you're scanning beams and
9 things like that with your transmitters and in
10 the receivers, make this whole analysis much more
11 complex. So that's certainly a new aspect with
12 that probability.

13 And the other side she already talked
14 about is we're not talking tens of megahertz for
15 a channel, we're talking hundreds and even
16 larger, maybe even gigahertz channels as we start
17 to get higher in frequency. So all these new
18 aspects that we have to consider as we start
19 doing this sharing considerations. That's all I
20 have.

21 CO-CHAIR ALDER: Thank you. I'd like
22 to say I certainly enjoyed the reading of the

1 report. It was very informative and covered a
2 lot of ground. So thanks for preparing that.

3 And I know my personal comment was I
4 think that 5G is a big area and as we drafted the
5 question in concert with NTIA, I think the key
6 thing was to focus on one, what's unique for
7 sharing in 5G? So I think that's some guidance I
8 would give. Focus on what you need for sharing
9 in 5G and actions the NTIA could take. Because
10 obviously the 5G subject matter is just so broad
11 you'll just be swimming.

12 Harold, did I see that you had a
13 question?

14 MEMBER FELD: I did. Thank you.
15 Understanding that the report is still
16 incomplete, but there is an open proceeding on
17 this at the FCC and I'm curious whether the CSMAC
18 recommendations are something that are likely to
19 be filed or if they inform NTIA with regard to
20 possible filing at the FCC or none of the above?

21 MS. ATKINS: My initial reaction is it
22 will inform us, not necessarily for filing per

1 se, but I think we have to see what it looks like
2 in terms of what comes out and how it relates to
3 the frontiers proceeding that you're referencing.

4 MEMBER FELD: If I could just have a
5 follow-up question. In the flip direction, I'd
6 just like to ask the chairs of the working group
7 here, the subcommittee, if they're monitoring the
8 docket with regard to any of the filings that
9 might be relevant to federal and non-federal
10 sharing? And if not, whether it would be useful
11 to pull the filings? And I know it's laborious,
12 but there are a number of us who are following
13 the docket anyway. And so I'm curious if it's
14 useful for the subcommittee to take a look at
15 what's been filed in the docket on this
16 question specifically.

17 MEMBER KUBIK: Sure. Rob Kubik. Yes,
18 I think I'll speak for Mariam. We probably have
19 both been following the docket very closely. Our
20 companies are very active in this.

21 The one concern I think we're trying
22 to hit broad goals here, broad direction,

1 recommendations for a long-term plan for NTIA
2 here, I'm not sure that what's being said in the
3 docket will fully inform that, but I think we'll
4 look at that and see if we can pull some nuggets
5 out of there for recommendations if possible.

6 CO-CHAIR ALDER: Paige.

7 MS. ATKINS: One more comment and this
8 is related to the next generation of federal
9 networks. One of the comments that I made in my
10 opening remarks or my spectrum update was on
11 dual-use technologies. And I think one of the
12 unique aspects of 5G is in opportunities for
13 dual-use technologies that could, in fact,
14 enhance sharing. So just to think about that a
15 little bit as you continue to develop the
16 recommendations.

17 CO-CHAIR ALDER: Okay, let's open the
18 floor up for questions to the subcommittee.
19 There's got to be some questions. Mark, come on.

20 CO-CHAIR GIBSON: I just had a
21 comment. This is Mark Gibson.

22 The subcommittee had struggled

1 initially, and I'm not speaking out of school
2 either, with trying to define 5G. Mariam did a
3 very good job saying 5G means different things to
4 different people. And I think this is a really
5 good start at trying to get a recommendation in
6 order.

7 A question I would ask is, do we need
8 anything of NTIA at this stage in terms of
9 guidance? I mean Larry made a good point to say
10 that, you know, we wanted to have this on here
11 because we wanted the NTIA to kind of get their
12 ideas going on 5G as well, so do you think, is
13 there anything you need from them at this stage
14 in terms of guidance or anything like that?

15 MEMBER SOROND: This is Mariam. We've
16 gotten really good participation from Rangam. So
17 we are having feedback from him on the call, but
18 I think overall, it would be I guess helpful to
19 give us a sense of relief that yes, we know this
20 is going to be a sort of a preliminary thing.
21 And it's an interesting question. It has to be
22 ongoing. So maybe some guidance on do you want

1 us to look at a particular phase? Because I know
2 you gave this over -- this umbrella of
3 differentiators, which is really nice and the
4 unique concept of it, absolutely. That's the
5 goal of it. But is there something more that
6 could bound it on a deliverable in time for you
7 as opposed to concepts?

8 MS. ATKINS: Let me think about that
9 one a little bit in terms of how we could further
10 bound it for the initial recommendations. I
11 would emphasize a point I made earlier that in
12 certain cases the recommendation may be teeing up
13 future topics for the CSMAC, but this is one
14 subcommittee in particular that I do believe it
15 will continue in some form or fashion. So I
16 would -- we will take the action to see if we can
17 further bound it for this initial question, but I
18 would also ask you think about recommendations in
19 terms of the next set of questions or next
20 question related to 5G that we want to tee up for
21 the CSMAC at the next cycle.

22 CO-CHAIR ALDER: I didn't quite see

1 who put their card up first, but we'll go to
2 Robert.

3 MEMBER PEPPER: Thanks, Larry. Robert
4 Pepper. So first, Larry, I like the way you
5 framed it so what's unique for sharing, but a
6 question in that context then for the
7 subcommittee is in terms of this definition of
8 mapping it. Have you looked at -- I assume you
9 did the next generation mobile network group,
10 right, and that the evolving set of requirements,
11 right? And then looking at that, mapping their
12 evolving set of definition, set of requirements,
13 and map it with the next generation federal
14 networks in terms of requirements.

15 And then when you look at that, then
16 I think it would give -- you know, provide a way
17 to think about in that context what's unique
18 about sharing because you're going to have the
19 next gen federal networks and then the next
20 generation mobile networks specifying through the
21 3GPP, et cetera, on the 5G work, and then looking
22 at those overlaid, and then figuring out what the

1 opportunities or not are vis-a-vis the sharing.

2 I think, Larry, we begin to get your point.

3 CO-CHAIR ALDER: Yes, I was just
4 saying, just trying to remind people that the
5 question did try and have some focus because I
6 know it's such a broad topic.

7 Go ahead, Robert.

8 MEMBER KUBIK: Rob Kubik responding to
9 that. We've done a very good job of documenting
10 where the commercial systems have been put
11 together and where they stand. I think we need a
12 lot more information from the federal side to
13 really make that comparison at this point, but if
14 NTIA is able to provide that, I think we would be
15 more than willing to look at it.

16 CO-CHAIR ALDER: All right, we'll note
17 that then.

18 MS. ATKINS: Let me clarify that. So
19 when I think of dual-use technologies and
20 sharing, the applications may not be exactly 5G-
21 ish. You may leverage the technology for
22 applications, aeronautical mobile telemetry, or

1 other types of applications that would not
2 necessarily be directly aligned with what 5G is
3 traditionally thought of in a traditional network
4 standpoint.

5 The idea of dual-use technology or
6 capabilities that could then be reapplied in
7 different ways for the federal requirements, but
8 not necessarily federal 5G specific networking
9 requirements, if that made sense.

10 MEMBER SOROND: Can I get some
11 clarification?

12 CO-CHAIR ALDER: Yes, go ahead.

13 MEMBER SOROND: Sorry, this is Mariam.
14 So I think what Robert was pointing to is that --
15 the NGMN requirements, for example, are concepts
16 that are the pillars of defining 5G. So one
17 million connected devices per kilometer scored,
18 as opposed to what we have today, this is delay,
19 reduce delay of one milliseconds.

20 Is there -- and a series of broadband
21 connectivity, machine type communications,
22 massive machine type communications support, is

1 there a parallel to that that the NTIA is working
2 on per operation, per agency or per sort of
3 technology that says that here's what future
4 technologies of these bands would go to? And
5 that's what we could do.

6 MS. ATKINS: Yes, there's nothing
7 within NTIA working that. There may be multiple
8 efforts spread throughout the agencies that are
9 looking at their future requirements, of course,
10 but we have not taken any action to try to roll
11 that up into something in that vein.

12 CO-CHAIR ALDER: Janice, you've been
13 patiently waiting there.

14 MEMBER OBUCHOWSKI: Oh, no. I'm fine.
15 First, I wanted to compliment Mariam and Robert
16 and the group. This is an excellent draft
17 report. And in terms of putting something out
18 there that educates policy makers on all the
19 activity, and frankly the complexity of this,
20 it's terrific. And it's in plain English which
21 is great.

22 I guess the only other point I wanted

1 to make -- in a way it bounces off what Mariam
2 said and something I always remember that Dennis
3 said in an earlier meeting, that when we look at
4 5G we have to understand the beauty that there
5 are going to be so many more levers that are
6 going to be worked into the system.

7 I think it's probably, I can't speak
8 for the entire federal user community, but you
9 have people coming from all over -- all different
10 kinds of requirements, FAA versus NASA versus
11 DoD. Those are some of the biggies. And then
12 within those agencies, very specialized new
13 technologies that people might be envisioning.

14 I think it would be useful to kind of
15 go to my earlier point, the point of designing
16 into 5G, and perhaps being somewhat explicit
17 about it. These are some of the levers that can
18 be designed in at this stage of the game that
19 could be very helpful for sharing.

20 I mean I don't know if you're -- that
21 kind of a sort of broad-based set of criteria,
22 even if it's imperfect, I think would be very

1 helpful to federal users. You've got to realize
2 a lot of these people don't come right out of MIT
3 yesterday. They may not know what the state-of-
4 the-art is, but they could understand and be more
5 comfortable with sharing going forward if, you
6 know, part of the process was to say these are
7 some of the most valuable levers and this is how
8 the world can change and perhaps both sides could
9 then design sharing at an earlier stage of the
10 game when it's always affordable or more
11 affordable and feasible.

12 So great report, and if you can apply
13 the brain power you've applied to those levers,
14 sort of articulating the levers going forward.

15 CO-CHAIR ALDER: Thanks, Janice.
16 Jennifer.

17 MEMBER WARREN: So I had a question
18 because when -- and I forget who -- Jennifer
19 Warren. I forget who mentioned about the mapping
20 of federal networks. And it occurred to me
21 having just listened over the last couple of
22 weeks to speakers like General Hayden and Deputy

1 Secretary of Defense Work, and their emphasis on
2 the future role of commercial satellites as being
3 integral to the Department of Defense's
4 operations globally and that they are going to
5 be, in fact, part of the way that the Department
6 of Defense deals with resiliency for their
7 network operations on a global environment.

8 The rest of the world isn't
9 necessarily in line with how the U.S. is
10 proposing to look at 28 gigahertz of Ka band and
11 I wouldn't expect it will. So how do you plan,
12 if you do this mapping, to look at regional and
13 global systems that may not emulate how one
14 either has to or chooses to operate domestically?
15 Because I think that when you look at what is a
16 DoD network, you have to take the whole and that
17 whole is going to be very different, very likely,
18 from what is domestic. Thank you.

19 CO-CHAIR ALDER: Rob Kubik.

20 MEMBER KUBIK: Rob Kubik. Certainly,
21 granted I think it's going to be different
22 frequencies across the world and I think that's

1 something we'll have to take into account. I
2 think that's probably part of this ITU process.
3 I know they're looking at bands that are in
4 adjacent, nearby frequencies, also quite
5 disparate bands. So I think that 5D process that
6 they're working through will try to handle that
7 somehow. As far as the recommendations coming
8 out of this group, I think for now, I think we
9 can focus on where we know systems are going to
10 be deployed and maybe make some general
11 recommendations from what we learned there on how
12 they should handle this for other bands where
13 these operations will occur.

14 CO-CHAIR ALDER: Okay, great.

15 MEMBER WARREN: Jennifer Warren. I
16 think when I look at the question and the
17 question is what standardization challenges,
18 technology and standardization challenges, I
19 think this is a challenge that needs to be
20 flagged even in the domestic report. I don't
21 think it's something that is just to be dealt
22 with in the 5D process. I think it has to be

1 flagged here and highlighted as something that
2 needs to be dealt with and understood in its full
3 entirety, even domestically. So I would suggest
4 that we find some language to at least note that,
5 if it's not already.

6 MEMBER SOROND: This is Mariam. I
7 think there are two different things, right? And
8 you're raising a really good point, but that's
9 not a focus of here. This is in the context of
10 5G, so not so much sharing in general which is
11 happening right now globally and whatever. It
12 calls out specifically 5G. And just -- but it
13 could be answered in a way for 5G to say that,
14 for example, like you mentioned satellites, like
15 3GPP right now, the standardization bodies is
16 considering actually integrating satellite and
17 terrestrial, right?

18 I mean maybe in the future,
19 technologies or something, these separations
20 between systems, federal users, whatever, will go
21 away. But that's our challenge. There's so many
22 good ideas out there, future-looking ideas.

1 Which one is going to make it and which one is
2 going to happen, that's the question. So we were
3 trying to keep the scope only limited to what's
4 kind of like a future-looking technology as
5 opposed to the problem at hand right now.

6 MEMBER WARREN: Jennifer Warren. I'm
7 again just going off the question and the
8 challenges unique to 5G is associated with
9 federal, non-federal spectrum sharing. I would
10 think that unique to 5G will be the fact that --
11 well, perhaps you won't think it is, but I think
12 it's still a note that there is going to be a
13 differentiated -- significantly differentiated
14 band plan that might require different
15 approaches. But we can talk about it in your
16 next call. I guess there will be a next one.
17 Thank you.

18 CO-CHAIR ALDER: Other questions for
19 Robert, Mariam, and the rest of this
20 subcommittee? Any questions on the phone?

21 Okay, I think then that brings the end
22 of the subcommittee reports. So the next --

1 we're well ahead of schedule which is probably
2 good for a Friday afternoon.

3 The next item is the opportunity for
4 public comment. So I'll first ask do we have any
5 public comment within the room? Not seeing any
6 public comment in the room, I'll ask do we have
7 any public comment on the phone? So I do not
8 think we have any public comment today.

9 So we're down to the final agenda item
10 which is just closing comments from the chairs.
11 I'll make a couple of comments and then pass it
12 to Mark.

13 Really, my closing comments are more
14 administrative. It's just to remind folks that
15 the path that we talked about in the beginning, I
16 think there's been great progress. We heard
17 great updates today. The subcommittees are at
18 different phases of obviously writing the
19 specific recommendations, but I do feel like
20 everyone is on a path to have that and our firm
21 goal. And I think Mark's and our job will be to
22 hound some of the subcommittees a little bit to

1 have actual written text for the May meeting and
2 that May meeting is yet to be calendared. But
3 that's our goal to have that text, bring it.
4 Hopefully, have it finalized so that as Paige
5 said in the final meeting of this CSMAC, which
6 will be in the August time frame, CSMAC and NTIA
7 can provide feedback on the recommendation. So
8 that's kind of the schedule we're working to. So
9 I ask all the subcommittees to try and hit that
10 and I think everyone is doing a great job on
11 that.

12 I think that was my only comment.

13 Hold on, I wrote down here -- yes, I think that's
14 my main comment.

15 Mark, did you have any other comments?

16 CO-CHAIR GIBSON: The only thing I
17 would add is I realize and I think I had a quick
18 conversation with Paige about this, as well as
19 with Larry, the five work groups or
20 subcommittees, whatever we call them, is a lot,
21 so I would just like to say thank you for all the
22 hard work you're doing, especially with the work

1 product that's come out. It's really excellent.
2 So thanks again.

3 I also would like to thank Tom and the
4 kind folks at Wiley for the space. I'm sure this
5 goes for high dollar, so thank you again very
6 much. And with that, I hope everybody gets home
7 and go Terps.

8 (Off microphone comments.)

9 CO-CHAIR GIBSON: Good point. Bruce,
10 do we have any -- May 19th? Okay, so Bruce says
11 around May 19th, is it around or on? Some folks
12 have got travel arrangements, so as soon as we
13 can put it out, especially -- is it going to be
14 in the D.C. area? Okay, so it's in D.C. That
15 helps.

16 CO-CHAIR ALDER: Yes, there's not much
17 time. We've got a couple of months. I think
18 we're adjourning because I see people leaving.
19 Thanks, everyone.

20 (Whereupon, the above-entitled matter
21 went off the record at 3:19 p.m.)
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C E R T I F I C A T E

This is to certify that the foregoing transcript

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Management Advisory Committee

Before: USDOC/NTIA

Date: 03-18-16

Place: Washington, DC

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