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

C-O-N-T-E-N-T-S

Adjournment

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 it, 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.)

22

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C E R T I F I C A T E

This is to certify that the foregoing transcript

In the matter of: Meeting of the Commerce Spectrum
                   Management Advisory Committee

Before: USDOC/NTIA

Date: 03-18-16

Place: Washington, DC

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_____
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