

DEPARTMENT OF COMMERCE

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COMMERCE SPECTRUM MANAGEMENT

ADVISORY COMMITTEE

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MEETING

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WEDNESDAY

JUNE 8, 2016

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The Commerce Spectrum Management
Advisory Committee met in the offices of
Wilkinson Barker Knauer, LLP, Suite 800N, 1800 M
Street NW, Washington, D.C., at 1:00 p.m., Larry
Alder and H. Mark Gibson, Co-Chairs, presiding.

MEMBERS PRESENT

LARRY ALDER, Co-Chair

H. MARK GIBSON, Co-Chair

MICHAEL A. CALABRESE

MICHAEL S. CHARTIER

MARK E. CROSBY

THOMAS S. DOMBROWSKY, JR.

HAROLD FURCHTGOTT-ROTH

PAUL J. KOLODZY

ROBERT KUBIK*

MARK A. MCHENRY

ROBERT PEPPER

CARL POVELITES

CHARLA RATH

RICHARD L. REASER, JR.

JEFFREY H. REED

DENNIS A. ROBERSON

KURT SCHAUBACH

STEVE SHARKEY

MARIAM SOROND

BRYAN TRAMONT

JENNIFER WARREN

ALSO PRESENT

PAIGE ATKINS, Associate Administrator, Office of
Spectrum Management, NTIA

COLIN ALBERTS, Senior Counsel, FTI

PAUL ANUSZKIEWICZ, Vice President, Spectrum
Planning, CTIA

SIDD CHENUMOLU, Director, Technology
Development, Dish Network

WANDA COVINGTON-RAGSDALE, Telecommunications
Specialist, Office of Spectrum Management,
NTIA

BOB DENNY, Electronics Engineer, Office of
Spectrum Management, NTIA

REBECCA DORCH, Senior Spectrum Policy Analyst,
Institute for Telecommunication Sciences,
NTIA

DAVID J. REED, Chief, Spectrum Affairs and
Information Division, Office of Spectrum
Management, NTIA

DEREK KHLOPIN, Senior Advisor for Spectrum,
Office of the Assistant Secretary, NTIA

JON MOAK, Telecommunications Specialist, Office
of Spectrum Management, NTIA

STEVE MOLINA, Deputy Associate Administrator,
Spectrum Planning and Policy, Office of
Spectrum Management, NTIA

RICH ORSULAK, Engineer and Telecommunications
Specialist, Office of Spectrum Management,
NTIA

GLENN REYNOLDS, Chief of Staff, Office of the
Assistant Secretary, NTIA

ERIC ROSENBERG, Telecommunications Specialist,
Office of Spectrum Management, NTIA

BRUCE WASHINGTON, Chief of Staff, Office of
Spectrum Management, NTIA

* present by telephone

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

1:00 p.m.

1
2
3 CO-CHAIR ALDER: All right. Welcome,
4 everyone, to the CSMAC meeting. So we've got a
5 full agenda this week.

6 But before we get into all of the
7 details of the agenda we'll have our opening
8 remarks by -- standing in for Larry Strickling
9 here is Glenn Reynolds, chief of staff. So
10 Glenn, why don't you take it away.

11 MR. REYNOLDS: Thanks, Larry. I get
12 the opportunity and the honor of channeling Larry
13 I think for the second time before this group.
14 He sends his regards and his regrets for not
15 being able to make it here today. He got called
16 away at the last moment.

17 For those of you who know Larry you
18 know there's nothing he enjoys more than digging
19 into the weeds of difficult problems and so he
20 would prefer to be here. But hopefully we can
21 continue to work in his absence. And he'll be in
22 attendance for what presumably would be his last

1 CSMAC meeting in August.

2 First of all, thanks to Bryan and to
3 Wilkinson Barker for hosting us in their garage
4 which I guess is a bit of an homage to the
5 Silicon Valley startup world.

6 But I also want to thank everybody
7 that's here and all of the CSMAC members who are
8 not here for their work and the recommendations
9 you all are working on and continue to provide
10 support to NTIA.

11 While we are certainly entering the
12 home stretch on behalf of the administration
13 there is no doubt that spectrum will remain a
14 highly visible and bipartisan issue regardless of
15 who comes in for the next administration. CSMAC
16 thus will remain a vital component to NTIA's
17 ongoing efforts and the current work will be an
18 important resource for policy-makers well beyond
19 this year.

20 It is no secret to anyone in this room
21 that spectrum has become critically important to
22 our economy, to the people of this country and to

1 the important government missions that all of the
2 agencies are serving.

3 While this was certainly true before
4 this administration, as we at NTIA look back over
5 the past seven years it seems as if this issue as
6 a national policy priority has come out right in
7 front of our very eyes.

8 Today spectrum use permeates our daily
9 lives even if most of the users don't think of it
10 on a daily basis.

11 Indeed, wireless and mobility have
12 become elements of the digital economy and
13 keeping the U.S. at the forefront of the emerging
14 technology and development and adoption is a fact
15 that is being repeatedly acknowledged by the
16 President and indeed by my boss's boss Secretary
17 of Commerce Penny Pritzker.

18 Moreover, new uses for wireless
19 communications continue to emerge in many ways
20 tied to the emerging internet of things.

21 Spectrum requirements for IMT are
22 going to be extensive and they're going to be

1 diverse because the applications that will be
2 using them will be diverse. Smart cities,
3 autonomous vehicles, UAS and so on.

4 To empower this evolution we know the
5 industry is very focused on 5G technologies. And
6 we at NTIA and the administration generally are
7 working hard to support those objectives.

8 We also see government at the federal,
9 state and local levels seeking new spectrum in
10 new and exciting ways. Yes, sometimes
11 piggybacking on commercial technology
12 developments such as with FirstNet and LTE, but
13 in even more cases to meet unique missions that
14 participants in the commercial sector undoubtedly
15 are not focused on.

16 We have to accommodate all of these
17 diverse interests requirements in these cases.
18 It requires hard work but is a fascinating effort
19 that all of you are contributing to.

20 We continue to believe that this forum
21 is a crucial resource for NTIA to be able to draw
22 upon to help us look at and ultimately address

1 some of these really important challenges and
2 opportunities.

3 So I want to thank you again for your
4 hard work here at CSMAC and the recommendations
5 you are working to provide to NTIA.

6 We look forward to hearing those
7 recommendations today and starting on a new term
8 in the fall. Your input at this meeting and the
9 next one on the possible continuation of existing
10 work or proposed new questions will be extremely
11 helpful in developing the way forward for this
12 next session.

13 A couple of quick business notes.

14 First, we want to let everyone know that the
15 applications for nominations for the next two-
16 year membership term which will start this fall
17 have been received by NTIA.

18 After an initial review we've decided
19 to reopen the application window for nominations
20 as we seek to expand the pool of applicants and
21 thus ensure that the composition of the committee
22 reflects balanced points of view.

1 As always we are looking for a
2 balanced cross-section of interests in spectrum
3 management and policy including non-federal
4 spectrum users, state, regional, or local
5 sectors, technology developers and manufacturers,
6 academia, civil society and service providers
7 with customers in both domestic and international
8 markets.

9 We have very strong candidates to
10 consider and we'll have to make some very
11 difficult decisions, but I'm convinced that the
12 CSMAC will continue to have a very strong and
13 diverse membership that is more than capable of
14 addressing the challenging questions we have put
15 before the committee.

16 Second, I want to recognize a recent
17 addition to our NTIA team. Rebecca Dorch who is
18 back in the corner there. Many of you all may
19 know Rebecca from her past 10 years as the head
20 of the FCC's Western Regional Office, and before
21 that as an advisor within the FCC's headquarters
22 offices on policy issues.

1 She has just recently joined NTIA as
2 a senior spectrum policy advisor to the head of
3 our Institute for Telecommunications Sciences out
4 in Boulder helping Keith Gremban organize the
5 policy choices and just basically running the
6 shop out there.

7 Among the things she's been working on
8 is helping to pull together the next ISART
9 meeting which is going to be held the first week
10 of August in conjunction with the next meeting of
11 the CSMAC.

12 And as she has preempted me, I was
13 about to say I note that she has brought a number
14 of registration information pamphlets about
15 ISART. And hopefully we will see many of you
16 guys in Boulder both for CSMAC and then staying
17 on for the next couple of days for the ISART
18 conference.

19 And with that I'm going to hand it
20 back over to Mark and Larry.

21 CO-CHAIR ALDER: All right, thank you.
22 Thanks, Glenn.

1 So, before we get into the roll call
2 just a few openings comments about where we are.
3 First again, thanks Bryan. Bryan, do you have
4 any announcements about facilities that you want
5 to make?

6 MEMBER TRAMONT: I think everybody's
7 been here before, but if not the kitchen's across
8 the hall this way, the restroom is through the
9 lobby in the back door there. I think that's it.

10 CO-CHAIR ALDER: Thanks, Bryan. So,
11 as you know we're in kind of the home stretch of
12 this CSMAC.

13 I want to thank everyone. I've seen
14 a lot of productive work. We've all seen a lot
15 of productive work culminating in this meeting.
16 I think we have five robust presentations with
17 recommendations to consider.

18 Hopefully, the plan is we'll debate
19 those and bring a lot of those for a vote today.

20 We'll then progress towards the final
21 CSMAC meeting for this group which will be August
22 1 in Boulder.

1 The plan there is twofold. One is to
2 finish up any unfinished business from today that
3 we can't get done today.

4 What we'll do is also ask for any
5 additional material. Some of the groups I know
6 have reports in addition to the recommendations.
7 That all gets turned in and submitted.

8 We'll also at that point -- we're
9 asking that all the recommendations and reports
10 get in by July 15. I think David sent an email
11 to that effect.

12 And what will happen then is that will
13 give time for the NTIA to react and in the August
14 meeting also provide feedback on the work that's
15 been done. So the goal will be to wrap this up
16 by the 15th of July and then on August 1 there
17 will be feedback.

18 In addition to that what we're going
19 to do is collect suggestions for future work. So
20 what we're going to ask is that people submit
21 their suggestions either through the existing
22 committee co-chairs or directly.

1 You can send an email to Mark, myself,
2 and I think cc'ing Dave and Paige is the right
3 approach.

4 What we'll do is we'll collect all
5 that input, digest it somehow and have that also
6 as a topic of discussion on August 1. So a lot
7 to happen between now and August 1.

8 Let me ask is there any questions on
9 that timeline and where we're at?

10 MEMBER DOMBROWSKY: Same deadline for
11 submissions?

12 CO-CHAIR ALDER: Yes, we didn't really
13 think of a deadline for the suggestions, but that
14 sounds like a good one.

15 Okay. So with that let's go ahead and
16 we'll do a roll call. We'll just head around the
17 room and do introductions. Tom, do you want to
18 start?

19 MEMBER DOMBROWSKY: Tom Dombrowsky,
20 Wiley Rein.

21 MEMBER SCHAUBACH: Kurt Schaubach,
22 Federated Wireless.

1 MEMBER SOROND: Mariam Sorond, Dish
2 Network.

3 MEMBER ROBERSON: Dennis Roberson, IIT
4 and Roberson & Associates.

5 MEMBER REASER: Rick Reaser, Raytheon.

6 MEMBER SHARKEY: Steve Sharkey, T-
7 Mobile.

8 MEMBER MCHENRY: Mark McHenry of
9 Shared Spectrum Company.

10 MEMBER POVELITES: Carl Povelites,
11 AT&T.

12 MEMBER KOLODZY: Paul Kolodzy,
13 independent.

14 MEMBER FURCHTGOTT-ROTH: Harold
15 Furchtgott-Roth, Furchtgott-Roth Economic
16 Enterprises.

17 MEMBER CROSBY: Mark Crosby, EWA.

18 MEMBER CHARTIER: Mike Chartier,
19 Intel.

20 MEMBER PEPPER: Robert Pepper, Aspen
21 Institute.

22 MEMBER RATH: Charla Rath, Verizon.

1 MEMBER REED: Jeff Reed, Virginia
2 Tech.

3 MEMBER WARREN: Jennifer Warren.

4 MEMBER TRAMONT: And Bryan Tramont of
5 Wilkinson Barker.

6 MS. ATKINS: Paige Atkins.

7 CO-CHAIR GIBSON: Mark Gibson,
8 Comsearch. I just want to say that the
9 microphones are on so I don't think you have to
10 push anything. You can do that, we'll laugh at
11 you, but you don't have to push them.

12 CO-CHAIR ALDER: Larry Alder with
13 Google.

14 MR. REYNOLDS: And Glenn Reynolds with
15 NTIA.

16 CO-CHAIR ALDER: How about on the
17 phone? Do we have any CSMAC members on the
18 phone?

19 MEMBER KUBIK: Rob Kubik.

20 CO-CHAIR ALDER: Could you say that
21 again? I didn't quite hear that.

22 MEMBER KUBIK: Rob Kubik, Samsung.

1 CO-CHAIR ALDER: Any other members on
2 the phone? Shall we go around the outside of the
3 room?

4 MR. REED: Dave Reed, NTIA.

5 MS. COVINGTON-RAGSDALE: Wanda
6 Covington-Ragsdale, NTIA.

7 MR. ANUSZKIEWICZ: Paul Anuskiewicz,
8 CTIA.

9 MR. ALBERTS: Colin Alberts, FTI.

10 MS. DORCH: Rebecca Dorch, NTIA ITS.

11 MR. ROSENBERG: Eric Rosenberg, NTIA.

12 MR. MOAK: Jon Moak, NTIA.

13 MR. ORSULAK: Rich Orsulak, NTIA.

14 MR. WASHINGTON: Bruce Washington,
15 NTIA.

16 MR. LESLEY: Jeff Lesley, NTIA.

17 MR. DENNY: Bob Denny, NTIA.

18 MEMBER MCHENRY: Sidd Chenumolu, Dish
19 Network.

20 CO-CHAIR ALDER: Any other guests on
21 the phone?

22 I just wanted to mention, Mark and I

1 both wanted to mention that unfortunately I think
2 many saw the email that Dale's wife had a fall,
3 injured her hip. And so he's unable to attend.
4 I think his wife's health is all on our minds and
5 we hope she gets better quickly.

6 So with that I think that's our
7 opening comments. And so now we'll turn the page
8 for our spectrum update.

9 MS. ATKINS: Thank you. So we're
10 going to spend most of our time today discussing
11 the recommendations that are before us. That
12 will be the most important topic.

13 But I think it's always helpful to
14 hear about our activities, accomplishments and
15 priorities that help shape that discussion and
16 debate.

17 I also have often said that we need to
18 look at our spectrum challenges through different
19 lanes. And I'm hoping today that I'll not only
20 give you my normal spectrum update, but perhaps
21 seed some ideas that help us look at our
22 challenges and opportunities in a different way

1 and perhaps think of new and innovative solutions
2 that can help us fully exploit those
3 opportunities ahead of us.

4 So first I'll highlight a few things
5 that have occurred since our last CSMAC meeting
6 in March.

7 Chairman Wheeler and Assistant
8 Secretary Strickling met in early April for their
9 normal biannual session to discuss spectrum
10 planning and management priorities demonstrating
11 the Commission and NTIA's commitment to work
12 collaboratively in all of the areas that we're
13 discussing here and that I'll mention this
14 morning.

15 They discussed the FCC and NTIA's
16 collective work to identify and prioritize
17 opportunities to increase spectrum availability
18 including for 5G as well as other federal
19 innovative uses.

20 In an important example of this
21 collaboration both affirmed the continued
22 commitment toward achieving the 500 MHz

1 President's goal of additional spectrum being
2 made available for wireless broadband by the year
3 2020.

4 And as all of you know here we're
5 about halfway to that target. That does not
6 include the ongoing incentive auction which we're
7 very excited about. And we are definitely on
8 target to meet the goal by 2020.

9 With the FCC and our agency partners
10 along with members of the industry we continue to
11 evaluate the feasibility of increased sharing in
12 other bands including with unlicensed devices in
13 5 GHz. And there are two bands we're focused on,
14 5350 to 5470 MHz, and 5850 to 5925 MHz.

15 And we continue to make progress to
16 include a robust discussion on 5.9 GHz at a
17 stakeholders meeting in March for those of you
18 who participated.

19 And most recently the FCC's release of
20 a public notice to refresh the record in that
21 band.

22 We also have intensified our efforts

1 in 5350 to 5470 MHZ working with the agencies and
2 industry to establish accepted system parameters
3 and modeling approaches that will help us
4 determine if sharing is technically feasible in
5 that band.

6 NTIA is also performing some baseline
7 simulations which will be used domestically and
8 internationally in the coming months. And folks
9 will remember that these 5 GHZ bands are also
10 being looked at for 19.

11 As Larry has mentioned before we are
12 very optimistic that later this year in
13 consultation with the agencies we'll be able to
14 lay out a roadmap of how we're going to achieve
15 the 500 MHZ goal.

16 The SEC working in collaboration with
17 NTIA and the DoD is in the process of reviewing
18 the first wave of spectrum access system
19 administrator and environmental sensing
20 capability operator applicants as part of the
21 compliance process for the Citizens Broadband
22 Radio Service devices operating in the 3.5 GHZ

1 band.

2 We continue to work with the
3 Commission and DoD to define the SAS and ESC
4 certification requirements and processes that
5 will enable implementation. And we think those
6 will be critical as do SEC and DoD.

7 And we remain very excited about the
8 potential 3.5 GHZ to not only enable new
9 commercial services, but really to help us throw
10 out approaches and technologies that could be
11 applied to other bands as well.

12 And as collectively we expand our
13 vision to include retired bands above 24 GHZ
14 primarily in the millimeter wave region. For
15 example, for 5G, predominantly for 5G.

16 Chairman Wheeler stated that the
17 Commission will adopt a report this summer in the
18 Spectrum Frontiers proceeding. I believe
19 specifically in July.

20 And in addition to this significant
21 step forward the FCC working with NTIA will
22 continue to explore new opportunities to make

1 additional millimeter wave bands available and
2 explore sharing mechanisms between federal and
3 non-federal users as part of the further notice
4 of proposed rulemaking.

5 The Chairman is working on an
6 aggressive timeline and NTIA fully supports his
7 goals and to further our U.S. leadership in the
8 5G arena.

9 We will also continue to work our
10 global effort as I mentioned earlier which are
11 extremely important.

12 And it is our hope to maximize global
13 harmonization in these bands as appropriate and
14 as makes sense.

15 And that will help us continue to not
16 only demonstrate U.S. leadership, but also gain
17 the economies of scale which are helpful not only
18 to industry but as well to the consumers.

19 It remains no surprise that Congress
20 continues to be actively engaged with spectrum
21 issues.

22 Bills in different stages of maturity

1 and consideration include the Mobile Now Act, the
2 Spectrum Challenge Prize Act and the Private
3 Spectrum Relocation Funding Act of 2016.

4 While we believe that our current
5 spectrum management processes are working quite
6 well, we always keep an open mind regarding ideas
7 on how we can do things better.

8 Last but not least, and don't think
9 I'm too close to the end, I would like to
10 highlight the latest wireless spectrum R&D or
11 wizard workshop on enforcement that was held in
12 May, about a month ago. And several of you I
13 know also attended.

14 We talked about many of the
15 enforcement challenges that CSMAC has tackled
16 especially over the last couple of years.

17 And I will paraphrase Janice. Is
18 Janice here? Well, I will paraphrase Janice from
19 one of our CSMAC meetings last year, "Without
20 enforcement nothing else matters."

21 And as we move to a much more dynamic
22 sharing environment, especially between federal

1 and non-federal users, we need to establish a
2 foundation that allows us to evolve from where we
3 are today which is very reactive and static to
4 where we need to be in the future which is much
5 more proactive and automated.

6 And we need to leverage opportunities
7 to build in enforcement from the start versus
8 bolting it on afterward. And that will give us a
9 huge advantage in the future.

10 Now, after wizard I used a cyber
11 analogy and I think it bears repeating today.
12 And this is the seed ideas.

13 If you look at NIST's cybersecurity
14 framework, and I'm not sure if anyone's familiar
15 with it, but the framework core consists of five
16 concurrent and continuous functions - identify,
17 protect, detect, respond and recover.

18 And so fundamentally you think of it
19 as identifying the context. What assets do you
20 have, for what business purposes and at what
21 risk.

22 Then better protecting those systems.

1 In our case from interference in the first place.

2 Effectively detecting that something
3 is happening, where it's coming from and who's
4 doing it.

5 Mitigating or preventing impacts from
6 occurring.

7 And then when needed restoring
8 capability that was lost or impaired. You can't
9 adequately provide for cybersecurity without all
10 of those elements, and they're enabled by
11 technology, particularly in terms of near
12 realtime and realtime capability.

13 And then the policies and processes to
14 effectively leverage and apply that technology.
15 And there are some unique challenges with cyber
16 as there are with spectrum.

17 So likewise, the same applies to our
18 spectrum enforcement as well as just our ability
19 to share more dynamically and successfully in the
20 future.

21 So it's a solid analogy I think and
22 construct that we can learn from and perhaps

1 reapply in a different way.

2 There are many other cyber analogies,
3 such as how do we better share information. I
4 know it's of particular interest to many of you.

5 And how do we correlate and digest
6 large amounts of information quickly to address
7 the current and future challenges we face. Big
8 data which will be a topic of ISART as well.

9 Some cyber models may be useful and
10 applicable to the spectrum management and policy
11 world.

12 In addition to the cyber framework
13 that I described which I think is very applicable
14 information-sharing is a key pillar of effective
15 cybersecurity.

16 And I'll give you some examples. In
17 the cyber world you've got the information-
18 sharing and analysis centers, the ISTACs.

19 The National Council of ISTACs helps
20 coordinate across the sectors.

21 The National Cybersecurity and
22 Communications Integration Center which is more

1 operationally focused but includes not only
2 government entities but industry members that are
3 supporting these critical functions.

4 And within the NCCIC, the National
5 Cybersecurity and Communications Integration
6 Center, the cyber information-sharing and
7 collaboration program.

8 And the latter is considered DHS's
9 flagship program for public-private information-
10 sharing.

11 And all of these efforts really are
12 geared toward information-sharing among industry,
13 among non-government players as well as between
14 non-government and government entities.

15 Not all these approaches or constructs
16 will be directly applicable to the spectrum
17 challenges we face, but I encourage us to think
18 of these kinds of analogies that are relevant,
19 that we can learn from and that can help us look
20 at these challenges and opportunities in new and
21 different ways. So I encourage you to do that.

22 And I really look forward to the

1 discussion today on innovation. I hope that we
2 can finalize most if not all of them, though I
3 understand we may be a little shy on some.

4 And then as Larry mentioned that will
5 allow us to address some feedback in August. It
6 probably won't be quite as robust as the last
7 feedback on the last set of recommendations since
8 we'll have limited time to digest the
9 recommendations and what we can potentially do in
10 response.

11 We will do that during our final
12 meeting. And as Glenn mentioned this will be in
13 conjunction with the ISART and I do hope that
14 everybody takes maximum advantage while you're
15 out there to participate in the conference as
16 well as the CSMAC meeting.

17 And I'll extend the cyber analogy
18 here. So the ISART, and I don't think Glenn
19 mentioned the topic is spectrum forensics. So
20 spectrum measurements that support interference
21 monitoring, investigation and enforcement.

22 So again, much closer to the cyber

1 analogy than other areas. More information may
2 also be found at the ITS website on the
3 symposium.

4 And with that I'm going to turn it
5 back, or I'll offer up if anybody has any
6 questions.

7 CO-CHAIR ALDER: Questions for Paige?

8 MS. ATKINS: I'm not sure I've ever
9 said anything that didn't result in a question.

10 MEMBER CHARTIER: Could you send us
11 the link to those of us who were not at the
12 wizard meeting?

13 I think the cyber analogy is really
14 powerful. So could you send us -- to the group a
15 link to the cyber framework?

16 MS. ATKINS: I will send a link to the
17 cyber framework. That's on the NIST site.

18 But there's also -- I'll point you to
19 the wizard webcast because that's posted as well.
20 So you can also listen to the discussion.

21 CO-CHAIR ALDER: Other questions for
22 Paige? All right, Mark, why don't you take us

1 over and walk us through.

2 CO-CHAIR GIBSON: Okay. Thanks,
3 Larry. Just to be redundant please speak into
4 the microphone. You don't have to press any
5 buttons.

6 And also remember to announce your
7 name when you speak. And I'll try to if you
8 don't do that because again the transcript is
9 being done. So I'm just going to read that as a
10 standard thing from now on.

11 Okay, so, the top of the list. Oh,
12 and the other thing is we have a fair amount of
13 time for this but there's no need to be
14 loquacious, you know. So, I mean, unless you
15 have something to say. No, I'm just kidding.

16 What we're going to try to do is get
17 through these recommendations. And to the extent
18 feasible please provide clarity around them. You
19 don't need to read them because all of us are
20 literate here.

21 But I mean, what Paige and her team
22 are going to need is detail you feel you can

1 provide as you read these out so they can
2 deliberate on them.

3 I'd also like to take a moment and say
4 thanks to all the NTIA people that have been
5 participating in the calls. It's a lot of work,
6 we realize that, and thank you all for the work
7 you do. It really adds a lot of help and a lot
8 of dimension so thank you again.

9 So with that the first one, Charla.
10 I think Audrey is not with us so it's bi-
11 directional sharing.

12 MEMBER RATH: Great, thanks. And I
13 just echo the sentiment that Mark just said about
14 the help that we've been getting from NTIA. We
15 really appreciate the support. And also to my
16 subcommittee members.

17 As Mark said there's no need to read
18 everything to you. And in fact, three of our
19 recommendations were made at the last CSMAC and
20 they're nearly identical. And I just want to go
21 through what some of the differences are.

22 And just as a reminder to sort of step

1 back you can look on the first couple of pages,
2 you can see we had a very big question that was
3 put before us.

4 But one of the things that we asked
5 NTIA to do even before the specific question came
6 to us was actually give us use cases. Because
7 the sense was that would help us focus on really
8 trying to learn what were the reasons and what
9 were the issues behind a federal user needing or
10 requiring access to non-federal spectrum.

11 So, as a reminder what we did is we
12 split the use cases that we got into two
13 different areas, several that were clearly very
14 involved with public safety issues, and then one
15 that was specific to DoD.

16 What we did the last time is we
17 actually shared with you the recommendations that
18 were specific to the public safety
19 recommendations.

20 As it's really turned out and as we've
21 looked at them really all four of them are
22 recommendations that apply to all of the use

1 cases. But they were really developed
2 separately.

3 The first two, as I said the first two
4 are nearly identical. They're just there to help
5 keep us on point, making sure that we were
6 recommending to NTIA that NTIA should be doing
7 some things. So we sort of moved a little bit of
8 it around, particularly the second recommendation
9 where it suggests that NTIA develop and maintain
10 a database, but in the alternative the FCC might
11 do it. But either regard you've got to
12 coordinate. So those two are basically the same.

13 The third recommendation was initially
14 a recommendation that came out of the work that
15 we had done with the public safety community.
16 And it seemed like there was just this sort of
17 open question did it ever make sense for -- and
18 this is how it was written the last time, did it
19 ever make sense for a federal user to actually
20 have a license as opposed to doing it through the
21 process that it tends to be done through now
22 which is through a memorandum of understanding

1 where you would then get an assignment for that
2 frequency even though it was considered a quote
3 unquote "non-federal frequency."

4 When we went back to the table and
5 talked it through there was just some discussion
6 about, first off, maybe we should ask it both
7 ways. You know, is there ever an opportunity for
8 a non-federal user to get a direct assignment
9 from -- at that point we were talking NTIA versus
10 the FCC.

11 And then we searched it back even
12 further and said well, let's not even talk about
13 who's giving the assignment. It's just sort of a
14 discussion of is there ever a reason for a non-
15 federal user to have a specific notation that
16 they have access to federal spectrum.

17 So we really just posed the question.
18 We didn't answer it. We just thought maybe it's
19 an interesting one for further exploration.

20 I know, and this is just personal
21 experience with having dealt with this issue over
22 the course of a few years. I won't say how many.

1 But we have looked at this specific
2 issue before of just how difficult it is to get
3 around things that are in the Communications Act
4 about who gets to assign for a license.

5 So it's -- I think in a way a part of
6 what we were trying to do is step back from that
7 and see if there are ways to actually give direct
8 authorization without actually getting into the
9 nitty-gritty.

10 So before we move to the fourth
11 recommendation since that was one where there was
12 a fair amount of both general discussion as well
13 as some offline discussion I'm going to open it
14 up and see if anyone else on the subcommittee, if
15 I said it clearly enough. I'm looking at
16 Jennifer. Are we good? Are we good? Okay.

17 Any other comments too Mark since this
18 was again, I said it the last time, I'll say it
19 again. Mark actually really took the lead on the
20 public safety side of this.

21 And just to remind people where we
22 came out which was quite interesting is that

1 there were a large number of cases where some of
2 the community just didn't even know what was
3 available to them. So it seems like a relatively
4 simple thing to give in response to a fairly
5 complicated question, but I was laughing because
6 I wrote down transparency, communication. A lot
7 of the things that you just said, Paige.

8 And I think that's a big piece of it
9 is just to identify for federal agencies just
10 what's available to them now and how they can
11 take advantage of these things.

12 The last use case was one we touched
13 on a little bit in the last meeting. And it was
14 frankly, it was both more difficult and in some
15 ways easier.

16 It was a very, the use case, the
17 recommendation, it's hard to even call it a use
18 case, but what DoD was asking was for primary
19 allocation of spectrum at 2.1 which is the
20 downlink portion in the AWS3 spectrum that was
21 just auctioned about a year ago for \$40 billion.

22 So it was a somewhat narrowly

1 fashioned request, but it still had a lot of
2 things in it. Needless to say there were several
3 people on the committee who felt a little bit
4 uncomfortable with leaping directly into, yes,
5 let's tell NTIA that they should make this
6 recommendation.

7 And our view was we needed to step
8 back and look at the issue. And we felt like we
9 couldn't even make a recommendation for the FCC
10 to do an NOI.

11 And to me what was most interesting
12 about this is we had actually reached that
13 conclusion before our last meeting with DoD.

14 I unfortunately wasn't able to attend
15 that meeting but I saw some of the notes from it
16 afterwards. And for me at least personally it
17 really affirmed that there are a lot of different
18 reasons that affect why a federal user does not
19 have -- why they're not able to get access to
20 non-federal spectrum.

21 And that it's really worth further
22 exploration, and not necessarily in the context

1 of a regulatory proceeding.

2 So I mean, there was controversy about
3 this one, but ultimately the group decided that
4 what we would do is we'd recommend a workshop.

5 And we talked about not exploring, but
6 addressing.

7 And one of the things that I wanted to
8 mention here is that a lot of people were like oh
9 you know, another workshop. That's going to get
10 us nowhere.

11 First off, you mentioned wizard. And
12 the wizard workshops do actually produce fairly
13 detailed reports that the government has taken
14 action on some aspects of it. And that's what
15 they're meant to do. So I think that's a good
16 model.

17 One of the models that I brought up
18 was one that Dr. Pepper will remember, but an
19 auction workshop that we did 20 years ago that
20 Annenberg did in combination. I reminded Janice
21 of this too, is that we did -- and it literally
22 led to what the FCC adopted.

1 It was a group of these incredibly
2 brilliant economists sitting in a room and they
3 knocked out details of what needed to go into the
4 auction, the early auctions.

5 And frankly, that is really -- when we
6 were talking about it that's the kind of workshop
7 we're seeking. That it's not just -- this is not
8 just sort of a frivolous recommendation. This is
9 from our point of view a very serious
10 recommendation.

11 So, I'm not going to read it to you
12 but you can read it. And I am actually going to
13 open this up because again there was a fair
14 amount of discussion on this and I just wanted to
15 see if my subcommittee members, my colleagues had
16 anything to say in addition.

17 Really? So, any questions on this?

18 MEMBER ROBERSON: Yes. One of the
19 things that you pointed out, in fact a couple of
20 times is the fact that the people don't know
21 what's available to them today.

22 I was expecting based on that preamble

1 that there might be something in your
2 recommendation that would be to document all of
3 the existing.

4 MEMBER RATH: Actually, maybe I
5 misspoke because I wasn't talking about what's
6 available spectrum-wise specifically, although in
7 some cases, Mark, I think it may be that piece.

8 But it's actually just the whole
9 process too.

10 MEMBER ROBERSON: Well, I'm talking
11 about the process, yes.

12 MEMBER RATH: Yes. And that was
13 actually I thought implicit in the first
14 recommendation because the process to share is
15 not universally known. NTIA in coordination with
16 the FCC should prepare a reference document that
17 actually outlines it.

18 MEMBER ROBERSON: Okay.

19 MEMBER RATH: Yes, so that actually --
20 does that capture it for you?

21 Oh, the other thing I meant to mention
22 is that we do -- I'm sorry, I forgot to mention

1 this. You probably should have.

2 We are actually going to produce a
3 paper that goes into detail on our rationale for
4 these various recommendations.

5 It's been drafted. It's actually in
6 fairly good form at this point, but we just felt
7 -- we made a decision last week as a committee
8 that it was not ready to distribute to the full
9 CSMAC. And we have made a promise that you will
10 have it by the end of this month. I put July 1
11 because that was a Friday, but it will be
12 distributed. We just have some work to do on it.

13 CO-CHAIR GIBSON: Any questions for
14 Charla or comments? Okay.

15 CO-CHAIR ALDER: In your
16 recommendation two you talked about a database of
17 the existing agreements. Did you have a feeling
18 for how many of these existing agreements?

19 MEMBER CHARTIER: More than a dozen.
20 Mark Crosby. I think there's more than a
21 handful. We really don't know because who is in
22 the database, we don't know.

1 But I think just based on some of our
2 conversations with -- the conference call we had
3 awhile back with five or six of the federal
4 agencies they all had like two or three, right?
5 And then those were the ones they knew about.
6 There may be others. So I think there's more
7 than a handful. I think it's a meaningful
8 number.

9 CO-CHAIR GIBSON: Okay. Thanks, Mark.
10 Any other questions or comments? Rob, do you
11 have anything? I'll take that as a no.

12 MEMBER TRAMONT: Thank you, Bryan
13 Tramont. Our meeting with DoD also yielded an
14 MOU template which will be attached to the report
15 which we think is a helpful jumping off point
16 towards some conversations.

17 MEMBER RATH: Yes, and Rich will also
18 have a link to one at DHS as well.

19 MS. ATKINS: And that is related to my
20 question. Will the report address what would be
21 recommended in terms of elements to be included
22 in the MOUS related to facilitating sharing?

1 MEMBER RATH: Yes, it's recommended
2 and plus DoD is fine with us including the MOU.

3 MS. ATKINS: And then there was, as
4 part of the original question we had on what
5 options are available to incentivize licensees,
6 exclusive use licensees to share with users.

7 Did you -- I know at one point one of
8 the earlier meetings I think the answer was
9 money, but I was wondering if you'd had a chance.

10 MEMBER RATH: It's funny, Paige,
11 because as I was preparing for this I went back
12 and I was looking at that.

13 And part of the reason that we didn't
14 talk that much about that issue was because the
15 use cases, the first set of public safety use
16 cases we had really -- it didn't seem like it was
17 about incentives as much as it was about
18 information.

19 And the second, you know, I'm not sure
20 whether anyone else would have anything to say
21 about the discussion on the DoD point of view.

22 I mean, I think there are some

1 questions about incentives with auctioned
2 spectrum being maybe different than other kinds
3 of incentives because DoD, for example, did do
4 agreements with the broadcaster auxiliary in the
5 spectrum.

6 But in all fairness we didn't really
7 address it and it was in part because we were led
8 down a particular path because of the use cases.

9 But did anybody else want to comment
10 on that?

11 MEMBER WARREN: Jennifer Warren. So
12 no, I don't really think we had, as Charla said,
13 any discussion about that because we were so
14 caught up in the first question.

15 As was said any discussions about
16 incentives was public safety fed, not the FCC
17 licensees, the commercial licensees. But that
18 might be a suggestion for further work.

19 But I did want to just raise one other
20 issue if I could. And there was something here
21 in the scope of the second recommendation that is
22 interesting if everyone has a view on.

1 When we talked about developing a
2 database of MOUS there's a parens around the
3 pending MOUS.

4 And I think one of our questions
5 internally that we didn't really resolve is when
6 does a pending MOU become relevant to even have a
7 public database on. What could you have be
8 public other than those two entities talking.

9 So, it is in parens because it's just
10 not clear.

11 And then in response to something you
12 said, Paige, the MOUS I think we agreed were only
13 one option to look at. We're wanting to make
14 sure that our recommendations are not that the
15 MOU is the option for enhancing federal and non-
16 federal sharing.

17 MEMBER RATH: Yes. And actually just
18 to add to that. This is Charla again.

19 That what I think we sort of figured
20 out too is that originally when we were talking
21 about doing a workshop it was really we were
22 talking about it in the context of a DoD use

1 case.

2 But I think what became clear is that
3 really is a broader workshop to really talk about
4 the full range of possible use cases.

5 The other thing I did want to mention,
6 and Jennifer alluded to it, is that I do think
7 that what's going to come out of finishing up
8 this white paper are going to be a series of
9 recommendations for further CSMAC study.

10 MS. ATKINS: And I will go back to the
11 comment on public safety in terms of incentives.

12 In many cases the public safety MOUS
13 and agreements are driven by the need for
14 interoperability for a common purpose. So it is
15 a very different type of use case than a broader
16 use case of federal access to non-federal
17 spectrum, or I'll say increased sharing that
18 could end up resulting in some sort of regulatory
19 action as well to accommodate co-equal sharing or
20 not co-equal sharing. So it is a very unique
21 case.

22 CO-CHAIR GIBSON: Okay. With that we

1 would like to see if we can vote on these and
2 have them for approval.

3 So let me take a stab and ask if we
4 could vote on the whole slate of the
5 recommendations. Is there a motion to approve
6 the full slate of four recommendations as they're
7 represented?

8 MEMBER ROBERSON: So moved.

9 CO-CHAIR GIBSON: Dennis Roberson
10 moves and Paul Kolodzy seconds. Any further
11 discussion? Okay, all vote by saying aye.

12 (Chorus of ayes)

13 CO-CHAIR GIBSON: Any opposed?

14 (No response)

15 CO-CHAIR GIBSON: Any abstentions?

16 (No response)

17 CO-CHAIR GIBSON: Awesome. Okay,
18 thank you. I also would like to take a moment to
19 acknowledge the work that DoD did on this because
20 Fred Moorefield and the folks at CIO office were
21 very, very helpful in pulling this together. So
22 thanks to them.

1 Okay, Tom.

2 MEMBER DOMBROWSKY: Yes. Steve
3 Sharkey co-chaired with me. This is Tom
4 Dombrowsky. I'll go ahead and talk through the
5 report and I'll let Steve chime in when he wants
6 to or at the end, either way.

7 As we've talked before our report is
8 fairly brief because, one, this is sort of an
9 offshoot of other work we had done before.

10 Two, when we looked at this we didn't
11 see sort of radical changes that we could come up
12 with that we wanted to discuss.

13 Instead we focused very tightly on the
14 idea of how do we get more collaboration in terms
15 of information-sharing. So our two
16 recommendations are completely focused on how do
17 we get more interaction between the federal
18 government and non-federal government parties on
19 secret, classified, FOUO kind of information.

20 And what we found through some
21 different discussions, and the full report goes
22 through all the different discussions that we

1 had, who we reached out to.

2 But two different things. One,
3 investigating other government and non-government
4 structures for collaboration. So, the spectrum,
5 consumers from the National Advanced Spectrum and
6 Communications Test Network, both of those groups
7 have had discussions between industry and federal
8 government of secret and classified information
9 in certain contexts.

10 And they seem to have a pretty good
11 methodology of doing that. Whether you could
12 actually use those specific parties, or NTIA and
13 Commerce could use a model like that to set that
14 up under the CSMAC itself. So that was one
15 option we saw as a possibility for moving
16 forward.

17 The second was other FACA groups that
18 are within the government. Jennifer Warren
19 provided the examples of other committees that
20 are governed by FACA but still we're able to
21 actually have secret or classified discussions
22 depending on the material that had to be

1 discussed.

2 I think the real thing that we found
3 is that it goes to the charter of the FACA group.
4 If you can point to other statutes, basically,
5 you may be able to have some discussions of just
6 specific pieces of information. So the rest of
7 the committee would be in the open, but when you
8 had to actually go behind closed doors you could
9 go behind closed doors.

10 So I think those are the two things
11 that we looked at in terms of recommendations
12 that NTIA could look at to sort of help us as a
13 committee have more of those discussions when we
14 get to that level.

15 And I think the final thing I would
16 say is we look at this as sort of a supplement to
17 everything.

18 We think in general having large open
19 groups makes sense, but it also makes a lot of
20 sense to have the smaller groups to actually talk
21 to this when you actually get to the final sort
22 of decision-making part of the process.

1 Because both parties need to have the
2 trust to understand what the information is. The
3 commercial industry has stuff they don't want to
4 share out in the public. Certainly the federal
5 government does. But if you could have those
6 small groups that is protected possibly you can
7 get to some solutions in some of those cases.

8 And with that I don't know if Steve
9 had anything to add before we open it up to Tom.

10 MEMBER SHARKEY: Yes, Tom did a good
11 job of laying it out.

12 I think the bottom line is I'd say if
13 there's a will there's a way to make it happen.
14 There are a couple of ways to I think make that
15 sharing collaborative discussion work.

16 It really comes down to whether or not
17 I think the parties want to actively engage. It
18 probably comes back, Paige, to your reporting on
19 incentives too, whether or not the incentives are
20 there and interest on both sides to actively
21 engage in that.

22 And to Tom's point on the smaller

1 groups, smaller groups really do give a lot more
2 comfort. I think that's one of the things that
3 we saw as we were looking at the AWS3 work. As
4 the groups got very big and information is less
5 controlled, they want to know where it's going.
6 So some way to make sure that there is control
7 over that.

8 CO-CHAIR GIBSON: Okay, thanks, guys.
9 Any questions or comments? Okay, Paul?

10 MEMBER KOLODZY: Paul Kolodzy. Just
11 a question. You're using NSC as being one of
12 your examples and I'm kind of confused how that
13 applies because that's actually a funding
14 mechanism, how to get people to talk together to
15 actually respond to funding possibility from the
16 government.

17 I'm trying to figure out how that
18 actually enables spectrum sharing as information
19 in the sense of the context. Maybe I'm missing
20 something.

21 MEMBER DOMBROWSKY: Yes, no, that's a
22 fair point. But what they actually are allowed

1 to do under these contracts even in addition to
2 the sort of funding part they also are able to,
3 if they have an agency that's part of the group
4 and has work that they're doing you can still
5 have the discussions about technical data and
6 technical information within the NSC. At least
7 that's what we were told by the folks at the NSC.

8 MEMBER KOLODZY: Just as a follow-up.
9 Classified information is classified information.
10 So I'm still trying to figure out -- you can't
11 just wave a wand over that and just say because
12 we're part of this group we can talk about it.

13 MEMBER DOMBROWSKY: Oh no.

14 MEMBER KOLODZY: That's why I'm kind
15 of confused. You still have that protected
16 information issue.

17 MEMBER DOMBROWSKY: Agreed. Yes, you
18 still have that problem. But it was more that
19 they have a way of at least getting the right
20 people in the right room and then seeing if they
21 can get to the classified discussion while
22 complying with all the other requirements for

1 protecting information.

2 CO-CHAIR GIBSON: Yes, and it's Mark.
3 I can add some color to that because I actually
4 brokered the discussion with Alan Purdy and Van
5 on that topic.

6 And you're absolutely right. You're
7 lacking a contract vehicle to engage in those.
8 So you don't have sponsorship for D4's and
9 whatnot.

10 But what they did say was to the
11 extent that that can be put in place it
12 establishes a framework for the sponsorship of
13 the clearances if they don't exist, or to use of
14 existing clearances.

15 So we felt in that -- and I
16 participated. So we felt like in that context it
17 provided at least a framework where none may have
18 existed otherwise, notwithstanding what you said
19 in terms of some of the I wouldn't say barriers,
20 but the requirements.

21 MEMBER KOLODZY: So this would
22 actually be very good.

1 CO-CHAIR GIBSON: Yes.

2 MEMBER KOLODZY: If you're telling me
3 that the NSC could actually own the 254 and
4 members of --

5 CO-CHAIR GIBSON: No, no.

6 MEMBER KOLODZY: Okay.

7 CO-CHAIR GIBSON: The 254 is owned by
8 the sponsoring agency. The NSC provides a
9 framework to establish the relationship through
10 the OTA. So the sponsoring agency could be NTIA
11 or not, depends. And in fact we made a point of
12 saying it may not be.

13 But in the event that there is early
14 opportunity for the discussion, and I don't think
15 there's any out there that are like that, but if
16 there is an early opportunity for discussion, all
17 the i's have been dotted, the t's have been
18 crossed with respect to it passing through the
19 consortium, if the sponsoring agency felt like
20 there was the need to engage industry they could
21 through the consortium or directly through the
22 DSO or DAA, whatever, sponsor the clearance and

1 actually have that discussion.

2 And the idea would be that they're
3 hoping to entertain interested parties in the
4 context of the discussion of spectrum usage.

5 So, Alan described a very complex
6 framework that would need to be examined. That's
7 the crux of the recommendation.

8 MEMBER WARREN: Jennifer Warren. With
9 respect to the examples provided I think one of
10 the next steps would have to be looking at
11 whether there was an actual governing act that
12 could be incorporated into something that was
13 relevant to CSMAC or Commerce Department writ
14 large.

15 We did not take it to that step. We
16 simply looked at examples that exist elsewhere
17 where they have been successful in funding
18 mechanisms to allow for confidential briefings
19 and what have you of sensitive data.

20 So that's, again, I just wanted to be
21 clear how far we've gone versus what's still to
22 be done.

1 MS. ATKINS: This is Paige Atkins. So
2 there's quite a significant difference between
3 sensitive data and classified data. I would keep
4 those separate. The small groups may be relevant
5 and easier with sensitive information. We've
6 discussed certain issues with them in the past.

7 The bottom line from my perspective is
8 with the consortium and/or the NASDN vehicles.
9 It's all about you have some sort of contractual
10 mechanism in place. And that's what you're
11 leveraging and it's still really the same roles
12 that apply with any other contractual mechanism.

13 And I did notice a couple of things in
14 the report that we'll need to correct around the
15 OTA and how it's described.

16 So it's -- we just need to be careful
17 in terms of referencing models that are basically
18 the same kind of method that you would use to
19 exchange classified information in particular.
20 And we would not necessarily endorse a specific
21 contractual mechanism to do that.

22 The other comment I wanted to make was

1 related to the FACA recommendation. Does anybody
2 else have comments on the NASDN or NSC?

3 So on the FACA recommendation there
4 are FACAs or federal advisory committees that do
5 work on classified issues.

6 I think the challenge that we would
7 have is the constraints that tends to put you in
8 in terms of membership as well as transparency.

9 And so it is a potential vehicle we
10 can look into, but I would be concerned
11 particularly for what we're trying to achieve
12 here that it would constrain us in a way that is
13 working against what we're trying to do.

14 And so I just want to share that with
15 you.

16 CO-CHAIR GIBSON: Okay, thanks, Paige.
17 Motion to approve the recommendations? Larry?
18 Sorry.

19 MS. ATKINS: Sorry. One other thing
20 I did want to mention.

21 So, everyone here should remember that
22 we were working on an industry government

1 collaboration that the last subcommittee looked
2 at and said it felt like a reasonable approach.

3 So we are fleshing that out. In fact,
4 we should -- that's under Dave Reed's shop as
5 well. So we should be pretty close to a point
6 where we will start taking actions looking at
7 that multilayered approach including smaller
8 venues that we could leverage to spur more robust
9 discussion.

10 So I just want to let you know that we
11 are pursuing that and fleshing that out to a
12 detail that we can actually sort of come in.

13 CO-CHAIR ALDER: Okay. I just had a
14 question in your work. Was there things you
15 looked at that you thought didn't work?

16 Like I noticed that the MOU mechanism
17 that was used before wasn't mentioned. Were
18 there some things you guys looked at and said you
19 know, we don't recommend doing this?

20 MEMBER DOMBROWSKY: Not so much that
21 we found things we wouldn't recommend, but we
22 went down some blind alleys, I'll say that. We

1 started down a path and said no, that's not going
2 to work.

3 So it's more of -- we had some
4 examples of cases where folks we thought had been
5 collaborating in reality it was more dictating
6 rather than collaborating. I'll leave it at
7 that. I'll leave the names out to protect the
8 innocent. So, I don't think we have anything.

9 CO-CHAIR GIBSON: This was a complex
10 problem that we were trying to solve because we
11 wanted -- the context of being open and
12 transparent as Paige was saying, but allowing the
13 facility to share data that at least is
14 considered CUA or FOUO, whatever the designation
15 is anymore.

16 We didn't really get to the point
17 where it was classified. To the extent we could
18 that's more like extra credit.

19 And I think there will be more work on
20 this. But the recommendations are what they are.

21 Speaking of which we have a motion.
22 Is there a second? Are you going to make a

1 comment?

2 MEMBER ROBERSON: Well, I had a
3 question. Just to follow up on Larry, I think
4 what you described would be really helpful to
5 document to find out where are the blind alleys.

6 Identifying blind alleys is really
7 helpful. Otherwise others are going to follow
8 those same blind alleys.

9 CO-CHAIR GIBSON: All right, we have
10 a motion to approve. Is there a second? Mariam.
11 All in favor say aye.

12 (Chorus of ayes)

13 CO-CHAIR GIBSON: Any opposed?

14 (No response)

15 CO-CHAIR GIBSON: Anybody on the
16 phone?

17 (No response)

18 CO-CHAIR GIBSON: Any abstentions?

19 (No response)

20 CO-CHAIR GIBSON: Great, thank you.
21 Okay, the next one is measurement and sensing in
22 5 GHZ. So I see both Dennis and Paul. Who's

1 going to do it?

2 MEMBER ROBERSON: We're going to do it
3 as a dynamic duo.

4 CO-CHAIR GIBSON: That's what I
5 thought you guys were.

6 MEMBER KOLODZY: We're going to share.
7 I'll start off with the first five slides. Then
8 Dennis will have the last six slides.

9 But actually I'm not going to go into
10 all the materials we can read on our own.

11 Just to kind of remind folks this was
12 a study as to looking at the two 5 GHZ bands that
13 Paige mentioned and actually looking at how to
14 take measurements in those bands for trying to
15 determine if there was spectrum sharing
16 possibilities, and then how to enable spectrum
17 sharing, and trending analysis and sense of flow
18 spectrum sharing type of measurements.

19 And we did look at -- this is the
20 framework. We did look at areas as to their
21 distinct differences between priority spectrum
22 sharing which means you just have to find out if

1 somebody is in there or not versus actually
2 trying to initiate a robust system that actually
3 could protect against interference and against
4 incumbents or your sharing partners, interference
5 between those. And we have to look at that very
6 carefully.

7 We started off a little bit broad in
8 this group and then we narrowed in quite a bit
9 since the last meeting trying to focus in just on
10 those two bands.

11 So I think we'll try and take the
12 credit for having some of the longest
13 recommendations. But I'll try to paraphrase
14 these.

15 In a sense the first recommendation is
16 for priority sharing, trying to determine the
17 viability of sharing those techniques.

18 If you look at the two bands, the
19 lower U-NII-2B band, you take a look at that and
20 say listen, that is actually a system that it's
21 quite predictable what's going on.

22 And therefore using a measurement

1 technology and architecture that simply does a
2 lot of integration to pick up weak signals and to
3 be able to be fixed is quite viable in that area
4 for pre-sharing.

5 How often is it being used and what's
6 going on with those bands. And those are used
7 for airborne telemetry. So therefore you know
8 where it's going to be operating. You know where
9 it's going to actually be used. Very nice fixed
10 resources to try to do that.

11 That should be put in contrast to the
12 U-NII-4 band which is a very distributed system
13 if it's being used for the DSRC and the like.
14 And then trying to understand exactly how you're
15 going to determine those systems actually are
16 there. That will require a lot more systems
17 distributed over a variety of areas.

18 So, we're trying to basically say it's
19 one measurement architecture does not fit all
20 constraints, that you're going to have to take a
21 look at looking at things that are matched to the
22 type of signatures that you're actually trying to

1 measure.

2 It's not taking a spectrum analyzer up
3 there and asking the question is there something
4 there.

5 On our second recommendation which is
6 now moving from trying to determine priority
7 sharing to after you are starting to share so how
8 do you enable sharing, and how do you look at
9 post sharing, there we looked at the two bands
10 very separately again.

11 First of all, the lower bands, because
12 a lot of these systems in the database that are
13 applicable to databases have needs because
14 satellite systems that could be dynamically --
15 the database could be dynamically updated seems
16 to be a natural process you do to actually be
17 used there.

18 Or you can actually look at sparsity
19 distributed fixed elevated sites to be able to --
20 because those are very long range and so
21 therefore once you get them up you actually have
22 a very good indication of exactly the footprint

1 those are operating.

2 So that was a thought of the lower
3 band.

4 In the upper band this is where you're
5 going to see in a future recommendation
6 augmentation techniques might be the thing to
7 look at for policy.

8 So if you're going to have a
9 distributed system out there using the band why
10 not -- and you haven't deployed all the heavy
11 work just yet, why not augment the signal to make
12 it easier to detect.

13 You don't need to have null sector
14 updates. The question is what type of
15 augmentation techniques like beaconing or
16 whatever can be utilized so that it will make the
17 detection probabilities much, much higher.

18 So in some sense it's going away from
19 how to make a better measurement system and more
20 to the way of asking the question maybe you need
21 to investigate how to make the problem easier
22 versus trying to figure out how to build a bigger

1 system.

2 And so we actually recommend that you
3 take a look at some of those augmentation
4 technologies. We'll be writing up some of those
5 in the report as examples of augmentation
6 technologies, but beaconing is one example of
7 one, or preambles or whatever which is a type of
8 beaconing that can actually be built into the
9 signal.

10 So those are the first two
11 recommendations. I'll pass it on to Dennis.

12 MEMBER ROBERSON: The first two
13 recommendations were very focused on the 5 GHZ
14 topic. The remaining four are actually broader
15 and certainly encompass the 5 GHZ but are
16 broader.

17 I will add one important element even
18 as I start my portion, and that is to recognize
19 Ed Drocella and his contributions.

20 Because Ed as many of you would know
21 is an absolute rock in this area, or maybe the
22 rock would be a gem like a diamond, but he is

1 really very, very helpful in our deliberations
2 and we really want to recognize him for that.

3 Our recommendation three though begins
4 to look at establishing measurement criteria.

5 One of the challenges that we have
6 often when measurements are taken, people go off
7 and invent their way of doing their measurements,
8 come back with results and say see there. This
9 is the answer.

10 And then somebody else goes off and
11 does another set of measurements using different
12 criteria and different approaches and contradicts
13 the first one and you're back and forth.

14 So there's no underlying criteria or
15 standard for doing the measurements. So, the
16 recommendation here is that we seek to establish
17 a standard approach to measurement so that when
18 measurements have exceeded that standard then
19 they would be viewed as something that decisions
20 could be taken on. If they fail to exceed the
21 standard then they would not be viewed as
22 valuable. Maybe anecdotal information, but not

1 valuable.

2 The fourth recommendation was a very
3 comprehensive piece of work. Several of you are
4 already enjoying the page after this.

5 But we undertook a small piece of work
6 which expanded as it often does. And this is
7 really Mark McHenry and Paul and I.

8 Our little matrix, I actually
9 calculated it. Our little matrix has only 10,496
10 decision points in it.

11 And the recommendation here is that
12 since we got tired that the NTIA should take this
13 up.

14 What we did do, and what you'll see on
15 your chart, we did specifically focus on the two
16 relevant 5 GHZ bands and what you see in the top
17 just to help you even decipher what this is.
18 Larry was struggling with this a little earlier.

19 But on the rows side are the different
20 approaches to measurement. We came up with 14
21 different ways of measuring, different structures
22 for that.

1 And then we established seven
2 different parameters of high performance, low
3 performance, high altitude, and so on. And there
4 could even be more but we came up with seven.

5 And then we slotted specific examples
6 in the top level of systems that did fit in those
7 criteria.

8 So the yellow one in the top, the
9 second logical column over are some of the
10 systems that we are interested in particularly
11 for the U-NII-2B band.

12 And then if you look down below you
13 can see the techniques that would work to observe
14 those bands and the techniques that wouldn't work
15 quite so well.

16 And what you see off to the left
17 purposefully is as you get beyond the first few
18 columns there are a lot of blank columns, and
19 that is indicative of the work that needs to be
20 done. So that's the recommendation four.

21 And I actually do think it's very
22 valuable. It's a lot of work to put such a thing

1 together, but it is valuable in understanding how
2 to see things. And it does contribute to the
3 other recommendations.

4 Recommendation number five really Paul
5 already pre-referenced it. This has been work
6 that has been bounced back and forth, FCC as well
7 as discussions here.

8 But it often is very, very difficult
9 to detect some of these signals and to understand
10 what they are. So, adding additional identifying
11 characteristics to the signals, mandating those
12 such as beaconing or some -- if you go
13 historically, call signals or some way so that
14 the uniqueness of the way form, some way that you
15 would be able to identify what it is that you're
16 seeing out there is the recommendation.

17 And the A part, B part, A part is just
18 to declare that B part is -- since this really is
19 important to the FCC as well that this be a
20 collaborative effort between NTIA and the FCC in
21 that area.

22 The final recommendation is around the

1 sensing itself. The challenge here is that you
2 have various signals occupying a specific band.
3 And if you're trying to sense what is
4 interfering, what's out there that shouldn't be
5 out there you never know when to look because the
6 signals aren't coordinated in time.

7 So if we did establish sensing periods
8 as a mandate within signals so that there were
9 points at which you could look and know that all
10 of the signals that were within certain
11 categories were turned off that would be
12 enormously valuable to identify other signals
13 that are there that maybe shouldn't be there or
14 maybe are coming from a long distance or whatever
15 it might be.

16 So those are our six recommendations.
17 The final couple of pages illustrates some -- or
18 two before the final one are sample band
19 characterization.

20 And this, I really compliment Rick
21 Reaser and one of his guys for pulling this
22 together. So this is the work that I referenced

1 on the earlier chart of identifying all of the
2 actual signals that are in the relevant bands.
3 In fact, the whole 5 GHZ but this is looking at
4 the U-NII-2B on the first and the U-NII-4 on the
5 second of these charts.

6 This again is a large matrix because
7 it does cover all the way to looking before. So
8 we looked from 4.9 through 6 GHZ and have a
9 compilation. But this is a significant
10 contribution that was made by the group just in
11 pulling this together. And again, kudos to Rick
12 on that.

13 The final chart says that our
14 perspective is that while we did a lot of work
15 there's a lot more to be done here. So this may
16 be a candidate area that we would wish to
17 continue as we move to the next round of CSMAC
18 adding additional questions but working in the
19 same domain. It's a fertile area.

20 An opportunity of course would be for
21 an NTIA team to come back with our recommendation
22 for fleshing out the matrix, the colorful matrix

1 and say great work. Go back and do some more of
2 that.

3 CO-CHAIR GIBSON: So thanks again. So
4 thanks gentlemen. Any questions or comments?

5 MEMBER ROBERSON: Well, first any
6 comments from colleagues?

7 MEMBER REASER: In picking up a little
8 brochure here, that matrix that we did, that's
9 sort of like the investigation of the crime
10 scene.

11 So, in order to do the spectrum
12 forensics part of this you have to do the crime
13 scene investigation first. So that's one of the
14 things we want to recommend.

15 That's why Ed was so helpful because
16 the federal spectrum kind of ends at 5 GHZ. So
17 we had to go off and figure that out. Ed was a
18 super help in that regard.

19 But you kind of have to know
20 everything that's out there before you can decide
21 what to do with it. And that was kind of why we
22 went down -- and I know that Paige thought we

1 went down a rathole.

2 (Laughter)

3 MEMBER REASER: So we focused on the
4 two bands. But really, I mean sure, you're going
5 to have to figure all this stuff out. There's
6 going to have to be something like this done to
7 keep track of stuff.

8 CO-CHAIR GIBSON: All right, thanks.
9 I would like to strike the term "crime scene"
10 from the record but it's already out there.

11 MEMBER REASER: Forensics?

12 CO-CHAIR GIBSON: Yes, that's
13 different. Mike, did you have a comment?

14 MEMBER CALABRESE: Yes, Michael
15 Calabrese. So, a question on each of these.
16 Well, lower-upper.

17 So, for the lower it seems as if you
18 anticipate essentially an extension of 3.5 ESC
19 approach that there would be -- on the civil side
20 there would be a sensing that that's going to
21 communicate to a geolocation database which seems
22 to be what you're describing.

1 But I'm wondering on that band did you
2 consider whether the radar system itself could
3 signal or beacon? You know, if it wouldn't be
4 very economical to add something even if it's on
5 another frequency so that the radar says I'm
6 doing my radar thing right now, get out of the
7 way, as opposed to having to have a more
8 elaborate -- the need for an elaborate mechanism,
9 what I can do at 3.5 to detect.

10 MEMBER ROBERSON: That is actually
11 recommendation five.

12 MEMBER CALABRESE: Oh, okay.

13 MEMBER KOLODZY: Yes. But be careful.
14 We're trying to distinguish between these because
15 some of them are military radars and so we're not
16 trying to give them beaconing based on the people
17 they're using it for we don't want them to deal
18 with beaconing off it.

19 MEMBER CALABRESE: But you want
20 potential users to hear something.

21 MEMBER KOLODZY: Well, no, we were
22 trying to distinguish -- that's what we said

1 about privacy and security in recommendation
2 five.

3 If you're going to augment you must
4 take into consideration. We talked a lot about
5 this within the group between security and
6 privacy versus having an easier way of sensing.

7 In the cases where it's military
8 radars we were concerned very much about the
9 security, ergo why we actually looked at the
10 sensing network to actually do it that way versus
11 the systems which may not have the security
12 issues like DSRC and stuff like that. Then you
13 might be able to use augmentation to make it much
14 easier to signal.

15 CO-CHAIR GIBSON: That was the subject
16 of no small amount of discussion.

17 MEMBER KOLODZY: At least two
18 meetings.

19 MEMBER ROBERSON: Yes, I was going to
20 say, multiple meetings worth of conversation.

21 MEMBER CALABRESE: So I just want to
22 ask, do these recommendations have any reference

1 toward -- I guess I'm just not seeing it --
2 whether federal users should consider and it's
3 just announcing them. Putting something out
4 that's easier to detach. As opposed to relying
5 on the civil side to set up a sensing network, or
6 use a sensing network and relay the information
7 to a geolocation database.

8 MEMBER KOLODZY: And the answer is
9 yes, actually that's what recommendation five
10 says as Dennis said.

11 We do recommend that NTIA look at that
12 as long as they take into consideration the
13 privacy and security aspects.

14 MEMBER CALABRESE: Oh yes.

15 MEMBER KOLODZY: And that's the only
16 thing we're saying. Because we think in some
17 areas it's pretty straightforward, but in others
18 it was a little grayer. And then we'd have to
19 actually take a look at it from the federal
20 services view as to could they give up that
21 security or privacy issue and still maintain
22 either job.

1 CO-CHAIR GIBSON: And they mentioned
2 beaconing. I want to just keep us on topic.
3 This is measurement and sensing. This isn't
4 implying that there's any special thing that the
5 federal user is doing to say yes, I'm here. It's
6 measurement and sensing.

7 And so some of this is supposed to be
8 in the context of what they're already doing.
9 And I think Paul's right, that's what
10 recommendation five is trying to do.

11 To the extent -- what you're talking
12 about, Michael, is something that should be
13 discussed. I think it's outside the context of
14 this working group unless we're talking about
15 putting beacons on federal systems.

16 And actually that did come up. Paul
17 talked about putting beacons on radars to the
18 extent feasible.

19 But I can't overstate what Paul and
20 Dennis and what Jennifer is busting to say is
21 that the operation security issues that are
22 attendant to this issue have to be considered.

1 And I think that's very important.

2 MEMBER CALABRESE: So I was assuming
3 the security issue will be considered either way.

4 CO-CHAIR GIBSON: Yes.

5 MEMBER CALABRESE: But I just wanted
6 to make sure that we're considering that a tool
7 and a kit shouldn't be for the federal incumbent
8 to beacon and signal because in fact that might
9 actually be better for them. They can be heard
10 more clearly than try to pick out a way for them,
11 for example.

12 The other question is on the upper
13 part of the band is, so you talk about consider
14 employing a signal augmentation beaconing
15 approach. What's a practical example of that in
16 the 5.9 band? For DSRC purposes.

17 MEMBER KOLODZY: This is Paul Kolodzy.
18 As an example, I would just say not the only
19 thing between the group we were talking about, if
20 you have DSRC and you have actual systems that
21 are deployed, your bay stations or whatever your
22 systems could actually beacon out on a very

1 infrequent basis since they don't move where
2 they're actually being located and where they're
3 actually working at.

4 So you can actually see where the
5 corridors are and things like that. So that
6 could be an example.

7 We're hoping that we'll have some
8 people around that actually could pick out even
9 better examples.

10 CO-CHAIR GIBSON: Okay, thanks,
11 Michael. Tom and then Jennifer.

12 MEMBER DOMBROWSKY: I'm going to defer
13 to Jennifer.

14 MEMBER WARREN: Jennifer Warren. I
15 actually have a couple of questions and a comment
16 which I'll save for last.

17 So, in reading these obviously in my
18 mind in reading recommendation one and two really
19 stuck to the question of the two 5 GHZ bands
20 whereas the other three, four, five and six seem
21 to be articulated to a broader applicability, or
22 at least a desire for broader applicability.

1 So, with that in mind, that's why I'll
2 make some of my comments because they're actually
3 not limited.

4 But I wanted to ask for recommendation
5 three it seems like that would be the first step
6 for anything. Would you agree? Defining the
7 measurement systems requirements.

8 It seems to kind of set out generally
9 what a measurement system should look like.

10 So, before you were talking about
11 techniques. Would you have to do this one first?
12 So recommendation three would actually be the
13 first.

14 MEMBER KOLODZY: Yes, you don't know
15 what you're measuring but you know it's there.

16 MEMBER WARREN: I'm just checking.

17 MEMBER KOLODZY: And it turned out it
18 was the first thing we really dug into.

19 MEMBER WARREN: Okay, that makes
20 sense.

21 MEMBER KOLODZY: So, not surprisingly
22 just to continue my comments are going to focus

1 on recommendation five. And I probably will
2 recommend at the end that we do the
3 recommendations one at a time.

4 So, I was really heartened to hear the
5 discussion that took place that isn't really
6 reflected here except for that last line.

7 MEMBER KOLODZY: -- the last sentence.

8 MEMBER WARREN: Very nuanced. I think
9 what's missing here though is a reflection of
10 policy to actually augment the low probability
11 detection of many systems, of federal systems
12 from an operational perspective.

13 This seems to suggest that there's not
14 value in that, or that we need to address both
15 security and privacy. We say that about a lot of
16 things. It doesn't really reflect that there are
17 policies to augment low probability detection in
18 some federal systems.

19 MEMBER KOLODZY: And it's one federal
20 system you're talking about.

21 MEMBER WARREN: No, not really.

22 MEMBER KOLODZY: Now all federal

1 systems are LPD.

2 MEMBER WARREN: No, I know, but there
3 are efforts to expand LPD. But I mean there are
4 policies, and I think there ought to be a
5 recognition stated that there are systems that
6 are designed for LPD and LPI of course as well.

7 MEMBER KOLODZY: Well, that one
8 sentence when you read it in the report actually
9 will go into that.

10 MEMBER WARREN: Okay, so this one line
11 in the recommendation has a much larger import.

12 MEMBER KOLODZY: Oh yes.

13 MEMBER WARREN: I didn't understand
14 that.

15 MEMBER KOLODZY: These recommendations
16 were long enough. We started actually putting
17 all that in.

18 MEMBER ROBERSON: Well, in fact, some
19 of these recommendations as long as they are were
20 a page long before we cut them back to what you
21 see.

22 MEMBER WARREN: Okay, so the report

1 will be very clear that there's federal policy
2 behind --

3 MEMBER ROBERSON: Yes.

4 MEMBER WARREN: And to support LPD as
5 well. It's not clear -- well, I can't tell that.

6 MEMBER KOLODZY: That's what security
7 generally means. When somebody is having an LPD
8 system and they're insecure because it can be
9 detected that's usually a lack of security.

10 CO-CHAIR GIBSON: Okay, so Jennifer's
11 question is answered that it should be in the
12 report.

13 MEMBER WARREN: It will be in the
14 report.

15 And then on the second part of that
16 for B it would seem to me, and we were talking
17 about this, there may be detectability and
18 mitigation for the commercial signals is intended
19 to also include identification or attribution.

20 But it wasn't clear to me that when
21 you look at 5B that detectability and mitigation
22 actually includes identification and/or

1 attribution to what device or what the source is.

2 So if we're talking unlicensed
3 devices.

4 MEMBER KOLODZY: This is Paul again.
5 Yes, agreed on that statement. That sort of
6 exists in the coordinated sensing is so that you
7 could actually separate out the wheat from the
8 chaff, that you actually know what you're
9 detecting versus detecting the sharing signals
10 versus detecting the primary signal.

11 So that's actually -- five and six
12 actually go together in that respect.

13 So I see what you're saying which is
14 you're asking the question how do you know you're
15 actually measuring the primary, right?

16 MEMBER WARREN: How do you know --
17 beyond that it's an unlicensed device. How do
18 you know whose unlicensed device it is?

19 MEMBER KOLODZY: But that's not
20 detecting the primary. Are you looking at the
21 primary being the unlicensed device?

22 MEMBER WARREN: Again, these are broad

1 statements. This isn't specific to --

2 MEMBER KOLODZY: Well no, we're
3 looking at the question that we're trying to
4 answer. We're trying to answer when we're trying
5 to share how do we detect.

6 So if we detect something and it's not
7 even the primary.

8 MEMBER WARREN: What if there's no
9 primary? I mean, there's no assumptions here to
10 say one isn't primary and one is primary.

11 There may have been a lot of
12 discussion but standalone recommendations I can't
13 tell what your assumptions are for that sharing
14 environment. So that's why I'm asking this
15 question.

16 CO-CHAIR GIBSON: You look puzzled,
17 Paul.

18 MEMBER KOLODZY: I'm puzzled.

19 MEMBER TRAMONT: So how do you
20 mitigate if you don't know who it is? Sorry,
21 Bryan Tramont. How do you mitigate if you don't
22 know who it is?

1 MEMBER KOLODZY: Well, the question is
2 is the measurement system requirements we're
3 trying to detect in a lot of cases. So if you
4 don't know who it is but you're detecting a
5 signal that tends to tell you you don't want to
6 use that signal.

7 That is at least a very high bar to
8 prevent interference.

9 CO-CHAIR GIBSON: So you're saying
10 it's in a sense an avoid approach basically?

11 MEMBER KOLODZY: Well, that's one
12 example.

13 CO-CHAIR GIBSON: Okay.

14 MEMBER KOLODZY: So that's why I'm
15 confused. If I don't know who it is but I don't
16 use the band then I'm not interfering with it so
17 that's a high bar.

18 Then you go to the low bar which is I
19 want to share as much as I can, and at that point
20 then you have to take a look at things like what
21 recommendation six indicates which is how do I
22 separate the different signature types.

1 MEMBER ROBERSON: And a critical point
2 that is implicit in all of this -- this is Dennis
3 Roberson -- is enforcement.

4 We put enforcement on the table and
5 then took it right off again because it was such
6 a big topic by itself. And it sounds like you're
7 moving down the path towards -- no?

8 CO-CHAIR GIBSON: No. I think I know
9 where this is going. So Paul? No, it's a good
10 thing, I just want to -- Tom?

11 MEMBER WARREN: I'm done for now.
12 Thank you.

13 MEMBER DOMBROWSKY: I had a feeling
14 she would cover my question but she didn't quite
15 get there. That's too bad. Tom Dombrowsky.
16 Just a quick question.

17 I know there's going to be a big
18 report behind this, but when I looked at the
19 question it was talking about strengths and
20 weaknesses.

21 The way I read these recommendations
22 were we had to do a bunch of measurements and do

1 a bunch of analysis before we can even figure out
2 what the strengths and weaknesses are. Am I
3 misreading that completely?

4 Because the question was what are the
5 strengths and weaknesses and how are we going to
6 overcome them. And it seems like there's a lot
7 of sort of measurements and things of that
8 nature, data-gathering and analysis that you're
9 suggesting. But I'm not sure how it's getting to
10 the question itself which is what are the
11 strengths and weaknesses.

12 Should I use measurement or should I
13 use sensors? I didn't see that in the
14 recommendation. That's what confused me.

15 MEMBER ROBERSON: I think where we
16 came at that was really the colorful chart again.

17 Because it isn't use or don't use, it
18 is use the right tool. So, if you use the right
19 tool you can accomplish significant things.

20 MEMBER DOMBROWSKY: And is the full
21 report going to go to sort of that kind of level
22 of information?

1 MEMBER ROBERSON: Sure.

2 MEMBER KOLODZY: Well, yes and no.
3 it's going to tell you we want you to do that.
4 Remember, we didn't say -- we didn't fill out the
5 entire archive.

6 But for instance, if the signal is
7 weak and distributed versus the signal is weak
8 but in a very localized area, versus the signal
9 is an airborne signal going over long ranges with
10 high gain versus a signal that's a satellite
11 that's going down because uniform signal
12 strength, field strength, that would have you go
13 down different directions than actually how to
14 use the measurements.

15 MEMBER DOMBROWSKY: And so the full
16 report will sort of go through the fact that it's
17 not a black and white answer, it's going to
18 depend, and you've got data here that sort of
19 tells you all that.

20 MEMBER KOLODZY: Ergo the first
21 recommendation actually says one size does not
22 fit all.

1 MEMBER ROBERSON: And that's the
2 critical point of this. The question as stated
3 sort of suggests is it or isn't it.

4 Well, it depends on what tool you're
5 using. If you are trying to cut a board in half
6 and you try to use a hammer to do so maybe it
7 will work, but it's not a very efficient way of
8 sawing a board.

9 MEMBER DOMBROWSKY: Okay. I just
10 needed clarity because I haven't seen the full
11 report, I just saw the recommendations.

12 CO-CHAIR GIBSON: Harold, did you have
13 a comment?

14 MEMBER FURCHTGOTT-ROTH: Yes, just
15 seeking some clarification on the report. This
16 is very helpful in a lot of ways.

17 And I think this may build on some of
18 Jennifer's concern recommendation 5B and focusing
19 more on the sharing part.

20 I think a lot of discussion I think is
21 that incremental sharing above and beyond where
22 we are now.

1 But if you look at cable allocation
2 for federal users and non-federal users there is
3 every -- not every, but most bands of spectrum
4 are certainly 5 GHZ. You have believe federal
5 users and non-federal users already there.

6 They're already sharing every possible
7 aspect. That's without even considering
8 unlicensed applications.

9 So, in writing it up to try to clarify
10 exactly what you mean by techniques to augment
11 the detectability and mitigation of transmissions
12 from users and services that shares federal
13 spectrum.

14 And whether you need every non-federal
15 user that's already using the band, whether
16 you're talking about incremental non-federal
17 users. There's a lot of different applications
18 that are going on. A lot of focus on the 5 GHZ
19 band by a lot of non-federal users too.

20 CO-CHAIR GIBSON: All right, thanks,
21 Harold. Mike?

22 MEMBER CHARTIER: Yes, Mike Chartier.

1 Just to comment on that.

2 One of the long discussions we had on
3 that point for wi-fi type uses is that every
4 other app on your phone asks if it can use your
5 location information as being able to augment
6 that app, or to get access to something.

7 So you can easily envision where that
8 type of information could be captured for
9 individual users. And especially when you're
10 talking about interference. If you even capture
11 10 or 20 or 30 percent of the users that's useful
12 information in understanding the potential for
13 interference, and also a potential mechanism for
14 turning it off, or shifting it to another band.

15 That's one of the areas where we
16 looked at sharing personal information might be
17 able to augment both getting access to the
18 special mode. Also mitigating any interference
19 if it occurs. We know it's coming from this
20 location. These are users there.

21 MEMBER FURCHTGOTT-ROTH: Just as we're
22 aware of the enormous privacy and security issues

1 that are encompassed in all of that.

2 CO-CHAIR GIBSON: I think we're well
3 aware of that.

4 MEMBER CHARTIER: It's enormous, but
5 people do it every day millions of times a day.

6 MEMBER FURCHTGOTT-ROTH: Yes, but when
7 you get the federal government involved in
8 actually doing that it's very different from
9 private entities.

10 (Simultaneous speaking)

11 CO-CHAIR GIBSON: All right. I'm
12 going to turn it over to Paige now for her
13 comments.

14 MS. ATKINS: This is very good work.
15 It reminds me a little bit of enforcement. It's
16 a very complex multilayered challenge so it's how
17 we dissect it. So we again take the right
18 actions at the right time.

19 And a couple of my high-level comments
20 initially will be applicable really to all of the
21 recommendations.

22 We have to think about limited

1 resources and understand what our priorities are
2 and when we get multiple recommendations back on
3 particular topics if you can help us understand
4 kind of the timing and priorities that we should
5 consider them in as we weigh resources because we
6 won't be able to do everything.

7 And in some cases these are -- some of
8 the recommendations, not necessarily just here,
9 but in general are quite labor-intensive. So we
10 want to help us understand what that should look
11 like.

12 MEMBER ROBERSON: But if I could give
13 part of the kudos to Ed Drocella, one of the
14 things that we used as a test for our
15 recommendations is to have Ed determine whether
16 or not he could write a work plan associated with
17 the recommendation. And he could.

18 MS. ATKINS: Doesn't mean he has the
19 resources.

20 (Laughter)

21 MEMBER ROBERSON: I was going to say
22 exactly that. That does not obviate what you

1 said, but at least a work plan could be
2 constructed around these which is sometimes not
3 the case. You put a recommendation in. What do
4 I do with this.

5 MS. ATKINS: And I think if he
6 understands it enough to do that that's
7 important.

8 But at the same time just on the
9 recommendations as they're written here they
10 could be tightened up a bit so we really
11 understand the intent and what the action is
12 intended to do or should do.

13 For me it wasn't totally clear as I
14 read the slides. So I ask you to re-look at
15 that.

16 Also, in some cases, for instance some
17 of the recommendations seem to perhaps overlap a
18 little bit with last year's recommendations in
19 terms of approach.

20 Like the recommendation one to me
21 looked like it was focused on occupancy
22 measurements. And in terms of the approach that

1 was laid out last year I'll start with limited
2 measurements, characterized, more detailed
3 measurements, get cetera.

4 So if there are interrelationships
5 with the recommendations from the last term or
6 the last set of questions, if you could identify
7 those I think that would help us understand
8 things that we're trying to consider, and again,
9 priorities and sequencing.

10 One of the areas I was a little
11 confused on. This covers the scope of everything
12 from a device-based DFS to dedicated sensors and
13 measuring capabilities. Is that true? Because
14 it was a little -- I didn't necessarily get that
15 from the material that I was reading.

16 So just again, that may be my own
17 ignorance to be able to pull it out. So if
18 that's the case I just want to make sure
19 whatever's written up is clear on that.

20 MEMBER ROBERSON: We're back to the
21 challenge where the documentation is intended to
22 cover that. These without the documentation

1 sometimes are a little bit obscure.

2 MS. ATKINS: And I think those are
3 basically my primary comments and questions. I
4 appreciate it. And again, a lot of good work in
5 a very complex area.

6 CO-CHAIR GIBSON: Okay. Thanks,
7 Paige. This one got a late start too because
8 everybody was really busy at the outset. So we
9 actually had about a weekly meeting cadence on
10 this. So there was a whole lot of work put into
11 this.

12 Let me just take the temperature of
13 the room at this point. How many people feel
14 that we have a set of recommendations we can
15 vote? Are any of these recommendations voteable
16 at this point?

17 Jennifer is concerned and I kind of
18 tend to agree that voting en masse is probably
19 not going to work. So which do you think should
20 be extracted perhaps and voted on separately?

21 MEMBER WARREN: I don't want to be
22 presumptuous but I certainly would think that

1 recommendation five should be voted on. I mean,
2 it depends. Do you mean to move forward for
3 consensus?

4 CO-CHAIR GIBSON: Yes.

5 MEMBER WARREN: Well, I would think
6 recommendation three is a very easy one to vote
7 on and to support.

8 Oh yes, one and two, three. Sorry, I
9 was taking out. My apologies. Probably even
10 four. I think it gets a little -- there are more
11 questions at least for five. And we didn't have
12 a lot of discussion of six, but if they're
13 interweaved then I would bring six together with
14 five.

15 CO-CHAIR GIBSON: So what I'm hearing
16 from the chairs is that there's a lot of detail
17 that they couldn't put in these recommendations.

18 And I saw the recommendations and they
19 stripped a lot of it out just to make them
20 readable. Well not readable, but you know. Not
21 loquacious.

22 Do you feel like with the appropriate

1 explanation that these fellows say that is going
2 to be provided we would have a slate of
3 recommendations we could vote on, or should we
4 vote on one to four and pull five and six out?

5 MEMBER TRAMONT: Does that mean we do
6 them in August?

7 CO-CHAIR GIBSON: We'd have to do them
8 in August, yes. What would you guys prefer? Do
9 you think you could add more detail to five and
10 six between now and August so that we could --
11 Steve, do you have a comment?

12 MEMBER ROBERSON: I mean, unless you
13 want to just try and take a vote, do one through
14 four, and see how things go with five and six. I
15 mean I think that they're fine.

16 CO-CHAIR GIBSON: Okay. Let's do it
17 that way. Let's do one to four, and then five
18 and six. One through four together and then five
19 and six together and we'll see where it goes.

20 We're looking for consensus. It's not
21 unanimity. To the extent we can be unanimous in
22 this August bunch.

1 So is there a motion for approving
2 recommendations one through four? Kurt and
3 Steve. Any further discussion? Please no.

4 Okay, so let's vote to approve
5 recommendations one through four. All vote by
6 saying aye.

7 (Chorus of ayes)

8 CO-CHAIR GIBSON: Any opposed?

9 (No response)

10 CO-CHAIR GIBSON: Any abstentions?

11 (No response)

12 CO-CHAIR GIBSON: Awesome. Okay.

13 Now, let's look at five and six. Is there a
14 motion for approval of five and six? Mark and
15 Michael. Okay. Any further discussion on five
16 and six? No, okay.

17 Vote to approve five and six. All
18 approve by saying aye.

19 (Chorus of ayes)

20 CO-CHAIR GIBSON: Any opposed?

21 MEMBER WARREN: Wait.

22 CO-CHAIR GIBSON: Oh, you're opposing.

1 Okay, one opposition. What could we do to the
2 recommendation?

3 MEMBER WARREN: It's Jennifer Warren.
4 It's so dependent upon what's in the report. And
5 while I have no doubt about what's in the report
6 I would hesitate to have this go forward as is.
7 And I would like to have a little bit more
8 discussion with Paul with respect to federal
9 systems and LPD.

10 CO-CHAIR GIBSON: Okay. So let's do
11 this for five and six. I know we have consensus
12 so we can actually move forward, but I want to
13 respect where Jennifer's coming from.

14 Since we have another meeting in
15 August is it possible that we could have the
16 report done -- you have the time frame you agreed
17 to -- and actually let's share it with the whole
18 group. I say that with reservation, but let's
19 say share it with the whole group.

20 I'm not asking for a vote offline, but
21 let's share it with the group so that we would be
22 ready for a vote in August. Would that work?

1 MEMBER ROBERSON: I have a procedural
2 item.

3 CO-CHAIR GIBSON: Okay, go for it.

4 MEMBER ROBERSON: All deference to
5 Jennifer because I really would like to have it
6 be unanimous, but we actually did take a vote and
7 it was 10 to 1.

8 CO-CHAIR GIBSON: Okay.

9 MEMBER ROBERSON: So in a democratic
10 system normally you would approach it that way.

11 CO-CHAIR GIBSON: Well, the
12 recommendation is approved. I'm with that.

13 I'm just saying can we -- can we --

14 MEMBER ROBERSON: Oh, for sure.

15 CO-CHAIR GIBSON: Yes, that's all I'm
16 saying. Stand by, Rick. Okay.

17 MEMBER REASER: Don't we have to
18 approve the whole report anyway later? Right now
19 we're just doing the recommendations.

20 CO-CHAIR GIBSON: I think the report
21 is just the icing on the cake.

22 All right, so what I'd like to ask

1 Dennis and Paul to do is to at least get with
2 Jennifer and change her vote to a yea.

3 MEMBER ROBERSON: No, I think that's
4 -- important for us.

5 MEMBER WARREN: So what is the
6 recommendation?

7 CO-CHAIR GIBSON: The recommendation
8 is move forward. We've got like 95 to 1.

9 (Laughter)

10 CO-CHAIR GIBSON: I did ask for
11 abstentions.

12 MEMBER WARREN: I didn't hear that.

13 CO-CHAIR GIBSON: Well, you said you
14 had an opposition so I went to -- well, it's
15 usually yea, nay, abstentions. Are there any
16 abstentions?

17 (No response)

18 CO-CHAIR GIBSON: Do you want to
19 abstain?

20 MEMBER WARREN: No.

21 CO-CHAIR GIBSON: Okay. Okay. So,
22 the recommendations are approved with the caveat

1 that the co-chairs will communicate with Jennifer
2 and work it out.

3 CO-CHAIR ALDER: And I think we had
4 some suggestions --

5 CO-CHAIR GIBSON: And some
6 suggestions.

7 CO-CHAIR ALDER: -- for the report.
8 You indicate timing and priorities.

9 CO-CHAIR GIBSON: Okay. Thank you.
10 Okay, now the next one is spectrum access
11 systems. I see both co-chairs are here so Kurt
12 and Jeff, take it on.

13 MEMBER SCHAUBACH: Kurt Schaubach.
14 Good afternoon.

15 So, first I want to thank our
16 subcommittee members for their participation and
17 also John Nobel (phonetic) our NTIA liaison. And
18 my apologies for the omission on the cover page.

19 What the committee has before it is
20 five recommendations which we shared in draft
21 form in the March meeting.

22 And since the March meeting what the

1 subcommittee has focused on is providing
2 additional refinements of the recommendations and
3 further context and tried to get very specific on
4 its reactions.

5 I think the discussion that the
6 subcommittee had really focused in three primary
7 areas.

8 One is that studies and experiments
9 with regard to use of database and sensing
10 technologies are already underway
11 internationally.

12 And it's important for NTIA to now set
13 priorities and decide how it wants to engage. I
14 think you see that in the thematically central
15 recommendations.

16 Too, traditionally the U.S. has been
17 a leader in the R&D around these technologies as
18 well as an early adopter.

19 And we are uniquely positioned I think
20 as a result of the -- the subcommittee believes
21 as a result to both provide an honest assessment
22 of the capability and relative maturity of where

1 these technologies are based on direct experience
2 as well as be a resource for knowledge transfer.

3 And as part of that process as you
4 look at adoption of these technologies abroad to
5 be able to also help regulatory agencies
6 understand what capabilities they need to have to
7 actually make these technologies emerge.

8 And then I think third as you'll see
9 in some of the recommendations that there are
10 still some fundamental issues that need to be
11 addressed both to facilitate adoption of these
12 technologies as well as to accelerate that.

13 So with that again this is sort of the
14 draft report. Between now and the August meeting
15 we'll take these recommendations if they are
16 approved today and move forward with the final
17 draft.

18 So just a reminder, the study question
19 involved database and sensing approaches about
20 the U.S., the effect of the extent
21 internationally and if so, how.

22 And the subcommittee's efforts really

1 focused on what challenges lie in using database
2 sensing approaches.

3 We didn't specifically focus on the
4 relative efficacy of technology. Instead what
5 are again these challenges and then perhaps
6 organization and culturally that exist in terms
7 of adoption.

8 So, again, the five recommendations.
9 I'm not going to specifically read all these for
10 you, but maybe provide some context.

11 Recommendation number one really
12 focused on priority-setting. Identifying both
13 systems and bands that we've addressed or
14 examined for sharing and starting to develop
15 priorities around that.

16 Specifically there were some -- a
17 framework that's been recommended here for the
18 prioritization of timing which should look at and
19 examine the impact on systems, specifically in
20 the national security setting and commercial.

21 The degree of certainty associated
22 with U.S. implementation. The degree of non-

1 realizable technical data required to implement a
2 sharing framework.

3 This notion of regulatory capacity or
4 capability required by foreign regulators to
5 adopt a specific technology or sharing framework.

6 And either looking at progress of
7 other countries or other priorities
8 internationally in terms of how we harmonize with
9 those activities.

10 Jeff, anything you want to add on
11 that?

12 MEMBER REASER: We have some
13 recommendations on how you might go about making
14 a priority. So we didn't set them for you, but
15 we gave you some ideas about how to structure and
16 sort of talk about that.

17 But the other thing I think is
18 important. We kind of said that we should put
19 national security first, then safety of life
20 second, and then sort of commercial or
21 marketplace access as a third. So that was the
22 other important point at the very end.

1 CO-CHAIR ALDER: In being in some of
2 those discussions there was kind of this debate
3 between setting our priorities and just making a
4 recommendation to set the priorities. And so it
5 kind of went back and forth and landed here.

6 So I do think it's an important
7 recommendation. We did not actually give you
8 what the priority should be.

9 MEMBER REASER: No, we just gave you
10 some ideas on how you might go about it.

11 CO-CHAIR ALDER: But the importance of
12 actually having some priorities and narrowing it
13 down is the critical message.

14 MEMBER REED: This is Jeff Reed. As
15 we go forward I'm sure there will be negotiations
16 that will occur with international entities.

17 The first rule of negotiating is
18 everyone should be aligned. So we think that we
19 need to establish these priorities now before we
20 start to have these international engagements to
21 be sure that we are able to achieve our national
22 interest.

1 MS. ATKINS: So I'm curious.
2 Understanding that you didn't define the
3 priorities, but gave examples.

4 I'm curious in terms of the sequence
5 of priorities in terms of national security over
6 safety of life.

7 MEMBER REASER: I think it had to do
8 with -- there's always -- this is Rick Reaser.

9 There's prioritization and there's
10 timing. So you have some timing things going on
11 right now. We're adopting rules now that have a
12 lot to do with national security. That's one of
13 your big focuses right now is rulemaking going
14 on. We're trying to figure out how to make that
15 work. So that's sort of a hot topic now.

16 So, while we're doing that and as
17 you've talked about this text in this report or
18 the start of a report.

19 The last thing you need to have happen
20 is for national security -- we've worked this
21 whole thing out for us here in the U.S., and to
22 go take the boat, or the tank, or the airplane

1 someplace else, it doesn't work. But it works
2 great here.

3 And so that one there is -- that's on
4 your plate right now. There's other ones that
5 are like that, but that one there in terms of
6 what is going on right now, we just thought that
7 was ripe for the choosing.

8 So that's the specific one, the 3.5
9 area. So that's why we said you probably want to
10 look at that one first.

11 Because Jennifer put in this comment
12 about it's not just about priority, it's also
13 about the timing part. So in a timing sense I
14 think that's a really important one to look at
15 now.

16 MEMBER WARREN: Yes, to pure
17 priorities I think you mix a couple of different
18 ones in terms of a list. It's not just pure
19 priorities.

20 CO-CHAIR GIBSON: All right. We're
21 kind of starting on the recommendations before
22 you get through them, but let's go. Bryan?

1 That's okay.

2 Well, he's not done presenting the
3 recommendations. So, there's five
4 recommendations here and they're kind of
5 complicated.

6 MEMBER SCHAUBACH: So, recommendation
7 number two really focused on some of these
8 fundamental areas of further study and
9 investigation that we both facilitate adoption of
10 sharing technologies internationally but maybe
11 also sort of accelerate adoption.

12 Certainly the issues related to
13 privacy and security. I think has come up as a
14 theme in some of the other subcommittees, but
15 also very much here as well.

16 And certainly in some of the
17 interviews that the subcommittee conducted this
18 was raised as a concern. For example, around the
19 3.5 GHZ band and development of sensing
20 technology and not only how that sensing
21 technology -- could that be used internationally
22 and what are sort of the privacy and security

1 concerns related to that, especially operational
2 security.

3 Also whether there are just
4 fundamentally some restrictions related to the
5 export of that technology. And should a more
6 fulsome study with regard to ITA (phonetic)
7 restrictions or other things be conducted.

8 And then there are some very good
9 discussions around collaboration across borders
10 as well as looking at how some existing spectrum
11 mechanisms used internationally could be adopted
12 here, whether or not sort of the restrictions
13 associated with that.

14 Jennifer, anything you want to add to
15 that?

16 MEMBER WARREN: No, thank you.

17 MEMBER SCHAUBACH: Okay, great.

18 Recommendation number three focused on expanding
19 efforts to engage internationally, specifically
20 through standards bodies that are already
21 actively engaged in looking at dynamic sharing
22 and use of database sensing technologies.

1 So currently there's a considerable
2 amount of work already underway with the ETC set
3 through GPP.

4 And it would be advantageous for NTIA
5 to begin to focus on specifically where and how
6 to engage. And try to as opposed to just
7 monitoring progress of these standards bodies
8 develop a method by which they could more
9 actively engage and actually contribute to the
10 development of standards.

11 So some of the recommendations here
12 were together with the FCC develop a more formal
13 working group to identify and target which
14 standards bodies NTIA would want to participate
15 in.

16 And also for that working group to
17 again look at establishing some priorities and a
18 framework for participation.

19 Further, that it would be good for
20 NTIA to focus on resourcing and address some of
21 the resource issues to make sure that engagement
22 in the standards bodies is possible.

1 And specifically the recommendation
2 was to look at expanding the role in development
3 of ITS.

4 Jeff, do you want to?

5 MEMBER REED: Sure. Let me go over
6 four and five. This is Jeff Reed.

7 Recommendation four. NTIA should
8 develop procedures to facilitate the disclosure
9 of rate forms and for parameters to facilitate
10 sensor sharing.

11 And this is a theme that has been
12 echoed today and in previous meetings.

13 The context here is that we -- there
14 will be others, there will be other countries
15 that are considering some of the same issues that
16 we're discussing in terms of disclosing
17 information about wavelengths and how those are
18 associated with defense agencies.

19 So, developing a policy that works for
20 us, but also with the realization that others
21 will be looking at how we set this policy. And
22 if we can provide some guidance on how to set

1 this policy then we're much more likely to get a
2 more rapid introduction of these technologies
3 into the international community.

4 Mark, I know this one we focused on.
5 Do you have any additional comments?

6 MEMBER MCHENRY: No, thanks. Go
7 ahead.

8 MEMBER REED: Okay. All right.
9 Recommendation five. NTIA should become more
10 cognizant of shared spectrum R&D programs and
11 work to disseminate information to government and
12 international communities.

13 Sometimes I think we're a little
14 inward looking in terms of the spectrum sharing
15 technologies that are rolling out here.

16 There are actually major efforts that
17 are going on around the world, particularly in
18 Europe and many in China that we need to be
19 better aware of.

20 And this can be a lot of work for
21 everybody to participate in. So having a point
22 man within NTIA that can look at it from an

1 international perspective, that can attend
2 conferences around the world and can help
3 facilitate peer to peer discussions with
4 regulatory counterparts around the world, and
5 help with the educational mission, the
6 international education mission on socializing
7 these ideas we believe to be important.

8 This is going to require resources of
9 course to do it. We should also be perhaps more
10 proactive in getting international participation
11 and notice of inquiries. Specifically target
12 international companies, international regulatory
13 agencies for input to these notices of inquiries.

14 And the information is only as good as
15 the dissemination of the information. So, as
16 part of this the responsibilities of the person
17 or group, they should provide publications of
18 this information or facilitate having this
19 information at the NTIA website. Questions?

20 CO-CHAIR GIBSON: Paul.

21 MEMBER KOLODZY: Paul Kolodzy. A lot
22 of at least recommendation five sounds more

1 academic oriented in the sense of how to actually
2 find out what's going on in R&D around the world
3 or whatever is a little more difficult than just
4 reaching out to their open forums, even the
5 European forums.

6 There's a back door area, there's a
7 front door area where there's a lot of people
8 working on.

9 So what I'm trying to figure out is we
10 have all these international conferences and
11 everybody's passing data back and forth.

12 What is this role other than -- I'm
13 trying to figure out that role and how valuable
14 it would be with respect to actually
15 understanding what's really going on behind the
16 doors.

17 Because at least I know when I worked
18 with both commercial and academic people it's a
19 very different world.

20 MEMBER REED: It is. And it's hard
21 for people in their day jobs to keep track of
22 this, all that's going on around the world.

1 And having a point person whose main
2 focus is making these connections, making sure
3 that the right people are informed we think will
4 help improve that communication.

5 CO-CHAIR GIBSON: Bryan, you had a
6 comment earlier. I didn't want to forestall it.

7 MEMBER TRAMONT: I think I'm passing
8 for now.

9 CO-CHAIR GIBSON: All right. Harold?

10 MEMBER FURCHTGOTT-ROTH: I think this
11 is a great presentation. I think there's a lot
12 of merit here.

13 Just a very tiny technical footnote on
14 participation by international bodies in U.S.
15 proceedings.

16 Having been involved in a litigation
17 matter where one of the parties was an
18 international government they do not take well to
19 the idea that failure to participate in a U.S.
20 government proceeding in some way limits their
21 prerogatives going forward.

22 We are a very powerful government, but

1 I think we need to be very careful and sensitive
2 about recommendations that we have outreach so
3 that more foreign governments or foreign entities
4 participate in our U.S. government proceedings.

5 There's a lot of international
6 sensitivity there. I'll leave it at that.

7 CO-CHAIR GIBSON: All right, thanks,
8 Harold. Did you guys want to comment on Harold's
9 comment? Or Jennifer?

10 MEMBER WARREN: I just want to
11 respond. Jennifer Warren.

12 Harold, I think your point's well
13 taken. I think though that this was set up as
14 NOIs as opposed to a rulemaking or anything like
15 that.

16 But also, international participation
17 as we discussed it was not focused necessarily on
18 foreign governments, but foreign companies that
19 are engaged in research and development as well.

20 It need not be the governments, but a
21 lot of the companies which in some cases may be
22 state-owned or otherwise. So you may indirectly

1 be getting the foreign governments.

2 But it was intended to be broader than
3 that, just to clarify.

4 MEMBER FURCHTGOTT-ROTH: Two further
5 points. One, international corporations of all
6 types of ownership participate today in U.S.
7 proceedings. And a lot of foreign governments
8 participate in U.S. proceedings.

9 All I'm saying is to have a
10 recommendation to the Department of Commerce that
11 we should have more outreach to international
12 corporations, or foreign governments, or
13 international corporations that are owned by
14 foreign governments to participate more broadly
15 in U.S. proceedings, I just -- I think there is
16 some sensitivity there.

17 CO-CHAIR GIBSON: All right, thank
18 you. Dennis and then Bryan.

19 MEMBER ROBERSON: I'm really surprised
20 Jennifer didn't jump up on the recommendation
21 four. Because recommendation four, it talks
22 about the notion of having the open waveform.

1 But the challenge here is of course
2 our secure government systems where that
3 information is viewed as classified information.
4 And the newer systems are even more classified
5 than the older systems. So I'm really unsure of
6 where you're trying to go with this one.

7 Certainly for commercial systems maybe
8 we could have this sort of thing, or for -- but
9 I'm not sure where you go with this kind of
10 recommendation when some of the critical things
11 that you might want to have in an open database
12 are going to be classified.

13 MEMBER REED: This is Jeff Reed. Yes,
14 certainly that is true. There are certain things
15 that are classified.

16 However, there are also ways to
17 abstract it so that you can at least provide
18 enough technical data to help facilitate the
19 spectrum sharing coexistence.

20 So, and I think that's a part of it.
21 We are still struggling with this ourselves. And
22 other countries will be struggling with this.

1 So we have the opportunity to help
2 guide them in their process by setting an example
3 for how this could be done.

4 MEMBER ROBERSON: I guess the question
5 is do you have some notion of how this can be
6 done.

7 MEMBER REED: Well, yes I do, but it
8 may be beyond these recommendations. And we've
9 discussed this issue before. But yes, I do think
10 there are things that can be done.

11 And I think one of the key things that
12 can be done is actually having a very realistic
13 appraisal of what should be classified and what
14 shouldn't be classified. I'm not sure that we
15 always have that.

16 So, I think that's a starting point.
17 But that's beyond the scope of this.

18 CO-CHAIR GIBSON: All right, thanks.
19 Bryan, then Steve, then Jennifer.

20 (Simultaneous speaking)

21 CO-CHAIR GIBSON: So are you deferring
22 to Jennifer?

1 MEMBER TRAMONT: I am.

2 MEMBER WARREN: And I missed some of
3 -- Jennifer Warren -- I missed some of this. My
4 apologies.

5 I think Dennis is right in that we may
6 be factually not correct here as well aside from
7 any way to implement the recommendation. But it
8 also may be we have some factual errors.

9 So for example, where it says waveform
10 in the third paragraph, first line, waveform
11 information is readily obtained by a spectrum
12 analysis and is typically not classified. That
13 latter, that second part is -- should be struck.

14 Are you saying the spectrum analysis
15 is not classified, or the waveform?

16 MEMBER MCHENRY: When the system is
17 radiated usually they're not classified anymore.

18 MEMBER WARREN: But just so you know
19 it is -- the way you've structured this it says
20 waveform information is typically not classified.
21 That's not --

22 MEMBER MCHENRY: It's the spectrum

1 analyzer. When it's radiated.

2 MEMBER WARREN: That's not what this
3 says.

4 MEMBER KOLODZY: The waveform is not
5 the spectrum.

6 MEMBER WARREN: Right. I just think
7 we have to -- there's a few touch-ups I think
8 that need to be done. Perhaps we could take some
9 editorial privilege to make it -- maybe more than
10 editorial.

11 (Laughter)

12 MEMBER WARREN: That's it.

13 MEMBER SCHAUBACH: And actually I
14 don't disagree with Jeff's point on a realistic
15 view or assessment of what's classified and not
16 classified. Sometimes I think things are overly
17 classified.

18 But there are certainly things that
19 should be.

20 One way to approach this is to look at
21 developing envelopes of waveforms that could be
22 used to protect. So you're not disclosing the

1 specific waveform, but still able to provide some
2 way to detect it in a way that's not, that
3 doesn't have to be classified, right?

4 I mean, similar to what was done with
5 5 GHZ where there were waveforms that needed to
6 be protected and there were envelopes used so
7 that you weren't giving away classified
8 information.

9 CO-CHAIR GIBSON: All right, thanks,
10 Steve.

11 MEMBER SHARKEY: Just to build on
12 Steve's point. A similar thing is also underway
13 in the 3.5 GHZ band to do exactly that, where
14 they also act as that agent to assess and work
15 with the federal agencies to determine what
16 should be classified.

17 CO-CHAIR GIBSON: All right. I think
18 Bryan and then Bob.

19 MEMBER TRAMONT: So, I think this is
20 a hobby horse from a couple weeks ago but I just
21 want to make sure I am clear about this.

22 So, the purpose of the report as I

1 understand it is spectrum access databases are a
2 spectrum management tool that regulators around
3 the country might want to look at.

4 And here are -- U.S. is a
5 technological leader in these databases and we
6 want to share what we're doing and look and see
7 what other people are doing so that people are
8 aware of the tool.

9 We are not saying that databases are
10 the right way to regulate any particular spectrum
11 band, or that it is the right way to regulate
12 spectrum at large.

13 In other words, it's not a
14 prescriptive about the nature of regulation.
15 It's more discussion of what this tool looks like
16 and what the capabilities are.

17 And ensuring that, for example, when
18 our tanks travel or whatever that the devices
19 work and we don't have sort of non-alignment with
20 the international community when it comes to the
21 use of these databases. Is that correct?

22 MEMBER SCHAUBACH: Yes, I think that's

1 right, Bryan. I think maybe the one thing I'd
2 add is that there's a clear recognition that work
3 is undergoing internationally and it's important
4 to not let the train leave the station without
5 us.

6 So, we have the ability to provide a
7 realistic assessment based on our direct
8 experience and influence and guide these
9 processes, the standards and other things.

10 But certainly in other regions there's
11 a much more coordinated effort between the
12 standards development and regulation. And I
13 think the subcommittee clearly recognizes that we
14 need to be cognizant of that and help to inform.

15 So, yes we are being very prescriptive
16 in the approach by saying this works, this
17 doesn't work. But we shouldn't let that void or
18 obviate our participation.

19 MEMBER TRAMONT: And this works and
20 doesn't work is a technological matter. I think
21 my sensitivity has been that until it's -- some
22 of these are not yet proven commercially viable,

1 and I'm reluctant to start touting them as a
2 panacea to some sort of connectivity issues when
3 we haven't yet proven them commercially viable
4 here is my sensitivity.

5 So, but my understanding is this
6 doesn't go to that question.

7 CO-CHAIR ALDER: I'll just comment on
8 that. I think the work was what are the
9 challenges of doing the database in an
10 international context as opposed to the domestic
11 context, and what are some of the tools to
12 address those challenges.

13 MEMBER TRAMONT: The challenges are
14 technical, not commercial viability challenges.

15 CO-CHAIR ALDER: Well, I think some of
16 the challenges relate up. The fact that it's not
17 just being worked on domestically, it's being
18 worked on internationally so you have to set
19 priorities.

20 The challenge around waveforms. The
21 challenges around standards. So I think that's
22 kind of to point out what some of the challenges

1 are and to recommend some specific actions.

2 CO-CHAIR GIBSON: I think that what
3 you're hearing is that the responses are in the
4 context of the question. The question didn't say
5 that these are a fait accompli so to speak. To
6 the extent they're applicable, where can that be
7 addressed?

8 So Bob, you'll have the last question
9 and then I'll give it to Paige because we're
10 running short on time.

11 MEMBER PEPPER: So, I want to go back
12 to something Paige started with in her comments
13 which is -- well this is a recommendation to
14 NTIA.

15 There clearly are resource
16 implications. The whole notion of -- and I
17 completely agree about international
18 coordination, advocacy, learning, get cetera, get
19 cetera. I mean, that's absolutely necessary.
20 And we probably don't do enough of that.

21 But there's also, you know, the
22 recommendation that there be one person dedicated

1 to be running around the world talking to
2 everybody, trying to synthesize this stuff and
3 bring it all back, frankly I'm not quite sure how
4 realistic that is and what the efficacy of that
5 would be.

6 And I do think that the broader
7 question, not just within the five
8 recommendations here, but across all the
9 recommendations that we're working on is at some
10 point either NTIA or the committee working with
11 NTIA, maybe it's a suggestion for the next round
12 which is trying to identify both feasibility and
13 impact for each of the recommendations. In other
14 words to help set the priorities.

15 So what's the executable agenda that
16 comes out of our recommendations broadly, and
17 what are the linkages between them. Is there
18 sort of an interdependency and a sequence.

19 In other words, do some things have to
20 happen before other things. Maybe not. Maybe
21 they're all sort of independent. But I think we
22 need to think about that. And then there is the

1 resource impact.

2 So on the one hand I want to hear
3 about, know more about what NTIA thinks the
4 realistic -- how realistic is it that a
5 recommendation would be implemented.

6 On the other hand, we should be making
7 recommendations whether they're realistic or not.
8 And so there's a tension there.

9 But I am concerned that the notion
10 that we're going to recommend that there be one
11 person designated as the international guru
12 running around the world soaking everything up
13 and advocating, and explaining what the U.S. is
14 doing, and explaining back to the U.S. what the
15 rest of the world is doing, I just don't think
16 frankly that's realistic.

17 CO-CHAIR GIBSON: All right, thanks,
18 Bob. Paige?

19 MS. ATKINS: So, I'll echo what Pepper
20 just said. Resources. You know, something like
21 this in particular you could eat a lot of
22 resources in terms of standards and warranty, et

1 cetera.

2 So the more you can help us identify
3 specific priorities as -- to include between, for
4 instance, if you were to choose, not that we
5 would, but if you were to choose between putting
6 resources on being more cognizant of R&D around
7 the world versus influencing standards, or within
8 standards which are the most important bodies we
9 would need to participate in.

10 And from a standards standpoint, for
11 example, to me -- for us industry is our force
12 multiplier. We can only do so much due to
13 resource constraints in our reach. But how can
14 we work with industry to then help industry
15 influence the standards as well.

16 And it goes back to us perhaps setting
17 the priorities, convening the groups and then
18 being able to work with industry to force
19 multiply for us.

20 So if you could think about that a
21 little bit I think that would be helpful to us as
22 we look at the recommendations.

1 I would say in terms of disclosure,
2 open disclosure or waveforms, whatever the open
3 waveform information terminology.

4 I do want to say something because
5 it's often misunderstood. Just because something
6 is on the internet doesn't mean it's not
7 classified. So we have to be careful in terms of
8 how we characterize what's classified.

9 I would recommend that we stay away
10 from things are over-classified, NTIA should do
11 something about it.

12 We've discussed similar issues before
13 and that's not going to get us anywhere for what
14 we need to do here I think at this point in time.

15 I would focus on not necessarily a
16 policy that's related to open information, but
17 then how do we abstract or create an envelope. I
18 mean, we do that today in multiple venues,
19 particularly as we're engaging internationally in
20 the ITU forum.

21 (Telephonic interference)

22 MS. ATKINS: -- to enable better

1 sharing I think would be the focus.

2 And from an R&D standpoint the
3 recommendation to become more cognizant is kind
4 of a loose recommendation. What do we do? How
5 do we do it? Do we do something through wizard,
6 for instance, or do we -- other than identifying
7 somebody that will engage is there a more
8 concrete recommendation that could be beneficial
9 to us as we look at cost-benefit across the
10 different recommendations? Thank you.

11 CO-CHAIR GIBSON: All right, thanks,
12 Paige.

13 I do understand there was some concern
14 about number four, but I believe the intent of
15 number four was that waveforms should be made
16 available and the issue of classification should
17 be taken into consideration.

18 So let me ask, do people feel we can
19 vote on these as a slate of five? Okay, is there
20 a motion to approve all five? With the changes
21 as requested and mentioned in the meeting.

22 MEMBER ROBERSON: So moved.

1 CO-CHAIR GIBSON: There is a motion to
2 approve. A second? Okay. Anymore further
3 discussion? Okay, all in favor vote by saying
4 aye.

5 (Chorus of ayes)

6 CO-CHAIR GIBSON: Any opposed?

7 (No response)

8 CO-CHAIR GIBSON: Any abstentions?

9 (No response)

10 CO-CHAIR GIBSON: Great. Okay, so the
11 last but not least is Mariam with 5G
12 recommendations.

13 Rob is on the horn. Is Rob going to
14 be able to help you, or are you going to go solo?

15 MEMBER SOROND: I think Rob dropped
16 off. Let me double-check. Rob, are you still
17 on? I think he dropped off. Well, solo with
18 help from other subcommittee members who
19 contributed to this work.

20 So with that thank you very much for
21 all the work that went into this. And also
22 Rangam and Bob who participated on the calls and

1 provided good input.

2 Basically I just wanted to start by
3 reading these one by one. No, I'm just kidding.

4 I wanted to start by saying that just
5 talking about the question a little bit, just
6 really briefly.

7 This question to us was really two
8 stages. Because if you look at it there's a
9 first part in the question that wants an
10 identification task. Really it's saying what's
11 unique about 5G. That is a task by itself.

12 And so we felt that we needed to
13 complete that task, hence a report, hence the
14 recommendations come with identifying that first.

15 And then the second step is what
16 should the NTIA specifically do about it. So
17 that's how the approach was.

18 So essentially there could be places
19 where, okay, it's identified and the NTIA
20 approach is not so much clearly defined because
21 of what I'm going to get into next is the
22 challenge that we face right now and during this

1 work is the nature of 5G.

2 And 5G is not defined. We put in a
3 bunch of -- a lot of background into the report.
4 You'll see later it's saying what are all the
5 activities.

6 Industry is assuming 3GPP is going to
7 standardize 5G work. Now I'm assuming that. But
8 you know, we always go to these different
9 workshops where people are saying well no, we're
10 going to do this as well. So it might be a
11 combination of things, a combination of work and
12 a combination of groups.

13 So that's why the recommendations, you
14 know, when you have an undefined concept in the
15 recommendations at that point sort of have to go
16 hand in hand with that undefined concept.

17 They will be at the preliminary stages
18 where 5G is right now, at the preliminary stages.

19 So in other words there's definitely
20 specific and immediate actions, but there's also
21 obviously long-term actions with respect to these
22 classifications. So I just wanted to say about

1 this work. And that's why we've outlined that
2 obviously this is going to require future work.

3 And another thing about the question
4 is that the question did not highlight a specific
5 band whereas -- then it would help a lot with
6 these recommendations as it defines to a specific
7 band.

8 Of course with the caveat that 5G is
9 still not defined. So we can't say do this thing
10 about this thing that's not defined yet.

11 So, but at least it would give some of
12 these frameworks that we're talking about about
13 the unique identifiers and what's different than
14 5G a little bit more context if it were in
15 regards to a specific band.

16 So with that said I mean just you
17 know, kind of highlighting some key points on
18 each of these recommendations and which ones are
19 more sort of your generic type as opposed to the
20 specific types and immediate actions.

21 Recommendation one is talking about
22 deployment so that's a unique attribute of 5G.

1 That's the one that stands out. You're going to
2 have because of IMT and because of the higher
3 frequency bands, and because of the different
4 types of coverage the deployment is going to be
5 vastly different than 4G.

6 And that by itself is a bandwidth of
7 sort of a lot of different things that are going
8 to impact spectrum sharing.

9 The three bullets above are
10 identifying certain things with this. I mean,
11 this would be definitely actionable with respect
12 to the specific band.

13 But right now they are essentially
14 highlighting it's about where you're deploying,
15 how you're deploying, and also this IMT concept,
16 how that impacts things in the waveform. So
17 that's sort of the first I'll call it the bucket
18 of deployment scenario.

19 The second recommendation is talking
20 about larger frequencies and bandwidths which
21 becomes really relevant in just sort of spectrum
22 in 4G and technologies before 4G were limited in

1 size to the extent that there was really -- now
2 you're talking about gigahertz slots of spectrum.

3 So the dynamic has changed not only
4 from the sense of a technology perspective the
5 dynamics are going to change, but also from a
6 sharing perspective. Obviously it changes when
7 you have such bandwidths.

8 And that's why at least with some of
9 the other recommendations, because as you're
10 designing these technologies and 5G technologies
11 or NTIA technology advancements this is an
12 important aspect that needs to go into these
13 designs.

14 So nothing can be done about it
15 particularly now, unless the NTIA starts
16 participating in standards which is laid out in
17 the next recommendations. That's where the key
18 difference is going to come in with respect to
19 this particular one.

20 Recommendation three is new duplexing
21 schemes. Currently all frequency bands are
22 FDB2D, downlink only or uplink only.

1 They're going to have dynamic
2 duplexing. They're going to have full duplexing.
3 So, it's definitely going to make both
4 challenging and less challenging in certain cases
5 to be able to do sharing.

6 Recommendation four is the probability
7 aspects. I think because there's flexibility
8 with 5G deployment and 5G technologies this whole
9 concept of let's look at the worst case and let's
10 design everything around the worst case is going
11 to limit everything on both sides.

12 So, we are saying that there needs to
13 be an expansion of that concept into looking into
14 actual realistic worst cases as opposed to worst
15 cases.

16 Recommendation five and six is what
17 gets into the immediate actions.

18 Five is the phase approach with
19 upgrades. So if you have these undefined
20 technologies I think the most immediate thing you
21 can do is get yourself involved in it to be able
22 to influence it one way or the other.

1 Because we really don't want to have
2 5G defined and then try to see how that -- what's
3 unique about the sharing, as opposed to getting
4 involved in 5G being defined and so that sharing
5 works on the federal side.

6 So I think that a standards
7 participation right now or public safety approach
8 that's being done by the Department of Commerce.
9 So as I've outlined before it's really good work.

10 This is not definitely an observed
11 recommendation, it is to influence. And the
12 reason why the industry won't be able to do that
13 through the NTIA is because of reasons that we
14 don't have -- for good reasons have knowledge of
15 the waveforms, and the specific technologies, and
16 things of the federal system.

17 So we won't be able to influence the
18 standards bodies to reflect what the sharing that
19 would help the federal systems, how to unleash
20 that potential. So it has to be a direct NTIA
21 involvement in this case in the standards bodies.

22 And then we are also talking about,

1 and then moving onto recommendation six I think
2 is where this propagation modeling work, I think
3 this is a recognized need.

4 The 4G system is sort of saying hey,
5 you know, NTIA should consider doing this as soon
6 as possible for 5G because it takes awhile to do
7 this work and to be ready for these next steps,
8 that's sort of an immediate action that requires
9 the modeling work that is being done by ITS or
10 other organizations to look at specific 5G
11 modelings in the millimeter wave region, in the
12 centimeter wave region.

13 So I think I'm going to stop right
14 there. I'll see if first subcommittee members
15 would like to weigh in. A lot of folks
16 contributed.

17 CO-CHAIR GIBSON: Great job. Thanks
18 for a succinct presentation. Okay, questions.
19 Comments. All right, Paige.

20 MS. ATKINS: So, just to take a step
21 back the initial question that we posed was
22 focused on millimeter wave specifically and the

1 subcommittee asked that we take that out. So in
2 retrospect perhaps we should have left it in to
3 help focus the recommendations.

4 But that was what we specifically had
5 requested so I just wanted to remind folks.

6 (Simultaneous speaking)

7 MS. ATKINS: But one of the best
8 recommendations I'll say that I've seen is this
9 propagation recommendation.

10 It is specific. It's something that
11 we can take action on and something that we have
12 been thinking about anyway. So, I want to thank
13 you for trying to capture something that we can
14 really take hold of and move forward.

15 One of the things that I would ask in
16 general because there are a lot of
17 recommendations that are not immediate and not
18 really actionable at this time. It's something
19 to think about or it's for the future.

20 I would ask that you try to focus on
21 the near term actions that you want us to take.
22 Not necessarily take the others out completely,

1 but really focus your recommendations on the near
2 term and things that we can address and move
3 forward.

4 One of the challenges I have with 5G
5 and we talked about this in one of our meetings.
6 It is everything to anyone.

7 And when we talk about things like IMT
8 for instance, for me personally I try to
9 conceptualize what's different with 5G IMT versus
10 current IMT with 4G or other technologies.

11 And again, we were trying to focus on
12 what would be unique that we would need to
13 address for 5G specifically. So I ask you to
14 think about that perhaps in a refinement of the
15 recommendations.

16 I think the probability aspects, that
17 is something that we are doing today to a large
18 degree. That's what we're moving toward and have
19 done with 3.5 and other activities.

20 So again, it's important whether it's
21 unique to 5G explicitly or it becomes more
22 paramount in 5G sharing. I'm wrestling with that

1 a little bit as well.

2 And the standards involvement. I know
3 you said that there had to be government
4 representation.

5 I think in my mind we still need to
6 look at how we can leverage industry as well. It
7 may be a government person, but we can't scale
8 the same way that industry can. So methods by
9 which we can work with industry to help us scale
10 in terms of our influence in standards bodies.

11 And when you say in recommendation
12 five you use the words investigate and encourage.
13 I don't know what to do with that. So who am I
14 encouraging? What does that look like? What
15 does that mean?

16 So if we can just tighten up exactly
17 what you had in mind in that area.

18 And again, the propagation limit is
19 right on topic in terms of the kind of
20 recommendation we're looking for. So thank you.

21 And thank you for all the great work.
22 And even just having that definition for us, that

1 baseline definition as we move forward I think is
2 going to be very important. So thank you.

3 CO-CHAIR GIBSON: Any comments?

4 MEMBER SOROND: Just to say thank you,
5 very good feedback.

6 So we would like to be able to revise
7 these recommendations to reflect what Paige has
8 said. I think to a large extent it's definitely
9 doable.

10 So, I guess for the July 15 date we
11 want to plan on making sure that this happens.

12 I think though just on one particular
13 one, on the 5G IMT versus 4G IMT I thought I want
14 to come out and say this. I don't know if my
15 colleagues would agree with this.

16 I would think really would be done in
17 5G the way it's envisioned. So yes, you could do
18 4G IMT. People are doing it right now. In fact,
19 2G, 1G, whatever IMT. But the idea of IMT in the
20 large number of connections that is envisioned
21 that's only a 5G concept. So that's the unique
22 thing about 5G IMT that when you're talking about

1 connecting everything there's a limitation
2 actually on 4G and previous technologies to be
3 able to handle that number of technologies. But
4 5G is opening that to be able to do it.

5 So I can clarify that definition in
6 there if that helps, but really to me it's like
7 when I see IMT it just really is just 5G.

8 CO-CHAIR GIBSON: Well, your paper
9 that accompanies this is actually, you know, it's
10 like a tutorial on 5G. So you may be able to
11 flesh that out. You flesh that out I think to
12 some extent in the paper anyhow, right?

13 MEMBER SOROND: I think. I'll double-
14 check.

15 CO-CHAIR GIBSON: If not --

16 MEMBER SOROND: The one in the
17 recommendation or the paper? We can definitely
18 flesh that out in the paper, but I was wondering
19 if we needed to clarify that in the
20 recommendation as well on that particular
21 feedback.

22 MS. ATKINS: Let me re-look at the --

1 because that recommendation basically is just
2 saying that you have to look at specific
3 deployment models for the various aspects of 5G
4 as they -- on a case by case basis almost in
5 terms of how you would approach something.

6 So, the recommendation in general is
7 not -- to me this is one of the ones that's not
8 really an immediate action. It's more of a
9 future approach. So, I'm not sure it really
10 affects the recommendation. It's more of
11 context. Unless there's something you have to do
12 near term to address specific issues.

13 CO-CHAIR GIBSON: Do you have a
14 comment, Dennis?

15 MEMBER ROBERSON: Yes, a couple. One,
16 the conversation you just had around IMT I found
17 very interesting. But I don't find it in your
18 recommendations. Maybe I just missed it.

19 MEMBER SOROND: I think it's in the
20 report. But that was my question. You're right,
21 it's not in there, but I was just wondering where
22 we had put it.

1 MS. ATKINS: Recommendation one is a
2 reference IMT in terms of looking at deployment
3 scenarios.

4 MEMBER ROBERSON: Yes, because I
5 didn't see it any of the six recommendations.
6 Yes. So that was the first comment.

7 The second comment for me, really in
8 line with some of the conversations back and
9 forth. I would agree with the notion of revising
10 these.

11 I think at least for me
12 recommendations three, four and six are pretty
13 good as is, but one, two and five do seem very
14 nebulous. It's like if you'd get down to the
15 specificity of the ones. I don't know whether
16 that resonates with you, Paige, or not, but that
17 -- kind of going to the next double-click level
18 on the -- that's where I came out for what it's
19 worth.

20 CO-CHAIR GIBSON: Okay, thanks. So,
21 thoughts on approving. Well, certainly six is a
22 good one. Three, four and six, general feeling

1 that those are good and can be voted in? Is
2 there a motion for three, four and six?

3 MEMBER TRAMONT: So moved.

4 CO-CHAIR GIBSON: Second? Any
5 discussion? All right, let's vote on that. All
6 approve three, four and six say aye.

7 (Chorus of ayes)

8 CO-CHAIR GIBSON: Any opposed?

9 (No response)

10 CO-CHAIR GIBSON: Any abstentions?

11 (No response)

12 CO-CHAIR GIBSON: Okay. So, if you'll
13 work on one, two and five. And then with the
14 comments then I think we'll be able to probably
15 approve them at the August meeting.

16 MEMBER ROBERSON: And it doesn't say
17 you can't do things with the other three that we
18 just approved.

19 MEMBER SOROND: Yes, I was going to
20 say we're going to probably --

21 CO-CHAIR GIBSON: You can probably
22 tweak the others too with the comments, but those

1 were solid.

2 Okay, that's a wrap. Thanks,
3 everyone. Where are we now? We're at public
4 comment. Do you have something? Jennifer has a
5 comment.

6 (Simultaneous speaking)

7 MEMBER WARREN: So my question was
8 nobody else has submitted a report for approval
9 here as Jeff and Kurt's group did.

10 And we asked for -- well, theirs was
11 voted on and approved, but I understood it was
12 approved where we could make some editorial
13 changes.

14 (Simultaneous speaking)

15 CO-CHAIR GIBSON: So what's your
16 question?

17 MEMBER ROBERSON: We did not approve
18 the full report.

19 MEMBER WARREN: You did not approve
20 the report.

21 CO-CHAIR GIBSON: Yes.

22 MEMBER WARREN: Thank you. That is

1 all I wanted.

2 CO-CHAIR ALDER: So just to clarify,
3 I think we need to agree on these dates upcoming,
4 that the idea was for people to submit their
5 final reports.

6 Actually, as I look at the email that
7 David sent out actually July 8 is the deadline
8 for that. July 8. I misspoke when I said the
9 15th. There are some other things, but the
10 reports are July 8.

11 I think that's actually necessary in
12 order for the NTIA to have sufficient time for
13 August 1. So July 8 is the date we're actually
14 targeting for reports, any updated edits, Mariam
15 that your group is going to make.

16 And I'd also like we also make that
17 also the date for recommendations for future work
18 as well. I just think we're going to need two or
19 three weeks before August 1 in order to fit that
20 all in.

21 So, July 8 for reports, edits and
22 suggestion for future work if that works for

1 everyone.

2 CO-CHAIR GIBSON: You're done.

3 MEMBER DOMBROWSKY: Well, I am, but
4 Paige said she was going to provide some
5 clarification for ours.

6 MS. ATKINS: There were some
7 inaccuracies in the writeup.

8 MEMBER DOMBROWSKY: So she'll give
9 that to us.

10 CO-CHAIR GIBSON: Yes. They had a
11 report too. Rick, do you have a comment?

12 MEMBER REASER: There was a lot of
13 talk about priorities today, and NTIA priorities.
14 So I have two comments.

15 One is that this might be a good
16 topic. A lot of federal budget committees try to
17 help the government figure out priorities, or
18 give some suggested ideas for priorities. I
19 think that might be something you might want to
20 think about for next cycle.

21 The other thing I think it's important
22 to do. Believe me, we know how strapped you guys

1 are. When Carl gave this thing, he said there's
2 100 people in my domain at OSM and only 25 of
3 them actually do spectrum work. The rest are the
4 janitors, the computer technicians. He made this
5 speech one time about this. And so we know that
6 you have a limited staff.

7 The question is that is there some
8 way, maybe one of the things that you ought to
9 look at is a way to augment the NTIA staff
10 somehow some other way. Because you're not going
11 to get more people, we know that. And
12 unfortunately work just gets more and more.

13 Is there some way to -- like the FCC
14 has these IWGs. There's all sorts of other ideas
15 out there. But you might want to start looking
16 at this, and then maybe get some of the federal
17 agencies to pony up some time.

18 Because -- we had this meeting, the
19 famous meeting at Stanford in the bar with Larry
20 Strickling about the same thing. You're killing
21 me. All these recommendations. I don't know if
22 you guys remember that discussion.

1 And so all we're doing is we're
2 creating more work for you. So we became very,
3 very sensitized to that for about a year. And
4 then we kind of blew that off.

5 MEMBER ROBERSON: Some people did.

6 MEMBER REASER: Well, we did. Some
7 people, and some people didn't.

8 I guess that would be my observation.
9 Maybe there's a way to somehow have some
10 mechanisms to allow others to help you do this.
11 Obviously you'd still need to be in charge and
12 set the tone and the rules, but you're right, all
13 these things we're telling you to do, you don't
14 have the people to do that.

15 You're not going to get some magic
16 appropriation that says oh, we're going to
17 increase the NTIA staff by three times. That's
18 not going to happen.

19 So, maybe we can help. Maybe your
20 federal guys can help with the prioritization,
21 some ideas about that. And maybe some ideas
22 about how you can leverage the greater community

1 to help you with that. Not just industry, but
2 maybe some other kinds of mechanisms. That's my
3 thought.

4 CO-CHAIR GIBSON: Did you want to make
5 a comment, Glenn?

6 MR. REYNOLDS: Yes, Carl, I appreciate
7 that. And in fact I was going to try to say
8 something along those lines even before you
9 commented.

10 Look, I think there's great value in
11 putting as many of these ideas and all this great
12 thinking on the table as you can.

13 NTIA is a very, very small agency and
14 this is my channeling of Larry. A lot of the
15 work we're talking about here is done at the OSM.

16 A lot of the work that you guys have
17 raised is done through our ITS group.

18 The vast majority of our work at ITS
19 is actually funded through -- by outside
20 resources either in the industry or today mostly
21 by other agencies.

22 So, I think it's just -- I appreciate

1 that thought because, yes, there's no additional
2 money coming in. Budgets aren't going up to deal
3 with this.

4 And I think I would throw it back to
5 this group and say look, if these are really
6 important priorities thinking about how we find
7 the money to do them is essential.

8 And so we'd love to have that
9 conversation and come up with ideas outside the
10 box.

11 CO-CHAIR GIBSON: All right. Thanks,
12 Glenn.

13 We're at the opportunity for public
14 comment. So is there any comment from the public
15 in the room? I take that as a no. And anybody on
16 the phone?

17 Okay, then from the comment standpoint
18 from the chairs you did great work. We got the
19 meeting done on time which is always good.

20 But I think the quality of the
21 presentations and discussion is sort of testament
22 to the quality of the people doing the work so

1 thank you.

2 I've been on most of the calls which
3 is a challenge in and of itself, but I've heard
4 the discussions go on.

5 And like for example the 5G. I'm not
6 singling that out because it's better, but it's
7 an example of the quality of the discussion
8 that's going on. The sharing and the
9 measurements. It's great work, it's great to be
10 part of it.

11 So thank you all for everything you do
12 and the time you spend on this.

13 CO-CHAIR ALDER: Is there any other
14 questions about timing and what's next? Everyone
15 is coming August 1?

16 CO-CHAIR GIBSON: We're adjourned.
17 Thank you all.

18 (Whereupon, the above-entitled matter
19 went off the record at 3:38 p.m.)
20
21
22

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This is to certify that the foregoing transcript

In the matter of: Commerce Spectrum Management
Advisory Committee Meeting

Before: US/DOC

Date: 06-08-16

Place: Washington, DC

was duly recorded and accurately transcribed under
my direction; further, that said transcript is a
true and accurate record of the proceedings.



Court Reporter

NEAL R. GROSS

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