

UNITED STATES OF AMERICA
DEPARTMENT OF COMMERCE

+ + + + +

COMMERCE SPECTRUM MANAGEMENT
ADVISORY COMMITTEE (CSMAC)

+ + + + +

MEETING

+ + + + +

MONDAY
NOVEMBER 8, 2010

+ + + + +

The Advisory Committee met in Room
4830, Herbert C. Hoover Building, 1401
Constitution Avenue, N.W., Washington, D.C.,
at 10:00 a.m., Dale Hatfield and Bryan
Tramont, Co-Chairs, presiding.

PRESENT

DALE N. HATFIELD, Independent Consultant and

Adjunct Professor, University of
Colorado

BRYAN TRAMONT, Managing Partner, Wilkinson
Barker Knauer, LLP

LARRY ADLER, Product Manager, Google Inc. (By
teleconference)

DAVID E. BORTH (by teleconference)

MICHAEL C. CALABRESE, Vice President and
Director, Wireless Future Program, The
New American Foundation

MARTIN COOPER, Executive Chairman and
Co-Founder, ArrayComm, LLC (by
teleconference)

SUSAN CRAWFORD, J.D., University of Michigan

Law School

MARK E. CROSBY, President & Chief Executive
Officer, Enterprise Wireless Alliance

DAVID L. DONOVAN, President, MSTV, Inc.
GARY EPSTEIN (by teleconference)
BRIAN FONTES, Chief Executive Officer,
National Emergency Number Association
(by teleconference)
HAROLD FURCHTGOTT-ROTH, President,
Furchtgott-Roth Enterprises
ROBERT M. GURSS, Director of Legal &
Government Affairs, Association of
Public-Safety Communications Officials
KEVIN C. KAHN, Senior Fellow, Director of the
Communications Technology Lab, Intel
Corporation (by teleconference)
JAMES ANDREW LEWIS, Senior Fellow and
Director of the Technology and Public
Policy Program, Center for Strategic
and International Studies
MARK A. MCHENRY, President, Shared Spectrum
Company
DARRIN M. MYLET, Adaptrum Inc. (by
teleconference)
THE HONORABLE JANICE OBUCHOWSKI, Founder and
President, Freedom Technologies, Inc.
ROBERT PEPPER, Senior Managing Director,
Global Advanced Technology Policy,
Cisco Systems, Inc.
NEVILLE RAY, Senior Vice President,

Engineering and Operations, T-Mobile
USA, Inc. (by teleconference)
RICHARD REASER, Jr., Head, Spectrum
Management Department, Raytheon Space &
Airborne Systems
GREGORY ROSSTON, Ph.D., Deputy Director,
Stanford Institute of Economic Policy

Research, Stanford University
R. GERARD SALEMME, Executive Vice President,
Strategy, Policy, and External Affairs,
Clearwire Corporation
JENNIFER WARREN, Vice President, Technology
Policy & Regulation, Lockheed Martin
Corporation

JULIE ZOLLER, Program Director, ITT Advanced
Engineering & Sciences Division

TABLE OF CONTENTS

Description	Page
Welcome and Opening Remarks	4
Dale Hatfield and Bryant Tramont	4
Larry Strickling	6
Presentation	8
Karl Nebbia	8
Subcommittee Status Reports and Discussion of Draft Reports	18
David Donovan	18
Michael Calabrese	35
Gerry Salemme	85
Way Forward -- 2011 Issues, and Format	96
Open discussion by members on possible issues and projects for the CSMAC to address in 2011, operating procedures, and membership	
Opportunity for Public	126
Schedule Next Meeting; Misc. Items;	144
Adjourn	

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

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

10:11 a.m.

MR. HATFIELD: If we could get started please. Okay, good morning and welcome to the sixth meeting of the Commere Spectrum Management Advisory Committee or CSMAC. We've got a good agenda today and I'm looking forward to the conversation. As we are following our tradition, I ask everyone to please use the microphone so we have a good record. And following our tradition, I will go around the room and then go by the, on the conference call to take our role. So I could start Mark down at the right-hand side.

DR. MCHENRY: I'm Mark McHenry with Shared Spectrum Company.

MS. OBUCHOWSKI: Janice Obuchowski, Freedom Technologies.

MR. REASER: Rick Reaser from Raytheon.

MR. ROSSTON: Greg Rosston, Stanford.

1 MR. PEPPER: Robert Pepper, Cisco.

2 MS. WARREN: Jennifer Warren,
3 Lockheed Martin.

4 MS. ZOLLER: Julie Zoller, ITT
5 Corporation.

6 MR. SALEMME: Gerry Salemme.

7 MR. STRICKLING: Larry Strickling,
8 NTIA.

9 MR. NEBBIA: Carl Nebbia, NTIA.

10 MR. CALABRESE: Michael Calabrese,
11 New American Foundation.

12 MS. CRAWFORD: Susan Crawford,
13 Princeton.

14 MR. CROSBY: Mark Crosby,
15 Enterprise Wireless Alliance.

16 DR. FURCHTGOTT-ROTH: Harold
17 Furchtgott-Roth, Furchtgott-Roth Enterprises.

18 MR. DONOVAN: David Donovan, the
19 Association from Maximum Service Television.

20 MR. GURSS: Bob Gurss, Association
21 of Public-Safety Communications Officials.

22

1 DR. LEWIS: Jim Lewis, SCIC.

2 MR. HATFIELD: Thank you and we'll
3 turn to the conference bridge. Is there
4 anybody on the line that would like to
5 identify themselves? I heard Marty Cooper.
6 Is there anyone else?

7 MR. BORTH: David Borth.

8 MR. HATFIELD: David Borth, okay.

9 MR. MYLET: Darrin Mylet.

10 MR. HATFIELD: Darrin Mylet. Don't
11 go too fast there. Brian Fontes, okay.
12 Anybody else? Kevin Kahn from Intel.

13 MR. RAY: Neville Ray from T-
14 Mobile.

15 MR. HATFIELD: Any others?

16 MR. ADLER: Larry Adler from
17 Google.

18 MR. HATFIELD: Any others? Okay,
19 thank you very much. I'll turn it over then
20 to assistant secretary Larry Strickling.
21 Larry?

22 MR. STRICKLING: Thank you Dale.

1 I will be very brief. I just want to welcome
2 everybody. I look forward to a productive
3 meeting today. I'm going to come back in the
4 last hour when we are going to talk about the
5 future of this committee. Believe it or not
6 our charter is up for renewal after the
7 beginning of next year. I think we have time
8 for one more meeting before we have to re-
9 chart ourselves. We are going to spend the
10 last 45 to 50 minutes today focused on how we
11 go about working with this group next year
12 assuming we go forward and re-charter it. So
13 I'll save most of my remarks and comments for
14 that period of time. I would just mentioned
15 for those of you who weren't already aware
16 that earlier this morning NTIA released a
17 report on broadband adoption in the U.S. I
18 have a couple of extra copies here. There are
19 a bunch of them in the hallway down by the ESA
20 offices about 50 feet down the hall if anybody
21 wants to get one. Thanks. Bryan?

22 MR. TRAMONT: Thank you Larry. We

1 are now going to turn the program over to Karl
2 Nebbia. As everyone knows its been a very
3 busy few months at NTIA on the spectrum front
4 and Karl is going to give us an overview of
5 the work that's been done and how it might
6 inform of our deliberations going forward. So
7 Karl.

8 MR. NEBBIA: Thank you Bryan. In
9 June of this year everybody knows the
10 president directed the Department of Commerce
11 via NTIA and together with the FCC to develop
12 a plan and time table to make 500 megahertz of
13 spectrum available for fixed and mobile
14 broadband within the next ten years. This
15 spectrum was suppose to come from the federal
16 bands currently allocated to the federal
17 government. Also from bands allocated to the
18 non-federal users. And then to be made
19 available for broadband for possibility, a
20 number of possibilities. One is exclusive
21 licensing. Another is license broadband
22 shared with incumbent services. Then the

1 possibility that unlicensed broadband would
2 share with incumbent services. And lastly the
3 potential for making spectrum available for
4 unlicensed services alone where we would
5 assume either there were no license services
6 or the license services would vacate.

7 NTIA worked through what's called
8 the policy and plan steering group. It is an
9 advisory committee of federal agencies at the
10 assistant secretary level. It includes the
11 National Economic Council, the National
12 Security Staff, OMB and other components of
13 OSTP. So it's a group that goes beyond the
14 normal Iraq agencies. It was subdivided into
15 three working groups. One dealing with
16 spectrum. One dealing with incentives and the
17 last dealing with the third issue in the memo,
18 which was sharing technologies. I had the
19 privilege, the difficulty of leading the
20 spectrum working group. So by October 1
21 deadline, we completed the effort to draw up
22 the plan and time table, identifying

1 approximately 2,260 megahertz , all below
2 4,400 megahertz that we thought offered
3 sufficient potential to warrant further
4 investigation. For example, bands that were
5 very narrow, we did not feel offered that
6 potential. Also bands with international
7 agreements, for example, for passive or
8 sensing from satellites didn't seem very
9 workable, nor did those for instance that are
10 currently being used by GPS. The 2,260
11 megahertz included the approximately 280 that
12 the commission had included in the national
13 broadband plan. Therefore the total of
14 additional spectrum we're going to consider is
15 somewhere just under 2,000 megahertz. And as
16 we look at that, the plan itself lays out a
17 process of prioritization of these bands can
18 then be followed by individual band review in
19 depth on a rolling basis. Now, the fact that
20 a band is on the current list that we put
21 together or not on the current list, doesn't
22 mean that it will come out the other end of

1 this process. So the goal is spectrum
2 available within ten years. But as you know,
3 also that is going to have to include
4 potentially multiple steps at the commission
5 in terms of rule makings. If relocation is
6 involved under the CSEA there will be a number
7 of steps involving identifying costs and
8 schedules ultimately conducting auctions. And
9 then finally the actual relocation process.
10 All of that the goal being to have done within
11 a ten-year process. So if we are going to
12 make spectrum available through sharing, the
13 means of how that, determining how that
14 sharing will occur to give protection to
15 incumbents and so on also needs to be proven
16 during that period.

17 Now in addition to the plan and
18 time table we are asked by the administration
19 under a fast track process to look
20 specifically at the 1755 to 1780 megahertz
21 band. And then at other bands that might
22 offer the opportunity for decision by October

1 1 and to be made available within five years.
2 So, within that we added the band 1675 to
3 1710, 3,500 to 3,650 and 4,200 to 4220 and
4 companion piece of spectrum at 4,380 to 4,400.
5 Now the time constraints that we had for this
6 fast track necessarily prevented consideration
7 of some different approaches. One was
8 significant relocation of systems out of these
9 bands. Because essentially the three months
10 that we had, it would not have been possible
11 to make a decision and specify a band
12 transition for those agencies and identify
13 spectrum for them to go to. We could not
14 direct the now in that three-month period
15 without knowing where they were going. Also if
16 we were going to seek to use some sort of
17 sharing, we felt that within that time frame
18 to come up with a definitive conclusion we had
19 to work with sharing methods that had already
20 been proven to suggest in that three months
21 that we were going to come up with a new
22 technique and give any guarantee of the

1 agencies that were going to have to live with
2 it. We just did not feel that was a credible
3 approach. Couldn't approve new techniques in
4 those three months. So, as assistant
5 Secretary Strickling noted in a recent
6 presentation. This was 1695 to 1710 megahertz
7 band and 3550 to 3650 as we saw holding the
8 most immediate potential. Both of those bands
9 will require geographic exclusion zones since
10 once again no plans could be made in the few
11 months we had to actually move out satellite
12 systems or receivers or to move the radars out
13 of the 3550 to 3650 band. So, while some also
14 pose the idea of transitional sharing in the
15 1755 to 1780 band. No suggestions have really
16 been presented concerning where the airborne
17 systems, the surveillance systems and other
18 military tactical systems could go. Some of
19 these are still moving out of the 1710 to 1755
20 band and their operations have not yet been
21 made whole and the 1755 to 1850 band. So to
22 throw them again into a transition to us

1 created too complex an issue and didn't seem
2 reasonable in the time that we had. Therefore
3 this band of course will go into the longer
4 term plan. It will be given a high priority
5 and of course given much more attention and
6 time to resolve those issues that I mentioned.
7 The 4200 band was appealing because the
8 measurements that NTIA had performed, we had
9 never seen emissions in the top or bottom 20
10 megahertz of that range. However, this band
11 is tied or these portions are tied to the 4200
12 to 4400 band that has ITU and IKO agreements
13 that currently govern them. Given the lack of
14 a licensing requirement at this point at NTIA
15 or at the FCC, we didn't feel like we had
16 enough information to actually be sure there
17 were no devices operating in those top and
18 bottom 20 megahertz. So the outcome, we
19 believe this first, this 150 megahertz is a
20 significant commitment and that these bands
21 will be continue to be considered in the
22 longer context of the ten year plan. I

1 understand the two reports are nearing the end
2 of the agency review process and we hope to
3 see them shortly. So I appreciate your time
4 this morning and I would love to be able to
5 actually be handing across the table here
6 today at the meeting today. That will just
7 have to wait for another day. Okay, that's
8 all I've got this morning.

9 MR. TRAMONT: Questions for Karl?

10 MR. CALABRESE: Michael Calabrese.
11 Could you say a bit more about the NOAA band
12 1675 in terms of I believe the area of 15
13 megahertz and so what kind of constraints we
14 could expect on the use of that, what you
15 expect the megahertz be used for?

16 MR. NEBBIA: Well the 15 megahertz
17 that we identified within this process was the
18 top 15 megahertz, the 1659 up to 1710.
19 Currently in that range are predominantly
20 polar orbiting satellites. These satellites
21 for the most part speak to a number of major
22 government facilities but there are other

1 organizations that are receiving the signal
2 that they transmit in that range. So, the
3 process that we are looking at is to create
4 exclusion zones around a number of these major
5 facilities so that they are protected from
6 interference from the mobile units in this
7 band is what we specifically analyzed. What
8 it will be used for, what 15 megahertz? There
9 has been significant debate as to how much
10 spectrum people need. Some have suggested 20
11 or more is what they are really looking for.
12 Others have said that they can use less. But
13 we at this point will be making it available
14 and the commission will have to start whatever
15 rules that it chooses to propose. So we will
16 go from there. Now of course the analysis was
17 based on this being a mobile handset band in
18 more or less an FDD configuration. So it was
19 analyzed on the basis of its potential
20 matching with the AWS-3 band but that
21 certainly is not a necessary outcome.
22 However, the analysis stands on that basis.

1 So if you were for instance to choose to put
2 TBDD base stations in here, the distances
3 might have to be different, some other tool.

4 MR. TRAMONT: Any other questions
5 for Karl?

6 MS. WARREN: Given that there's no
7 relocation involved but accommodating new
8 users, what are the methods for funding or
9 making whole and the agencies that have to
10 make changes?

11 MR. NEBBIA: At this point one of
12 the significant issues in this 1695 to 1710
13 band is that NOAA and this created, love
14 relationship between NTIA and our fellow
15 commerce agency here. NOAA had to, NOAA
16 already had plans for the next generation of GOES
17 satellites up above 1695. Fortunately the
18 process, their processes were still early and
19 their replanning how they are going to pack
20 the portion below 1695 where we have not only
21 the GO satellites but we have radiosondes in
22 there. So, that planning as you look at the

1 incentives and assistance portion of the
2 document, that component without a change in
3 the CSEA will have to be done through
4 allocations of funding through the normal OMB
5 processes.

6 MS. WARREN: Thank you.

7 MR. TRAMONT: Now are there any
8 other questions? Anyone on the phone? Great.
9 Thank you Karl very much. We'll now move to
10 the subcommittee reports. We have one report
11 in final, two drafts and an update on the
12 sharing committee. We'll start with David
13 Donovan's Adjacent Band Interference/Dynamic
14 Spectrum Access Subcommittee report which was
15 presented and adopted with editorial
16 privileges in Boulder. David is going to give
17 us a little update on the final draft and
18 we'll move to final adoption. David?

19 MR. DONOVAN: Thank you Mr.
20 Chairman. Just a matter of process. This was
21 voted on at the July 27 meeting in Boulder.
22 At that meeting we received, there was a

1 lively discussion which is reflected in the
2 transcript of the meeting. We also received
3 at the time a comet filed by M2Z making
4 certain suggestions and some things that quite
5 candidly the committee had not looked at, I
6 think in sufficient detail.

7 Post that meeting I received one
8 set of edits from a member of the committee
9 and those edits have been incorporated into
10 this document. My understanding is based on
11 the transcript is that edits which we made to
12 the extent they were wholly and consistent
13 with the report that was presented in Boulder.
14 Two weeks ago we sent out a copy of the
15 revisions with the edits to the subcommittee.
16 I've had one additional comment from a member
17 of that subcommittee which edit needs to be
18 reflected in this document that we have before
19 us. Last week I believe the document was put
20 on the list serve for review by the committee
21 as a whole. It is a lengthy document and
22 without, go through in awful detail if you

1 would prefer point by point. Sufficed to say
2 that I think there was general concerns and
3 let me just address them here. The first was
4 that the document seemed to be one-sided in
5 favor of the incumbents versus sort of a
6 balanced approach. Certainly while the
7 committee's position was that those who have
8 made investments in communication systems
9 deserve to have those investments protected.
10 It wasn't the committee's intent to make that
11 sort of a one-sided affair. What we have and
12 you will see in the executive summary, an
13 attempt to provide a more balanced approach
14 that will be consistent with the public
15 interest.

16 There are also some other specific
17 issues. One that we did not discuss the issue
18 of harmful interference or attempt to define
19 it. That is correct. We did not. And that is
20 so now noted in the document with the
21 suggestion that needs to be done. I think
22 there was a concern at least on this committee

1 that questions of how one defines harmful
2 interference and vary from context to context,
3 system sharing with another system. And that
4 may be best done on a case by case basis. But
5 the issue regarding how one defines the
6 importance of that and its potential effect on
7 investment in future communication services is
8 now in the document that has been discussed
9 and ready. So I think that was a major
10 concern.

11 The other thing is, is that as I
12 said we wanted a balance of the document
13 reflects a more balanced approach. I would
14 note, however, that I think that there may
15 have been some confusion in that when we were
16 listening to tools and the techniques to avoid
17 interference, guardbands got listed first.
18 And I think people thought that was our first
19 priority and our first recommendation. That
20 was there frankly because of historical
21 significance that's what we've used. So it
22 got discussed first in the document. There is

1 now a paragraph in here explaining that what
2 we claim to do here is to discuss this as a
3 toolbox and that would include guardbands and
4 some instances dynamic spectrum access
5 techniques in terms of both spectrum sensing
6 and geo location. Getting into some
7 specifics, I think one of the critical debates
8 that you will see in the discussion in the
9 transcript was the idea of whether or not the
10 database should be made public. And that we
11 went around and around on that. What I have
12 done in this document is made the edit
13 indicating that the databases should be made
14 public subject to of course national security
15 concerns and also there may be some other
16 private business issues that we have not
17 foreseen yet. But the presumption should be
18 that in effect the language now says where
19 appropriate database information should be
20 made available to the public to provide
21 transparency and proper oversight. Such
22 access must be consistent with the concerns

1 regarding national security. From an
2 operational standpoint, however, which I think
3 was the balance, government inspector managers
4 may find it appropriate to limit real time
5 access to the database information to those
6 devices that have been certified or approved
7 to use the database by NTIA, the FCC or an
8 appropriate government agency. And I think
9 that's important because you only want devices
10 that have been certified to use the database
11 to have operational access to use it in real
12 time. But in addition in the interest of
13 transparency, provisions may be made to allow
14 for non-realtime access by other parties
15 interested in improving spectrum utilization.
16 This was an edit that came from a member of
17 the committee that the data contained such
18 details about national security, the non-
19 realtime access might contain aggregated data
20 that protects sensitive details. So the goal
21 was, the presumption is to make it public
22 unless there is some other reasons not to.

1 There was also some discussion regarding
2 realtime use of the data. The database, the
3 original suggestion that all these databases
4 should be in realtime. There are spectrum
5 efficiency tradeoffs. The better, the more
6 realtime a database, the more accurate you
7 could have in terms of other people using
8 them. On the flip side, there are reasons in
9 terms of costs of equipment or things that may
10 make it not the most efficient way to have a
11 real time database. So, we included, insert
12 the word where appropriate.

13 There are some other, I don't know
14 Mr. Chairman how extensive you want me to walk
15 you through all the major changes but I'm more
16 than happy to do so. I don't want to tie up
17 the full committee's time. We could go to
18 discussion.

19 MR. TRAMONT: I think if there is
20 a relatively high bar to constitutes major,
21 that would be fine.

22 MR. DONOVAN: We have changed a

1 number of things since Boulder. There are
2 substantial things that were in response to
3 edits. I think it is worth flagging.

4 MR. TRAMONT: Okay. I think there
5 was one issue that the document came out very
6 much in favor of harmonization, particularly
7 on an international basis. We did receive an
8 edit indicating that if you have too much
9 globalization and harmonization it may impact
10 innovation of the interim. And that, there's
11 a real balance there. So what we did is we
12 included some additional language that says
13 while recognizing these benefits meaning
14 harmonization following policymakers should
15 also consider the potential impact of such
16 harmonization on the development of new
17 innovative services and wireless technologies.

18 MR. DONOVAN: I think, trying to
19 fit the high level. I think one of the key
20 things that was recommended and I actually
21 think it is a very good idea. In terms of
22 enforcement, one of the things that we didn't

1 look at was the aspect of what happens if you
2 have two legal authorized entities operating
3 but for some reason they are throwing out
4 interference to each other, harmful
5 interference. And I think probably the best
6 example of that is years ago with sort of the
7 next health public safety where two perfectly
8 legal entities were throwing a lot of
9 interference. Now without taking the position
10 that once you have enforcement rights against
11 the other because they are both legal, the
12 thought was that we shouldn't keep track of
13 that information, keep track of that data.
14 And you will see a bullet put in there on page
15 14, the last bullet, which recognizes that we
16 out to have a streamline process for the
17 maintenance and keeping of that data from a
18 policy perspective, which we think is
19 important.

20 The last sort of high level issue
21 is and it will appear on page 17 and also as
22 footnote five and also discussed in the text.

1 And that was the use of probablistic methods
2 of calculating interference. The committee
3 really didn't go into that in sufficient
4 detail. But what this report now says is that
5 future reports should probably look at the
6 issues of what the improbablistic models
7 regarding interference as opposed to, I mean
8 we use sort of the traditional approach. I
9 don't think we felt comfortable shifting at
10 this point. But certainly that was raised and
11 it was raised by M2Z at the last meeting. It
12 certainly is something that we might want to
13 look at. And I think with that I think I will
14 probably stop and be happy to discuss any
15 issues.

16 MR. HATFIELD: Great David. David
17 I want to thank you and the committee for some
18 really great work. I think I said in Boulder
19 that I learned a lot by reading the report.
20 Again re-reading it last night I did have one
21 thing that did strike me and I would like to
22 ask you about it. On page six, the first of

1 the bullet of items there and this may, I
2 should probably say in advance that this may
3 come from the fact that your in part listing
4 guardbands as sort of the first. So this sort
5 of jumped out at me. It seems in reading this
6 that there's still sort of a presumption in
7 favor of the incumbent and I went back and
8 looked at the report where you talk about
9 that. I couldn't find much more explanation
10 there. My concern is the situation where the
11 new entrant would have to give up let's say
12 ten million dollars worth of spectrum for a
13 guardband that would normally only cost one
14 million dollars for the incumbent to improve
15 their receivers. So I think the economically
16 efficient solution in that case would somehow
17 to figure how to pay off that person with the,
18 the incumbent pay off the incumbent somehow
19 with the one million dollars and free of ten
20 million dollars worth of spectrum. So, I
21 notice in the second bullet point you do have
22 sort of a savings there where you say that

1 would be in the public interest. But actually
2 I think as written that's a little bit too
3 absolute and would prevent, could prevent what
4 would be an economically efficient. I'm
5 looking at my economist here in the room to
6 see if I have butchered the, I guess we are
7 sort of talking about coast there I guest and
8 see if I'm butchering the comment too much.

9 MR. REASER: Who would pay that
10 though. Would the guy who wants to share pay
11 that? Where does the money come from?

12 MR. HATFIELD: That is where you
13 probably need some language because it decided
14 the government taking a look at ten million
15 versus a million. It just makes sense to do
16 it this way and do it through some sort of an
17 order, voluntary encouraging or facilitating
18 voluntary negotiations. I think my point
19 wasn't necessarily how but the fact that there
20 seemed to be a presumption in favor of the
21 incumbent even when it would make economic
22 sense. Again, I keep looking at my economist

1 friends here.

2 MR. DONOVAN: Thank you Mr.
3 Chairman. And I do feel bad. My deepest
4 apologies and concern. Your point is well
5 taken and we could certainly put in the
6 language if consistent with the public
7 interest, which I think would take into your
8 account. I think what we were trying to drive
9 at here was when should the government put its
10 thumb on the scale. Now it may be for example
11 that it would be more efficient for a new
12 incumbent to come in and certainly purchase
13 someone to do relocation costs or cover new
14 equipment or things of that nature. I guess
15 the question would come is when does the
16 government decide to say yes you must do this
17 or yes you must not. So I think that's really
18 what we are trying to get out is where does
19 the thumb come down on the scale. Having said
20 that, certainly on a going forward basis there
21 may be a variety of issues that come up where
22 it may make more sense to have type of

1 negotiation with the entity seeking access who
2 is willing to pay for relocation costs to
3 achieve that or to pay to have a guardband.
4 So with your permission if its okay, I would
5 like to put if consistent with the public
6 interest to try to discuss that could even put
7 some additional language in the text if you
8 would prefer.

9 MR. HATFIELD: I don't think it is
10 for me to decide but rather the committee but
11 maybe I will turn to my economists here.

12 MR. REASER: So I guess part of it
13 in my mind, I think your thought is absolutely
14 right with one tweak which is to the extent
15 that the incumbent sort of has a property
16 right in the spectrum already then the
17 government has to think about taking, the
18 question of taking it away versus facilitating
19 a negotiation between the parties. I think
20 that's how I would like to think about it
21 rather than necessarily thinking that the
22 government should sort of weigh the ten

1 million versus one million and pick the
2 cheapest if it has already established a
3 quasar property right in the spectrum.

4 MR. HATFIELD: Because that would
5 discourage future investments if people were
6 afraid the government unilaterally stepped in.

7 MR. DONOVAN: And that was a
8 balance that we tried to achieve here is that
9 we want to stimulate investment of
10 communication services and if suddenly someone
11 could come in and take a spectrum from you
12 that may discourage it. So it's a delicate
13 balance. It's not -- it's a tough call.

14 MR. HATFIELD: Further discussion.

15 MS. OBUCHOWSKI: Would that not be
16 a topic that we could potentially either key
17 up or say next round or almost recommend to
18 the FCC and its advisory committee. Because
19 in a way there's a pretty profound question
20 there. And you a raised a point of view about
21 property rights and applied property rights
22 which also ties into investment. It is going

1 to have to be address because sharing is going
2 to require that kind of discussion to be had
3 pretty routinely.

4 MR. REASER: I think it gets back
5 to what is the role of the regulator in these
6 types of matters and this would be a much,
7 right now I think a lot of this is sort of
8 based on the market and then if somebody wants
9 to have something, they are going to go pay
10 for it, whatever the market price is and
11 certainly on the commercial sector side. If
12 we want to have enhanced involvement by
13 regulators in helping sort through those
14 things in the goal of efficiency defining how
15 that mechanism would work in both the federal
16 and non-federal spectrum. It is a very, very
17 important matter because there's some
18 significant changes in terms of how we do
19 business today.

20 MR. TRAMONT: I think we would
21 like to wrestle to the ground language. Is
22 there, if it is consistent with public

1 interest that it respond fully or is there
2 something?

3 MR. HATFIELD: Well my own
4 reaction, yes, I think it is important. That
5 is sort of a minimum to have in there whether
6 we wanted it in, back in the text but I'm a
7 little hesitate to reopen, suggest reopen
8 this. So if that simple language change would
9 do it with maybe the footnote that this may be
10 worth coming back and taking a further look,
11 that might let us move forward today.

12 MR. TRAMONT: Is everyone
13 comfortable with that approach? Okay, with
14 that, can I have a motion to adopt the report
15 with the friendly amendment that was just
16 offered?

17 MR. PEPPER: So moved.

18 MS. WARREN: Seconded.

19 MR. TRAMONT: All those in favor?

20 EVERYONE: Aye.

21 MR. TRAMONT: Any opposed?

22 Excellent. Hearing none, the report is

1 adopted. Congratulations Mr. Donovan.

2 MR. DONOVAN: Thank you.

3 MR. TRAMONT: We now have two
4 first draft reports starting off with Michael
5 on the Incentive Subcommittee and then we will
6 turn to Gerry on the Unlicensed.

7 MR. CALABRESE: The committee has
8 been tackling this rather long going and
9 contentious issue of incentives, but obviously
10 a very important one I think as we will see in
11 the context of the NTAA's spectrum blueprint
12 forthcoming because we have to get the
13 incentives right. So, we have in this report
14 not a complete agreement you could say. It is
15 an ongoing disagreement which I will flag
16 because we really need input from the full
17 committee. We want to make sure this has the
18 flavor of the full CSMAC as much as possible
19 by the time we adopt a final report. So this
20 is as Brian said a draft and we are
21 encouraging your feedback since we will have
22 to have some further discussions before the

1 next meeting. As we said in the last meeting
2 in Boulder, we wanted to foster those outcomes
3 that are bolded right at the top of the first
4 page which are not surprising at all. And
5 we've come forward with three recommendations
6 which I think all three could be fairly
7 impactful and relevant to debate right now.

8 So the first is to internalize
9 opportunity costs through spectrum fees. And
10 I should flag right away that this was one
11 where there's not a consensus on the
12 subcommittee. In fact it was more along the
13 lines of four to three in terms of whether
14 these make sense, particularly for federal
15 spectrum users, which is where most of our
16 debate occurred. And the group ended up as I
17 said kind of a majority supported instituting
18 initially a relatively low flat simple fee.
19 You might say a below market fee initially
20 that would increase over time to get closer to
21 market rates. Of course the more we dug into
22 it, the more tricky questions there are

1 concerning implementation of any such fee. So
2 at the bottom of page four there is more
3 questions than answers about the exact
4 implementation of this. We had an alternative
5 viewpoint that spectrum fees particularly for
6 federal users were not going to cost benefit
7 basis, not worth doing. And some disagreement
8 as well about how to represent that view. In
9 this draft it is appended as a, it is an
10 appendix, in a separate appendix a, additional
11 considerations concerning spectrum fees, which
12 are all mostly skeptical. And although there
13 was a desire I think by the three committee,
14 subcommittee members to have it in the main
15 body of the report and to present these side
16 by side as sort of alternative perspectives on
17 spectrum fees. So, in addition to getting
18 some feedback on substance, it would be
19 helpful if anyone feels strongly in terms of
20 how this is presented in the final report
21 because that's a subject of ongoing discussion
22 within the subcommittee and there's no hard

1 fast rule apparently within the CSMAC for
2 doing that.

3 The second recommendation more
4 promising, we have much more consensus on the
5 next two, which is to strengthen OMB Circular
6 A-11. And that is right now a fairly vague
7 process, which it says precisely spectrum
8 should generally not be considered a free
9 resource but rather its value should be
10 included to the extent practical and economic
11 analysis of alternative systems. But there's
12 really no specification about how that is to
13 be done and it seems to suggest more that the
14 exercise is more about determining the value
15 of the spectrum to be used rather than kind of
16 going through a real cost benefit analysis
17 process that is disclosed for some
18 accountability. So what we've done is that
19 we've moved, we proposed a rewritten section
20 33.4, which is the spectrum section of
21 Circular A-11 that is on pages eight and nine.
22 So actual language that can be just pumped

1 right in to Circular A-11 to replace what's
2 there. And we've moved to more of a specific
3 checklist that would demonstrate a cost
4 benefit analysis process has been carried out.
5 So for example, agency should indicative the
6 system selected was the most spectrum
7 efficient solution among those that were
8 qualified, among the qualified bids and if
9 not, why not? Also, whether the RFP included
10 requirements for respondents to address
11 spectrum efficiency factors and if not why
12 not? Whether the system will share spectrum
13 with other federal agencies or non-federal
14 etc.? And those are on page nine. So we
15 think its actually a way of turning the screws
16 a bit tighter, giving more transparency, more
17 accountability and we hope to sort of bake
18 these considerations into the procurement
19 process more strongly. But again, suggestions
20 are welcome.

21 The third area of recommendation
22 is for a spectrum innovation fund. So

1 currently spectrum users have little
2 incentive, some would probably say a
3 disincentive to undertake the costs and risks
4 to upgrade systems or processes to share the
5 bands that they are assigned, whether with
6 other federal and particularly with non-
7 federal users. There is one exception to
8 this, to this disincentive which is we think
9 a very good precedent. And that's under CSEA,
10 the commercial spectrum enhancement act, which
11 creates a spectrum relocation fund with
12 auction proceeds. So similar to the way to
13 the DTV transition was done, the auction,
14 proceeds from the auction were earmarked into
15 the spectrum relocation fund and used to
16 reimburse agencies for the cost of new systems
17 or upgraded systems so that they could
18 actually relocate the different frequencies.
19 So, our recommendation is that the authorized
20 purposes of the spectrum relocation fund be
21 broadened turning it into a revolving fund for
22 modernizing federal systems not only to

1 relocate when conditions permit but to
2 facilitate the shared or more efficient use of
3 other bands, not just auction bands. Agencies
4 then would have the resources to pay for
5 research, up-front costs including research,
6 planning, testing as well as potential
7 upgrades to their radio system capabilities
8 without depleting their appropriated mission
9 budgets. So we recommended that this be
10 called a spectrum innovation fund, that it be
11 created within and managed by the NTIA and the
12 Department of Commerce, of course. I see
13 Matthew Hussey from Senator Snowe's office
14 over there and a version of this is already,
15 something along these lines is already in
16 legislation that I know Matthew drafted which
17 I should acknowledged. We discussed that a
18 bit. There's two other aspects of our
19 recommendation. One was that you will see on
20 page 12 that this could, this spectrum
21 innovation fund could be narrow or broader in
22 scope. In other words we thought it should at

1 a minimum provide up-front funding for
2 research for studies because right now we
3 can't even, in fact probably perhaps the
4 reason that Karl and NTIA here were
5 handicapped a bit because maybe work that
6 could have been done with targeted budget was
7 not done over the preceding years to study
8 these options. So at a minimum but there
9 could be broader in scope. It is said to
10 include perhaps the cost of planning, testing
11 and even actual system upgrades and yet we
12 were also concerned that this not get out of
13 hand to the extent it could be a runaround the
14 procurement process for things that are not
15 spectrum related or which were goldplated.
16 And so we also suggested OMB would have to
17 approve recommendations from the NTIA.

18 The final aspect of the
19 recommendation was we recommend that this fund
20 should not only be ongoing but budget neutral.
21 And so we say that the initial increment of
22 funding should come from the next federal

1 spectrum option or certainly some future
2 federal spectrum option. But we did not agree
3 on any particular revenue source to replenish
4 the fund on an ongoing basis beyond mirroring
5 what CSEA does with the current spectrum
6 relocation fund. That is using auction
7 revenue. There was some disagreement on
8 whether to specify options. So in other words
9 we agreed we wouldn't endorse any particular
10 revenue option for replenishing the fund. But
11 there was also this agreement about whether we
12 should even discuss it in terms of laying out
13 any particular options that could be
14 considered such as possibly user fees on those
15 who benefit from the spectrum, spectrum users.
16 And that could include and in fact they are in
17 this draft on page 14 that include spectrum
18 fees themselves if we were to actually go that
19 way. The device certification fees, which is
20 noted might be particularly useful relevant to
21 unlicensed devices, which wouldn't be bidding
22 at an auction. Or spectrum leasing fees to

1 the extent that secondary markets were used to
2 use our license commercial use of federal
3 bands. And as I said you know some of the
4 feedback that we welcome is about whether we
5 should go into this question of how could such
6 a fund self-financing or whether we should
7 just say it should be and leave it at that.
8 So, I think that pretty much weighs it out but
9 others on the committee should offer some
10 additional context or comments if they wish.

11 MR. TRAMONT: Just one note on
12 process. At this point we have a draft. The
13 public and the members of the committee will
14 now have a period of time to react the draft.
15 Michael will continue to shepard it during the
16 course of th next few weeks with the idea of
17 recirculating a complete draft for vote in a
18 week in advance of our final meeting or at
19 least a week in advance of our final meeting.
20 And then we would vote at the next meeting.
21 So that's both for this report as well as for
22 Gerry's that we are going to hear about in a

1 moment. That's the process that we intend to
2 undertake. So with that, you are open for
3 questions or comments.

4 MS. CRAWFORD: This is Susan
5 Crawford. As Jennifer's question indicated,
6 this is a huge stumbling for agencies making
7 sure that they are not nickel and dimed by on
8 these as they make transitions. And whatever
9 we can do to make this report as substantive,
10 meaningful, particularly with the revenue
11 neutral aspect. Whatever the subcommittee can
12 do to connect with OMB even informally and
13 with Matthew and others and really make this
14 is an attempt to work out this problem. That
15 could be very useful in the contribution. So
16 it seems to me that's this section of the
17 subcommittee report could be deeply fruitful
18 if there was more done at this point and it
19 won't be easy. But I would think that's the
20 whole point of this advisory committee.

21 MR. TRAMONT: Michael, would you
22 be willing to take on reaching out to OMB and

1 particularly pursuing some of the comments
2 that Susan just made? Okay, great. That's
3 worth doing. Yes, Jennifer.

4 MS. WARREN: Just a follow up on
5 the spectrum innovation fund. I think that's
6 a good point. I think the concern was that
7 there hadn't been a full discussion yet of the
8 options. So it just wasn't right. We wanted
9 to have that since it was full agreement or
10 generally full agreement on the spectrum
11 finance, budget neutral element that these
12 weren't ripe yet. I agree with you that going
13 forward there needs to be a figuring out, a
14 very detailed approach to how to fund it. It
15 is going to be meaningful and that may be that
16 Congress if its important just allocates money
17 for it as opposed to being budget neutral. But
18 I think all of those things needs to actually
19 be discussed in more depth rather than perhaps
20 just throwing out a few ideas that there was
21 still ongoing discussion before even
22 finalizing language there. That's just my

1 comment for now. Thank you.

2 MR. REASER: I was the guy who was
3 anti-revenue neutral guy although I could
4 probably go along with that. My experience of
5 being a former program director for a major
6 system program at DoD is that if the
7 departments and agencies want to do something
8 and it is important to them, they will fund
9 it. And we will get money to go do that.
10 Software to define radios is an example of
11 that. A lot of things we did in the GPS
12 spectrum was funded out of the federal budget
13 and justified in that way. Those things come
14 and go and maybe that's the issue about
15 continuing. But typically if something is
16 important enough to be important it will
17 attract funds to do that. That could come
18 from a very limited sources. The reason why
19 we kind of said, okay revenue is okay because
20 departments and agencies may elect to invest
21 in technology. Many of the agencies DHS, FAA,
22 NASA, DoD have, you know, research and

1 development budgets. We devoted a lot of
2 money in the DoD, which was looking at
3 spectrum efficient. So in terms of the
4 overall pipeline, certainly revenue neutral in
5 terms of going in for new money to the top
6 line. But that decision was made within the
7 department to take a look at spectrum
8 efficiency and so forth that was done that
9 way. So like I said, my view is if its
10 important enough then it would attract the
11 funding to make it happen. And typically most
12 funds that the government is interested in
13 either attract money, people or reorganization
14 was the three methods.

15 MR. PEPPER: That actually is an
16 example of revenue neutral. So it is a
17 question of defining budget neutral in ways
18 that actually incorporate the range of the way
19 things are funded without changing the overall
20 budget. It could be through reprogramming of
21 existing funds from projects into priorities.
22 What I think is really nice about this is that

1 it highlights, identifies, the real benefit of
2 the program. And by highlighting that it
3 provides the opportunity for people to do some
4 reprogramming saying this actually is more
5 important than some other things we are doing.
6 But in terms of overall budget, it is budget
7 neutral. Additionally, and this is one of the
8 issues where embedded in the draft, the
9 balancing difficulty is the extent to which
10 there are savings to existing agency budgets
11 as they move forward and do, and actually do
12 some reforming, incorporating more efficient
13 technologies. How do you ensure that they
14 actually get the revenue and the budget to be
15 able to do that, that any savings aren't then
16 dissipated and go elsewhere. So, again
17 there's an opportunity to use some of those
18 savings and keep it internalized within the
19 system so that the agencies that benefit from
20 the technology also benefit from the future
21 replenishment going forward with R&D and the
22 technologies. So I think that one of the

1 discussions going forward because again its
2 sort of the beginning. I like the idea. Like
3 on the whole subcommittee for embedding this.
4 I think its great going forward but I think it
5 is just the beginning of the conversation. It
6 may not be ready for the next meeting. I
7 think that this is one area of thinking more
8 broadly about what does it mean to be budget
9 revenue neutral in a much broader sense where
10 the benefits of the process actually accrue
11 back into the loop for the agencies that
12 actually benefit from it and that need the
13 increased deficiencies.

14 MR. HATFIELD: Just to make sure I
15 understand the nuances of that and going back
16 to Rick your comment. An individual agency
17 may not have the incentive to make the R&D
18 investment to be more efficient if the
19 efficiency accrued to other agencies and
20 therefore you would have a market failure, I
21 think from an economic so the notion is you
22 have to do it at a higher level than one

1 individual agency. So I agree with you
2 agencies should have the incentive but I'm not
3 sure they do. I think this is what you were
4 saying that I interpret what you said.

5 MR. REASER: The dilemma is that
6 most agencies manage things program by
7 program, P1 r line, R1 line at a time. I can
8 give you examples of wire program and I was
9 the chief engineer at the time. Rather than
10 going after new spectrum for GPS for the new
11 military codes, my direction was reuse
12 existing spectrum. Now, we have like 15
13 billion signals in this one set of little
14 band. Actually it is a big band. But we have
15 a whole bunch of things going on. And we
16 agreed to share that with other countries. We
17 did all these other things. So whereas I
18 didn't really use less spectrum, I didn't use
19 more. Most other programs that I'm involved
20 with at my company have to do with common data
21 links. Where basically we have a certain
22 allocation of a big band with what are we

1 trying to do? Pack more data in it. Rather
2 than going after 15 more CDLs, we are trying
3 to figure out how to get way more bandwidth or
4 effective EVDO into an existing band rather
5 than going for spectrum. So that's the other
6 problem we have. In terms of many of you are
7 following the UAB debate about remote sensing
8 and so forth. I mean that's a huge problem
9 over any other systems that want to do remote
10 sensing. So we don't have new bands. So many
11 of the technologies that are getting vested by
12 DHS, because they are in this program as well.
13 It is somehow use existing bands more
14 efficiently. That doesn't really necessarily
15 free up more spectrum. It just prevents you
16 from going after more spectrum. And I think
17 that's the other real difference in terms of
18 what goes on here. I think there's lots of
19 opportunities if you wanted to speed up the
20 federal narrow banding process. That could be
21 done through investment. But in the end what
22 ends up happening is people are going to want

1 to have more channels, more radios. But one of
2 the things that could happen is you could go
3 down at 6.25 and you could get a lot more
4 efficiency in those bands if you wanted to
5 innovate and have those technologies be
6 introduced quicker and sooner. But you know
7 it all comes down to money. I was talking to
8 some police officers just over the weekend at
9 a track meet or a cross country meet.

10 UNKNOWN SPEAKER: You have to
11 clarify where that was.

12 MR. REASER: It was a cross county
13 meet. They are talking about the whole
14 business on the radios. I mentioned I deal
15 with spectrum. Oh you are one of those evil
16 spectrum people. How come our radios don't?
17 But see it all gets back to investing to be
18 more efficient because they still have like
19 these monster radios. Anyway.

20 MR. TRAMONT: Julie and then maybe
21 Janice. Julie do you want to go?

22 MS. ZOLLER: Sure. Thank you

1 Bryan. I would like to touch on the issue of
2 fees and to say that from the time the
3 subcommittee began meeting I think it was
4 clear that there were legitimate differences
5 between our various views on how we felt about
6 these. We focused most of our effort on the
7 circular A-11 and spectrum incentive fund
8 issue and return to the fees I would say late
9 in October in a real meaningful way. In our
10 text providing the alternative view, we
11 developed that at the end of the process
12 expecting that to be incorporated in the body
13 of the report as sort of a balanced approach
14 to looking at fees. And I appreciate
15 Michael's comments on how we got to where we
16 are. But our expectation was to see that in
17 the body of the report and to provide the sort
18 of balanced report that we saw from the
19 adjacent band interference/dynamic spectrum
20 access community. And we would like to go
21 forward in that manner with our final report.
22 Thank you.

1 MR. TRAMONT: Janice.

2 MS. OBUCHOWSKI: I mercifully gave
3 over the chair to Michael. I wanted to first
4 off thank you Michael for his work on the
5 committee and subcommittee. I do want to
6 return to the topic which I will now have a
7 document to look at. I appreciate that the
8 committee while our mandate is not to address
9 FCC issues, did refer to the need to apply
10 fees as a tool in an even-handed manner. That
11 is a very material concern to me. And
12 frankly, you know, as I look, the FCC just
13 stood up in an advisory committee need, the
14 technical advisory committee but with a very
15 broad mandate. I took note and Mr. Co-
16 Chairman Hatfield with you as an exception out
17 of the 42 members, I don't think there was any
18 other person whose dominate career path had
19 much to do with recognizing federal
20 priorities. And so as the FCC -- and it is
21 chaired by of course Mr. Wheeler of brown
22 renown but closely associated with the trade

1 association, the beaten back fees at every
2 turn despite the fact that its always been in
3 the president's budget bipartisan budget. So,
4 as we go forward I would just like to note for
5 the record that even handed recommendation is
6 one that is critical to my signing on to the
7 idea of fees as a valuable tool at least for
8 consideration across the board. The second
9 issue I think that a well calibrated report is
10 going to need to address more closely at the
11 top of the international impacts. The U.S.
12 stands very much alone in how we use spectrum.
13 We remain the company with the most broad
14 reaching expectations both in space, for NASA
15 and for our security objectives. And I think
16 anything we say about fees will be weaponized
17 against us in the international environment.
18 And I don't think that's just a loose threat.
19 We saw that just happen in Guadalajara where
20 the U.S. was talking about maybe moderating
21 its perspective on the Internet and had
22 various calibrated domestic perspectives. But

1 of course the Chinese don't see those
2 calibrations the same way we do. So as we
3 launch satellite networks or other networks
4 around the globe, I would be very careful of
5 how we describe the benefits of these as a
6 tool and will they matter to us enough and
7 where they really don't.

8 And then my last point and I will
9 the floor, I think all this discussion
10 probably would benefit from a certain amount
11 of budget realism. We are in an environment
12 where we don't even have a budget. We are
13 operating under continuing resolution and
14 depending on and every other major agency is
15 trying to figure out what its going to do in
16 that context. And all that may change, is
17 looking at a reality of declining budgets,
18 perhaps desirable for a long time to come.
19 So, frankly as I look for example at the
20 security agencies but probably a lot of
21 others. I don't think there's any way that
22 fees can generally be applied in anything

1 other than a punitive way. So while the
2 economic rationales are clear in a theoretical
3 world, I'm not sure that's how they could
4 possibly work. And while it is a footnote
5 point, when we talked about this spectrum
6 efficiency fund, again theoretically something
7 we can all support. But as I see the idea of
8 auctions and spectrum relocation being sold on
9 the Hill, its not being sold as something that
10 will be funding major upgrades and
11 efficiencies with federal systems. It is
12 being seen as a way to deal with the budget
13 crisis that exists in the country. So I just
14 think that realism has to exist and as we look
15 hopefully at a draft that we can all sign on
16 to. I think its got to be manifested in the
17 report.

18 MR. TRAMONT: Thank you. Bob and
19 then Bob.

20 MR. GURSS: I just want to note
21 that I did see in the appendix portion some
22 brief reference to the fee should not apply to

1 safety or services and certainly every effort
2 by licensed fees or spectrum fees, whether
3 federal or non-federal is generally excluded
4 public safety and I certainly saw that in the
5 appendix, I would assume it would be in the
6 final report because I think its not only is
7 there a lot of logical reasons for it
8 politically you are not going to get fees if
9 they are going to apply to public safety.

10 MR. PEPPER: I want to first agree
11 with Janice that we need to think about the,
12 whatever we do is huge internationally. But
13 if we are looking is also using a degree
14 courses for spectrum management, that's part
15 of the balancing. So there are pros and cons,
16 right? And whatever we do will be used in
17 some instances to create barriers for making
18 spectrum available globally for both defense
19 systems as well as U.S. companies. On the
20 other hand using those mechanisms to lead to
21 more market oriented approach to spectrum
22 management I think is the upside. So we have

1 to that as sort of the balancing within the
2 international context. But we absolutely need
3 to take that into account. On the fees issue,
4 it strikes me that this is a subcommittee
5 report draft. We've known from forever
6 including previous CSMACs that fees and
7 administration pricing issues are the most
8 controversial. I think that ultimately we are
9 going to have to have that as a discussion of
10 the body as a whole. And it not just the
11 reflects just the subcommittee. Michael,
12 you've done a great job but you shouldn't have
13 to bear the brunt of everything. Janice had
14 to do that last time. Very seriously I think
15 that we really need to set time aside, perhaps
16 at the next meeting to actually go through the
17 pros and cons, the costs and benefits of
18 working through these fees issues because we
19 have to get beyond the traditional legacy
20 positions. The reality is that with the
21 budget constraints, you know, it is non-
22 trivial to be able to have internalized

1 funding for the kinds of development,
2 migration, reforming RMD that we are going to
3 need going forward to retain leadership in
4 spectrum. And this is one way to do that and
5 I think if we think of fees in a broader sense
6 about funding the work that needs to be done
7 within the spectrum ecosystem here in the U.S.
8 Thinking of it that way as opposed to money
9 that's thrown off to go off to a budget
10 process. I think we would actually make some
11 real progress. Problem is when the money is
12 identified just something that goes into a
13 deficit reduction attempt or we don't see the
14 benefits back in the spectrum. I think we
15 maybe need to think about how we can think
16 about getting benefits back into the spectrum
17 for the R&D, the migration and reform.

18 MR. TRAMONT: Jennifer.

19 MS. WARREN: Thank you. Just to
20 add on discussion of fees. I think we made a
21 lot of progress when we look at the principles
22 that we all agree we wanted to achieve and the

1 context of the incentive subcommittee
2 promoting efficiency and expanding access to
3 existing spectrum capacity, ensure that
4 spectrum based solutions are required to
5 ensure the protection of system serving
6 important public needs, military or public
7 safety and the like. Those are really four
8 guiding principals that we use. And the real
9 heart of the debate on spectrum fees at least
10 as they apply to the government users, the
11 non-revenue generating users was will there
12 really be an efficiency impact. And that's
13 where the heart of the difference is. What is
14 for certain is that there will be an
15 administrative cost, a bureaucracy of overlay
16 to do the transfer of funds to develop, etc.
17 etc. With absolutely nothing but speculation,
18 as to whether or not it will actually drive
19 again greater effective and/or efficient use
20 of the spectrum that is being used again for
21 non-revenue generating purposes. And some of
22 us on the subcommittee feel very strongly that

1 it is very important to have an integrated
2 balanced view. I think Bob mentioned pros and
3 cons. That may be an approach which is to
4 make sure that the policymakers have the
5 benefit of thinking of all of those who have
6 views on this or what are the pros and cons
7 whether it be international dimensions,
8 whether it be the economic dimensions,
9 whatever dimension is relevant, that be
10 reflected in an integrated balanced outcome,
11 which may have some recommendations that some
12 support and some recommendations that others
13 support. But this has been going on for quite
14 a while and I think that we've been doing
15 these in subcommittees and ultimately the
16 product ought to be one that the policymaker
17 see the benefit of the, its only been three
18 years for me I know. Others have said 30 and
19 40 years of discussion on this. So perhaps
20 that might be the way forward. I would
21 certainly welcome that discussion. Thank you.

22 MR. TRAMONT: I think David

1 Donovan is next and then James.

2 MR. DONOVAN: Thank you Mr.
3 Chairman. Just a couple of thoughts. One is
4 and Michael I thought I had mentioned this.
5 Coleman Bazelon whose a well-known economist
6 in this town and has kept me very, very busy
7 over the last year, wrote a marvelous article
8 when he was at CBO on spectrum fees and their
9 efficiencies. I just commended, I'll try to
10 get a copy of it and send it to you all and to
11 send it to the full committee because I do
12 believe its worth looking at. The second
13 thing is to tack on to Dr. Pepper's. Michael
14 this is terrific work. No one knows more than
15 I do on trying to balance the give and take.
16 But I think that Dr. Pepper's work I'll be
17 honest I think in terms of facilitating and
18 stimulating communication services and
19 investment and jobs and what have you, fees
20 are a huge issue here. I am new to the
21 community so I haven't had the experience of
22 fast lifetimes on earlier committees but have

1 had experience of commission when all this
2 gets discussed. So it might be since this may
3 become a committee of a whole sort of issue is
4 to the extent having opposition that's in an
5 appendix to the extent that it has any
6 implication to it, we might want to just kind
7 of maybe put an A and a B. But again I'm new
8 so I can sit back on that. But from what I
9 understand there's a 50-50 split. Is that
10 correct?

11 MR. TRAMONT: 4-3.

12 MR. DONOVAN: 4-3, okay. So, I
13 think the committee as a whole really ought to
14 look at all of this because this is going to,
15 I truly believe probably this is the most
16 important issue that we'll have to address
17 next to adjacent channel interference. This
18 requires some serious thought. If for no
19 other reason, the imposition of spectrum fees
20 whether you are using by megahertz pop or what
21 have you will necessarily imply value
22 judgments at an administration or any

1 particular administration because you may want
2 to facilitate certain things. So I applaud
3 your effort Michael and look forward to
4 working with you on this.

5 MR. TRAMONT: I think today's
6 discussion at the beginning and the
7 committee's consideration of this and
8 obviously that's what going to happen next.
9 We will relatively move on quickly, Dr. Lewis
10 and then Mark and then Rick.

11 DR. LEWIS: I've been upgraded
12 from Mr., thanks. This has been a very
13 interesting process. I want to congratulate
14 Michael on having herd the cats, very
15 difficult. I think what we heard is basically
16 right. There is some very large issues for
17 the group. This might very well be a make or
18 break issue for the group. So it might come
19 back in the discussions at the end. We need
20 to think about what some of our goals are. If
21 our goals are better management to allow more
22 productive use of spectrum, we have to ask how

1 we get there. We have to ask what the role of
2 market mechanisms is as opposed to commander
3 control. I think that's underlying a lot of
4 our discussion but we haven't really tackled
5 it. We need to think about what is the best
6 way to produce both competition and innovation
7 and its not clear to me that a process that is
8 oriented towards incumbent rights will produce
9 innovation. Incumbents are not going to be
10 producing to innovations. So we do this as a
11 whole group thing. I do think we need to put
12 it in a large international context, but not
13 only the potential for fees but the potential
14 for loss which many of us perceive. And the
15 potential for balancing market mechanisms with
16 the more traditional approach to spectrum.

17 In that sense, you know we've had
18 this discussion before and I welcome what the
19 chairs see and what they think the best way to
20 move ahead. I think we do need to broaden
21 this out and start talking about market versus
22 commander control, competitive and innovation

1 versus incumbent. Those might be the issues
2 that are before us.

3 MR. TRAMONT: Mark and then Rick
4 and then Susan and that's a wrap.

5 MR. CROSBY: Real brief. We are an
6 advisory committee so the information of this
7 committee is not only on the benefits of
8 implementing use of fees for user fees. There
9 is just as much value saying the risk of doing
10 it as well and all the complications. And
11 that is just as important. I think at the end
12 of the day there won't be any real winners or
13 losers in this. We will just be a lot of data
14 that people will be able to use to make
15 judgments about how to go forward. That's
16 all.

17 MR. TRAMONT: Rick.

18 MR. REASER: But when we do the
19 committee as a whole it might be useful to get
20 some presenters that talk about some of these
21 things that are very difficult to monetize and
22 that's the problem I had with fees in general.

1 How does the National Science Foundation put
2 a price per megahertz on radioastronomy? How
3 does that happen for some of these net bands,
4 you know that just give us 15 megahertz. But
5 it would be very, those kind of things need to
6 be talked about. Because some of these things
7 are just, we are not selling radioastronomy
8 sites to homeowners. We are not doing that.
9 So I think we should have some discussion
10 about that and maybe a couple of short
11 presentations about what people, how they
12 should react to. My views obviously are at a
13 very low level because when they talked about
14 revenue, I think about my own little tiny
15 budget and my tiny little program. We out to
16 probably have some outside participation and
17 some briefings about what some of these things
18 that are difficult to monitor. Because the
19 public safety is another one. The police
20 officer when you see -- they have no money to
21 buy new radios much less pay fees. They are
22 having a hard time. So having that discussion

1 I think may be some presentations when we go
2 to this thing and maybe Karl can help with
3 that.

4 MR. TRAMONT: Dr. Crawford.

5 MS. CRAWFORD: Just very briefly.
6 As we get to the point of having meeting as a
7 whole, we are going to need much better data
8 than I think we have now. One thing that
9 would be helpful would be a detailed dive on
10 the experience because they will say that it
11 doesn't matter what the price is you set.
12 Just a price changes behavior. Now whether
13 that's true or not, we will have to wait to
14 find out. But we will need some -- so let's
15 just hear what the facts are.

16 MR. TRAMONT: And indeed I believe
17 we have some of the thoughts to process over
18 the course of the last three years. There is
19 pain everywhere on this one. I want to make
20 one observation which is going to be
21 underscored in the last half of our meeting
22 which is that we are nearing the end of our

1 charter in April and I think more than a half
2 of the members, the committee's terms expire
3 in January. This topic has been as we all
4 reference now, part of the initial charge and
5 now part of this charge. I think for all of
6 our purposes would like to put an end to this
7 particular chapter of report. It may well be
8 that there is subsequent work to be done with
9 the next chartered committee but since we are
10 changing out more than half of the membership,
11 I think it would be a disservice to Larry and
12 everyone if we were not to give him something
13 from this group instead of starting all over
14 again or kicking it again to another
15 committee. So, I would like to make that data
16 point. We do have somewhat of a time frame
17 here and it may be that we will not be able to
18 do as deep of an assessment of some of these
19 issues as we otherwise would have liked. I
20 would like to try and move on to Gerry's
21 report if we can.

22 MR. NEBBIA: I need to make one

1 quick standard comment. It is very important
2 that in the end we see something that stands
3 out as a recommendation. Right now Michael
4 read the recommendations and I would have read
5 them as just the headings of sections. In
6 David's document, not only does it as NTIA
7 should and then there's a list but its in blue
8 which I really appreciate. So in this
9 document as you move toward closure, it is
10 very important that it comes out as here are
11 the should type of recommendations. It is in
12 blue bold.

13 MR. DONOVAN: I was told red was
14 an inappropriate color.

15 DR. LEWIS: Bryan before you move
16 on can you tell us where we stand on this
17 because I agree completely that we need
18 recommendations out of this. We are not going
19 to get them from a consensus process. So
20 that's what I think. Maybe two drafts are the
21 way to go. One that has recommendations that
22 are along the lines of what Karl would like

1 and one that has the objections. And doing
2 that process might be useful to flush out. It
3 is up to the chairs as I understand it. So
4 what do you want us to do next? And you can
5 take a pass on that one if you want.

6 MR. TRAMONT: I didn't think you
7 implied otherwise.

8 MR. DONOVAN: The only point on
9 that is you can do it a number of ways. The
10 offset that we are going to have two
11 documents. You won't have sort of the debate
12 and drive towards consensus that process sort
13 of brings.

14 DR. LEWIS: Since you are new the
15 last time we did that it failed. So I'm not
16 a big fan of consensus on this one.

17 MR. HATFIELD: If people here could
18 -- I feel like I'm always lagging up here. We
19 need some sort of a proposal to get this done
20 between now and early January and what are the
21 proposals on the table then for getting it
22 done? In other words I think there's an awful

1 lot to be said, even if its very interim at
2 this point. By the way, let me say first of
3 all, I think there's an awful lot of
4 innovative thinking that's gone into this, in
5 the innovation fund in the A-11 and I would
6 hate to have the discussion here, the dispute
7 over fees somehow pollute or diminish the
8 other really great work that's been done. So,
9 I think, I'd like to see us move forward but
10 its not clear how we can get done between now
11 and January and maybe we have to tee up some
12 things for later. I really think we need to,
13 this is next to the last meeting of this
14 formation. So we need to get somehow closure,
15 something we can vote on if you will at the
16 next meeting.

17 MR. TRAMONT: I also want to note.
18 There is 18 pages in this draft of which four
19 are devoted to fees. So we are talking about
20 a relatively narrow section of this draft. In
21 addition, there's the Appendix A language
22 which is another four pages roughly. It is

1 not clear to me that all of the Appendix A
2 materials are such that there would be a split
3 vote on them. I think many of the issues
4 raised in Appendix A could well be folded into
5 a consensus draft. But I think we need to, to
6 Dale's point, have a process in place to move
7 this forward. Jennifer did you want to weigh
8 in on that topic?

9 MS. WARREN: Yeah, I wanted to
10 actually respond to Dale's question whether
11 there was a proposal on how to go forward. I
12 think it goes back to what I know the
13 subcommittee knows put on the table and which
14 was having the A and B. And each A and B can
15 have integrated into the whole document and so
16 you could start off by all the positives where
17 we have full consensus as Dale referenced.
18 The A-11, general inspection innovation fund
19 and then this other long standing issue can
20 have two views and each view could even have
21 its own recommendations if you buy the
22 philosophy and the concerns that underlie or

1 underpin each of those views and then it is
2 not anything we've produced compare
3 automatically, directly implemented. It is
4 for policymakers to consider we are advising
5 and when we look at the charter this committee
6 is to provide our advice, the fact that we
7 have different advice is something that the
8 policymaker should consider. And that would
9 be the approach, the structures already been
10 submitted to the subcommittee toward that
11 which then we could benefit from the full
12 committee further discussion and elaboration
13 of each of those views. That would be my
14 proposal. Thank you.

15 MR. TRAMONT: Gerry.

16 MR. SEALMME: I was going to say I
17 think that would be fine but I would want the
18 committee to actually vote and see if there's
19 a majority opinion and minority opinion. And
20 I think if you did that it would be a good
21 way.

22 MR. TRAMONT: Is there a counter

1 proposal to how to proceed?

2 MS. OBUCHOWSKI: I do have a
3 decision on the vote today.

4 MR. TRAMONT: We are not voting
5 today. I'm sorry. That wasn't clear. We are
6 not voting today.

7 MS. OBUCHOWSKI: Not even deciding
8 that we are going to vote or not vote. I don't
9 think -- I think that should be discussed and
10 the work going forward.

11 MR. TRAMONT: I'm sorry. You
12 don't think we should reach a consensus on
13 process today?

14 MR. GURSS: I think what Janice is
15 saying that strategy -- I'm mean usually in a
16 trial you throw everyone back, you send them
17 back into the jury room and work hard to come
18 up with a consensus. Maybe ultimately we have
19 a hung jury but we need to work hard to see --

20 MR. TRAMONT: To make sure that's
21 what we have.

22 MR. GURSS: Yes.

1 MR. TRAMONT: Commissioner?

2 UNKNOWN SPEAKER (TT): Is there
3 anything wrong with the minority report?

4 MR. TRAMONT: Commissioner, I will
5 turn you back. I think that Bob's point if I
6 can summarize is that if we have a minority
7 view, then we should have a minority report,
8 but its not clear that we have to a minority
9 view at this stage. It is premature to set it
10 up that way.

11 DR. FURCHTGOTT-ROTH: I just want
12 to reinforce the points you are making Bryan
13 that the process of timing. This subcommittee
14 has met many, many times and an enormous
15 number of hours have been spent on this and it
16 is not I think for want to try that a
17 consensus has not been reached. I think there
18 are simply very deeply divided views about the
19 best approach for the U.S. going forward on
20 this issue. But I do think its really
21 important that we have a very clear process
22 for final meeting and I would think very clear

1 time frames about how much time this full
2 committee wants to dedicate to this because if
3 its open ended we will never finish. So you
4 need to have a really clear idea that we are
5 not going to spend more than half an hour or
6 an hour or some amount of time to figure out
7 how to do this.

8 MR. TRAMONT: And I suspect its
9 logistically that --

10 DR. FURCHTGOTT-ROTH: It will have
11 to be done by phone in advance of the final
12 meeting as opposed to trying to do it at the
13 final meeting and trying to get the language
14 for the final meeting. So I think that's
15 important.

16 MR. CALABRESE: But one other
17 possibility, I mean I see a bit of a conflict
18 between, there's been an expression of the
19 full committee to have input. But then voting
20 this at the next full committee.

21 MR. TRAMONT: That is why we need
22 by open teleconference so it would be

1 publically available is the way we would have
2 to do it.

3 MR. CALABRESE: I was just going to
4 say that perhaps we should have some
5 opportunity for the committee as a whole to
6 meet. Just to meet to have a special session
7 just to discuss this and get everybody else's
8 views.

9 MR. PEPPER: Is there a consensus
10 not on the PTs but on the directionally on the
11 incentive fund and the recommendations on A-
12 11. Because again I think your point is
13 compared to last time around, I think we've
14 had huge progress on that. I think that there
15 is broad agreement if not consensus in that at
16 least on that we should try to get the next
17 version to come to some closure and then
18 narrow down where the difference of opinion
19 are which is on administrative pricing, fees
20 etc. and have that be the focus of the
21 discussion.

22 DR. LEWIS: Well I don't know if

1 there's consensus to --

2 MR. PEPPER: I didn't say
3 consensus.

4 DR. LEWIS: -- separate A-11 from
5 the fee question. The answer is you might not
6 want to at least initially but it may come to
7 that. On the spectrum fee, I've always had
8 reservations. I'm the one who has pushed for
9 it to be revenue neutral and I might even push
10 for it to be more than revenue neutral. So
11 those are closer, I agree. And I agree that
12 we don't want to lose them but they are not
13 ready for prime time.

14 MS. ZOLLER: Thank Bryan. I think
15 one of the things that we should decide when
16 we re-engage on this process is what our
17 milestones are so that we know what our
18 targets are in terms of revised drafts,
19 comments and a final report. And if I
20 understood you correctly, you are looking to
21 have a complete draft one week prior to the
22 next CSMAC meeting. So I think we need to

1 work backwards from that.

2 MR. PEPPER: So it has to take
3 place before January, when's our --

4 MR. TRAMONT: 20th or some time.
5 12th and 13th. So let me and consistent with
6 what Julie just proposed, I'm going to rough
7 something out and then we'll send it around
8 once we finalize it based on everyone's
9 schedule. I think if we and Michael let me
10 know if this makes sense everyone. Within the
11 next few weeks and before Thanksgiving
12 everyone on the committee would send edits or
13 thoughts to Michael who will then sympathize
14 to the extent possible what's in there, what's
15 in the feedback. And that should include a
16 close examination of Appendix A and places
17 where you see a consensus. It also needs to
18 reflect some bottom lines on where we are
19 headed on your feedback in terms of the bottom
20 line that you bring to fees. Then we will
21 convene a call, a conference call of the
22 entire committee in early December, early/mid-

1 December.

2 MR. HATFIELD: And that has to be
3 noticed.

4 MR. TRAMONT: How far in advance?

5 MR. GATTUSO: Legally 15 days.

6 MR. TRAMONT: Okay. That's about
7 as soon as we could do it anyway. So early in
8 December a committee of the whole would meet
9 to walk through where we are. Then Michael
10 and whoever else is working with him would set
11 up a revised draft that would then be
12 circulated ideally before January 1 and then
13 we would meet somewhere after that. So we
14 would try and do but the big bogie is everyone
15 getting some feedback who have views about
16 this to Michael on the draft that has been
17 circulated and Appendix A within the two weeks
18 before the Thanksgiving holiday. Does that
19 make sense?

20 MS. ZOLLER: I would say, just ask
21 one other thing that those comments that are
22 sent to Michael be distributed.

1 MR. TRAMONT: To the whole?

2 MS. ZOLLER: Yes, not just one on
3 one.

4 MR. TRAMONT: Okay.

5 MR. HATFIELD: I think this point
6 going forward we are essentially committee the
7 whole, yes.

8 MR. TRAMONT: Okay. All of this
9 will go to everyone. Okay, any other edits,
10 revisions to the process?

11 MR. REASER: One of the things
12 that we talked about was like having and I was
13 one with the single report but the case for
14 these, the case or alternative views on these,
15 maybe call it that way. Because I think
16 that's -- and we are driven by world views by
17 the way. There are fundamental reasons why
18 people have different beliefs about it. That
19 ought to be described I think.

20 MR. TRAMONT: Well I think we're
21 driving towards that idea. We just have to
22 figure out how much, we would like to get as

1 much consensus as we can. And if there are
2 reconcilable differences, then they will be
3 reflected in alternative views and we'll have
4 to figure out as a group where those are.
5 Okay. So that will be our process. But it is
6 super important and incumbent upon every
7 member of the committee to weigh within this
8 first window because its not fair to the group
9 to still try and be struggling with this on
10 January, whatever that date is that we
11 actually meet again, which we are going to try
12 and work out. Okay, anything else on this?
13 All right. Great. Thanks. That's a very
14 robust discussion. Gerry, turning to you.

15 MR. SALEMME: Thank you. In the
16 subcommittee on unlicensed spectrum which was
17 comprised of Mike Calabrese, David Donovan,
18 Jennifer Warren, Larry Adler, Marty Cooper and
19 myself, met a number of times. We've had
20 productive and stimulating meetings on the
21 role and the importance of unlicensed going
22 forward. I think that many of the members of

1 the subcommittee were fresh from the white
2 space FCC proceeding and that may have driven
3 us to take a broad or more forward looking
4 approach than getting to the practical
5 discussion that Michael just withdrew of the
6 incentive subcommittee. And we pulled
7 together I think under Marty Cooper's
8 visionary guidance more of a conceptual piece
9 about what can the future look like with
10 unlicensed. What is the, how can we convert
11 through the great technological advances that
12 seem to be in front of us. The way in which
13 we review the spectrum licensing and can we
14 take a different approach if Sherry and the
15 technologies really do drive us to a new
16 model. And it is, like I said, it is a
17 thought piece. It is more of a conceptual
18 piece. We didn't deal with some of the issues
19 that Karl and the administration, I think, may
20 want us to with regard to enforcement and some
21 of the very practical pieces and issues that
22 we deal with on unlicensed. But I think if

1 you take this forward looking approach, then
2 we start now to develop policies that promote
3 and facilitate the development of these
4 technologies. We do have a vehicle with the
5 government's activities to drive the onset of
6 these technology driven sharing platforms more
7 quickly and we think that it would be in the
8 benefit of all to be able to maximize the
9 spectrum of efficiency, which these new
10 technologies, I think we all agree would
11 provide. Now the real debate is how real are
12 these technologies? What's a time frame that
13 is reasonable? There was a great divergence
14 of opinion on that matter. Some of us were
15 less bullish than others on how quickly you
16 can make technology drive us to this. On the
17 other hand it is laid out there in the
18 recommendations to make sure that we are
19 promoting sharing in the appropriate fashion
20 and not doing, setting up more obstacles by
21 actually licensing regimes that would provide
22 for either economic disincentives or other

1 technical barriers to allow these new
2 technologies to come forward was I think the
3 major recommendations of the piece. Again,
4 this is an early work -- Marty has another
5 version of a draft I'm told that we may be
6 able to circulate by even this week. And
7 there are issues around GPS timing. There are
8 issues around the technologies and how we get
9 these out there. I think the government just
10 should be cognizant of as they are moving
11 forward with their day to day practical
12 implications and that's what we try to get to.
13 I don't know if Marty or any of the members
14 want to add anything to that.

15 MR. COOPER: There is an important
16 point that I hope everybody will extract out
17 of this. That is that the technology of metro
18 improving metro efficiency is going to keep
19 improving and the difficult problems is
20 matching up the allocations of spectrum with
21 the evolution of the technology. The point
22 being that if you allocation all of the

1 spectrum now, there is not the opportunity to
2 introduce spectrum technologies and the
3 recommendation is that there ought to be a
4 concept like a national spectrum plan. Can
5 everybody still hear me? There ought to be a
6 national spectrum or somebody or somebody
7 looking at the evolutionary practice and
8 various scientific ways in trying to match up
9 the technologies with allocation.

10 MR. TRAMONT: Thanks Marty. Any
11 other feedback for Gerry?

12 MR. DONOVAN: I just want to thank
13 Gerry and I want to thank Marty for some just
14 terrific work and Marty my hat's off to you.
15 Now I know why they named Alar after you but
16 I mean you've done a terrific job. Thank you.

17 MR. TRAMONT: And I think one
18 thing Gerry wants you to keep in mind, David's
19 report touches on the same issues as your
20 report and I think that probably consistent.

21 MR. SALEMME: Having David on the
22 committee has kept us in I think a disciplined

1 fashion. We will continue to work on that.
2 Like I said, this is, we would not have had
3 this release this quickly. We probably needed
4 another couple of weeks. A lot of people were
5 distracted with Michael. And Michael was
6 distracted with his own incentives.

7 (Laughter.)

8 MR. SALEMME: We were definitely
9 second chair in this process and I think in
10 another couple of weeks, we'll be able to get
11 something.

12 MR. REASER: That is really
13 interesting talking about the technology and
14 I agree with Marty that the technology is
15 going to keep advancing. I think that's a
16 great thing to keep in mind. I think I had
17 some concerns about how this is sort of
18 conflating ideas of sharing technology in the
19 regulatory regime without really explicitly
20 saying how necessarily the unlicensed regime
21 necessarily is the right thing to promote
22 sharing technologies. It didn't come across

1 to me that there was a logical link between
2 those two. They could have been made better
3 in that and then some of the statements in
4 there about sort of how innovation occurs and
5 then it is only forced upon people that seem
6 to be overstated as well. So I would, I'll
7 try and provide you with specific comments on
8 that as well.

9 MR. SALEMME: Thank you. That is
10 very helpful and it is something that we
11 actually said that a lot of the technological
12 advances are actually promoted in license
13 spectrum advances as well as unlicensed. It
14 is one or the other exclusive but that the
15 government had an opportunity now to again be
16 aware of both and be promoting it in both.

17 MR. TRAMONT: So Gerry in light of
18 you, you said there was potentially another
19 draft coming. You know why don't we stop
20 working on this just in case.

21 MR. SALEMME: I think that would
22 probably be best from a timing standpoint. If

1 we get something by the next 48 hours I'll get
2 it out to you.

3 MR. TRAMONT: Okay. So then our
4 goal will be to get, everyone should get their
5 edits to Gerry by December 1 seem fair? That
6 should give you plenty of time. And then
7 he'll re-circulate.

8 MR. SALEMME: I'll be eating
9 Thanksgiving dinner by then.

10 MR. TRAMONT: Excellent,
11 excellent. So the bogey will establish for
12 the committee is edits by December 1 to Gerry.
13 And then Gerry will re-circulate well in
14 advance of the final CSMAC meeting which like
15 I said will occur on a January date. Okay?

16 MR. NEBBIA: Gerry, are you going
17 to be looking at the enforcement issue and the
18 unwanted omissions issue which are very much
19 a critical part of this or is that not going
20 to be included?

21 MR. SALEMME: We hope to so yes.
22 Why don't we say yes. And if not it will fall

1 off the table.

2 MR. TRAMONT: Okay. Excellent,
3 anything else for Gerry? Okay, so December 1,
4 a shorter time frame on the Michael edits for
5 the obvious reason that we have, there's more
6 work to be done to reach consensus. With
7 Gerry, we'll send him edits by December 1,
8 okay? You all may have noticed that sharing
9 subcommittee report is not included here. In
10 light of the work that's been done by other
11 committees and the shortness of time and some
12 evolution in membership and employment status,
13 we have decided for the moment to shelve the
14 sharing subcommittee report and fold it into
15 next year's, if there is a recharged CSMAC.
16 I don't want to presume when we are going to
17 discuss this next. Then it would be folded
18 into the work. But a lot of it, when Gerry
19 and others started looking at what the
20 portfolio was of that subcommittee, a lot of
21 it had been consumed by other folk's work.
22 And so we decided to put that off for now. So

1 with that we are going to take a ten minute
2 break. We will reconvene at five minutes of
3 12 and then we'll go for, I don't know maybe
4 a half or so. Does that sound about right?
5 Okay. So we'll reconvene right before noon.

6 MR. STRICKLING: Let me give you
7 your assignment.

8 MR. TRAMONT: We have an
9 assignment during the break, wow.

10 MR. STRICKLING: That way we'll
11 save some time. What we want to focus on is
12 what you all think about CSMAC in terms of
13 where we are at today. But most importantly
14 how we can improve it going forward. And on
15 the table is the possibility that we choose
16 not to continue. So that's certainly a topic
17 for discussion. Here is what I would like
18 each of you to do during the break. Just take
19 out a piece of paper. I want you to jot down
20 your ideas on three questions. This is wide
21 open. This is in terms of the substance of
22 what we are doing, the process by which we go

1 about it, the people are doing it. This is
2 totally wide open. This is a fairly standard
3 analysis. Question number one is what things
4 that CSMAC is doing now do you want to see
5 continued? Second question is what is it that
6 we are not doing now that we should start
7 doing? And the third one is I guess kind of
8 what upsets you or what bothers you. What
9 should we stop doing or change about what we
10 are doing? So those are the three questions
11 and if you can have a couple of points under
12 each. I don't know that we will be able to
13 collect everybody's input in the time we have
14 but we'll try to get a discussion going and
15 then maybe people can follow up by e-mail. So
16 take your break and that's where we will start
17 when we come back.

18 (Whereupon the foregoing matter
19 went off the record at 11:50 a.m. and went
20 back on the record at 11:59 a.m.)

21 MR. TRAMONT: If we can everybody
22 seated we'll get started.

1 MR. STRICKLING: Did everybody do
2 their homework? So obviously let's make two
3 assumptions. One is that let's assume for
4 purposes of this session that the group is
5 going to continue and we'll recharter next
6 spring. But if anybody feels that this group
7 really has outlived its usefulness, feel free
8 to say that.

9 Second thing is, Bryan also
10 mentioned that for a lot of you your terms
11 expire in early January. That doesn't and
12 then he made a comment about half the people
13 rolling off the committee. That hasn't been
14 determined in any sense. Tentatively we are
15 thinking that having everybody whose terms
16 expire reapply and to go through a selection
17 process.

18 But no final decisions have been
19 made on that. So those two assumptions, what
20 I just want to capture and I don't think I've
21 got time to get an exhaustive list but what I
22 think I would to do is start around and we'll

1 just go around the room and just give me one,
2 give your best idea in one of those three
3 categories, which is to begin doing it, which
4 I will put a B up, to continue doing it, for
5 a C or to stop or change we will use S. So if
6 somebody would have a burning suggestion they
7 want to start with before I just call on
8 somebody?

9 MR. REASER: I think that we ought
10 to begin, you did a pretty good job but I
11 think the department needs to lay out some
12 very specific things, specific things like
13 specific recommendations. Give a specific
14 task of things you want to do. This has been
15 a problem in other federal advisory committees
16 I've been involved with. They come up with a
17 specific thing that you need help with and
18 then structure the committee so that you can
19 get the help you need to do stuff rather than
20 us just flap our gums about what we think is
21 important.

22 MR. CALABRESE: But one of the best

1 parts of this was that we had when we started
2 it was very drab, 15, 16 17 things that were
3 relevant that the committee could provide
4 advice on. And the opportunity that was very
5 helpful because I think that gets people's
6 passion up and interest up and participation
7 up and that was a good move.

8 MR. STRICKLING: So we did try to
9 at least put topics out there. I'm putting
10 yours as a nest to start to be even more
11 specific than we were. So I'm going to start
12 with you. We are just going to work away
13 around the room. Give me your best idea.
14 Greg?

15 MR. ROSSTON: I didn't pay
16 attention to your charge before the break.
17 I'll pass for now. I'm unprepared.

18 MR. STRICKLING: Usually when
19 people come to class unprepared they go back.
20 Well Janice has got her hand up. We'll go
21 that direction. Janice.

22 MS. OBUCHOWSKI: I think that the

1 debate is very healthy. I admire this
2 committee for actually engaging in debate and
3 having a difference of opinion and what I
4 would like to tee up perhaps is finding a
5 couple of topics that we had either neglected
6 or haven't looked at more carefully and pursue
7 them. I want to again congratulate David. On
8 the topic of sharing it is going to be as
9 important as anything economic going forward.
10 We are going to be in an environment. So I
11 would like to tee up that topic of sharing and
12 perhaps take some of the tough issues that we
13 didn't quite resolve including the big
14 intellectual one of what happens with an
15 incumbent who pays, how deep the property
16 rights run, what is the proper role of
17 government and take it one step further
18 because that's going to be crucial.

19 MR. STRICKLING: Is there some way
20 we conduct the debates that could be improved?
21 Because in general we don't do much debate
22 here although it sounds like the next meeting

1 will have more of a debate flavor to it in
2 terms of the work of Michael's subcommittee.
3 But is there something about the way our
4 meetings are structured that would even make
5 this more important or better than we do it
6 now?

7 MS. OBUCHOWSKI: One thought I had
8 when we brought in experts, they have enlarged
9 our approach. And perhaps it would be good to
10 solicit some views before of experts we would
11 like to hear from.

12 MR. STRICKLING: And the
13 suggestion was made that maybe at the next
14 meeting to bring in a couple of people who can
15 talk authoritatively about the fee question
16 and use that as the jumping off point for the
17 debate people like that ideas.

18 MS. OBUCHOWSKI: I think facts are
19 good.

20 MR. STRICKLING: Facts are good.

21 DR. McHENRY: Karl asked for
22 specific recommendations for calling back the

1 next meeting. I don't understand your
2 recommendation or I don't agree. Rather the
3 debate, give it to the staff on what they
4 thought about it and too vague or send it
5 back, tweak it.

6 MR. STRICKLING: I wrote it as a
7 to have staff provide feedback on the
8 recommendations. That's your idea? Okay.
9 Bryan?

10 MR. TRAMONT: I guess I will just
11 piggyback off of Janice. I really the panel
12 of experts idea. I think we really have had
13 very robust discussions when we've brought in
14 outside people either within government, from
15 academia what have you. I just think it's a
16 very healthy process and that maybe that
17 should be baked into the delivery process on
18 reports that we have, as part of every meeting
19 or before there's ever a final report there's
20 a panel of experts that we listen to and probe
21 a little bit as a group on some of those
22 issues.

1 MR. STRICKLING: Okay. Jim.

2 DR. LEWIS: I am going to just
3 reserve on my comments, okay. I know that may
4 not be entirely fair but we were the group
5 that suggested setting this place up. This
6 came out of the CSI report. I've been
7 thinking about it for a while now so I want to
8 give it a little more thought.

9 MR. STRICKLING: Okay. Anybody
10 who wants to, whether you get a chance to talk
11 today or not, feel free to send me comments.
12 My e-mail is just lstrickling@ntia.doc.gov.
13 I would be very interested in anything even
14 after the meeting.

15 MR. GURSS: One of them is fed
16 coordination with the FCC because so much of
17 what we are talking about really is not
18 strictly dealing with a federal spectrum.

19 MR. STRICKLING: Okay.

20 MR. DONOVAN: I think I sort of
21 like the structure of the way its laid out.
22 I think the idea of providing the specificity

1 recommendations is important. Otherwise we
2 can spin off. If we keep with specific
3 recommendations to help from that develop sort
4 of the debates regarding basic principals
5 regarding property rights. I don't want us to
6 lose, I'm kind of a nuts and bolts guy. I
7 don't want us to lose that idea of we need to
8 provide specific recommendations rather than
9 just become a more global debating issue.

10 MR. STRICKLING: Very good.

11 Harold.

12 DR. FURCHTGOTT-ROTH: I have
13 several suggestions.

14 MR. STRICKLING: Give me your best
15 one. We'll come back around.

16 DR. FURCHTGOTT-ROTH: Well okay
17 just very quickly. I would strongly consider
18 setting up several smaller advisory
19 committees. I think the chart for this
20 committee has already been far too broad. I
21 would think that the department and NTIA would
22 get far better use out of smaller groups that

1 they go to with narrow expertise but they
2 could go to more frequently with specific
3 issues that come up. I think that reinforces
4 Rick's point about coming up with specific
5 questions.

6 MR. STRICKLING: Okay, Mark.

7 MR. CALABRESE: I like, this is a
8 great committee. I like all the people. You
9 work hard. You've got a lot of visionaries,
10 a lot of smart people. At the end of the day
11 its got to be helpful as to change things, new
12 things, new innovative and capture things. So
13 it was very helpful with respect to inventory,
14 to have Karl's feedback. I mean he makes a
15 substantial -- my first reaction was, what but
16 when he really dove in it was extremely
17 helpful for the purposes of our thing. So I
18 like feedback coming back on whether we are on
19 the right track or not because it has got to
20 be helpful. Anybody can right words but the
21 words have to be meaningful and change things.
22 That was very helpful.

1 MR. STRICKLING: Okay, we'll put
2 another checkmark back from staff. Susan.

3 MS. CRAWFORD: Following up on
4 what Mark just said. As someone trying to
5 participate from a distance, its almost
6 impossible. So, better staff support, staff
7 interaction. Knowing that the meeting
8 schedule is going to be nine months in advance
9 or six months in advance should be possible.
10 Being able to see drafts of reports regularly
11 and understanding what the process is and
12 what's going to happen next, I think will be
13 very helpful.

14 MR. STRICKLING: Okay. Mr.
15 Calabrese.

16 MR. CALABRESE: I would come back a
17 little bit with what I believe someone said
18 over here is that I think we are all maybe
19 more strongly, because I think we are overly
20 siloed in subcommittees and that we would
21 really benefit to have as we saw perhaps with
22 the fees question for example, to have a

1 discussion of the, set aside time for
2 discussion of the whole early in the process
3 of each subcommittee. And then that the
4 subcommittee go off and with homework in a
5 sense to work out some of the things that are
6 explicated by the full committee. And then
7 perhaps a second time at the end set aside
8 some substantial time for discussion by the
9 whole committee before the vote to give final
10 approval to the report. Now I realize that may
11 mean that the committee needs to either have
12 somewhat longer meetings or perhaps meet an
13 extra time or two each year. But I think that
14 would have been valuable because right now, a
15 guy would bet that almost everyone of the
16 subcommittee reports at least since I've been
17 on would be different, would have been
18 substantively different had we done it that
19 way.

20 MR. STRICKLING: Okay and maybe
21 that could be tied in with the expert panel as
22 well.

1 MR. CALABRESE: Oh sure.

2 MR. STRICKLING: General
3 discussion, subcommittee goes off to write and
4 work. Dale.

5 MR. HATFIELD: I am going to turn
6 to substance and I think we've still got ways
7 to go on more clearly defining spectrum usage
8 rights and then a compound recommendation and
9 then more efficient effective predictable ways
10 of resolving those such disputes.

11 MR. STRICKLING: Gerry.

12 MR. SALEMME: More of the same.

13 (Laughter.)

14 MR. STRICKLING: No one has given
15 me a stop yet. Do any of you guys think we
16 are doing wrong or we should stop doing? You
17 didn't do your homework either.

18 MR. SALEMME: I am working on it.

19 MR. STRICKLING: We'll come back
20 to you. Julie. Right after we go to Greg.

21 MR. SALEMME: I am ready this time.

22 MS. ZOLLER: I think we would

1 benefit from having some working methods, what
2 constitutes a forum, how do we settle
3 diverging views, what our time lines are for
4 developing texts, reviewing texts and so on so
5 that we know what to expect, how to manage our
6 workload and have everyone send those.

7 MR. STRICKLING: I'm sorry, you
8 mentioned voting. What were some of the other
9 specifics?

10 MS. ZOLLER: I said time lines,
11 what constituted a quorum.

12 MR. STRICKLING: Jennifer.

13 MS. WARREN: The advantage of
14 going last since Greg changed directions. I
15 would continue the broad representation. I
16 think when you get informed views then narrow
17 finalist of expertise that may not represent
18 the broader capabilities of the advisory
19 committee.

20 MR. STRICKLING: And are you
21 referring to the affiliations or skill sets or
22 both?

1 MS. WARREN: Probably all of it.
2 The broad representation, skill sets,
3 engineers, lawyers, economists, what have you.
4 I'm sure I'm leaving out something. Academic.
5 And then different backgrounds.

6 MR. STRICKLING: In terms of the
7 skill set issue does everyone feel that they
8 were productively engaged with regardless of
9 skill set they brought to this or did anybody
10 kind of wonder gee what am I doing here? Yes?
11 No?

12 MR. TRAMONT: I do that all the
13 time.

14 DR. LEWIS: I do strategy and this
15 group doesn't do strategy. So what the heck.
16 What do you need a strategist for?

17 MR. STRICKLING: Mr. Pepper, Dr.
18 Pepper.

19 MR. PEPPER: Aligning with Dale on
20 substance. I think that notwithstanding the
21 frustration on the fees issues because its
22 really hard. I think one of the values is

1 that we actually focus on the hard issues and
2 start those conversations. And the big one
3 that sort of lurks behind everything is what
4 do we mean by interference with technologies.
5 Greg would not define what we mean by
6 interference in different contexts, especially
7 when we start, you know, at the hear of,
8 sharing is the heart of everything that we are
9 talking about. I don't think we've really
10 taken that on.

11 MR. STRICKLING: Greg?

12 MR. ROSSTON: I am ready now. I'm
13 going to follow on Karl and the substance. I
14 think that a lot of what we talked about is
15 the and somebody brought it up, having the FCC
16 input here. I think looking at what's the,
17 although it is sort of circumscribed as the
18 rule of NTIA and the FCC, trying to figure out
19 where those lines really are and trying to
20 make things work together seeing what we can
21 do as a committee to make recommendations for
22 where there's better able to work together,

1 who should take charge of what things and how
2 to get things done between the FCC and NTIA.

3 MR. STRICKLING: Okay, so we'll
4 come back around and see if folks have -- Oh
5 I'm sorry, on the phone. Gerry are you ready?

6 MR. SALEMME: I think if we could
7 get earlier drafts from the subcommittees even
8 in a bullet format, I think that it would help
9 us help influence that process early on. So
10 I know that the feedback, really it would be
11 helpful.

12 MR. STRICKLING: And do you have
13 an idea as to how to do that?

14 MR. SALEMME: I think that instead
15 of waiting until there is a perfect document
16 that is actually in a narrative form, that you
17 can start to send out bullet points around
18 ideas. This is an outline. I think an
19 earlier outline and have the whole committee
20 work on an outline would be better.

21 MR. STRICKLING: Okay. On the
22 phone, any ideas?

1 MR. COOPER: I would encourage us
2 to continue to look for offsite venues once or
3 twice a year at Washington, places where we
4 can go and actually be exposed to real world.

5 MR. CALABRESE: Santa Barbara.

6 MR. STRICKLING: Anybody else on
7 the phone? So let's go back around. You can
8 pass or if you have something --

9 MR. REASER: I was just going to
10 say that the, on the duty side, the defense
11 side, where they use panels and then they have
12 deliberations as a group without the panel. It
13 is actually a fairly decent model of DoD. The
14 other thing, on the debate thing, one thing
15 that I do at Raytheon is actually hire a
16 professional moderator on that to help tee up
17 what the arguments are and keep things moving.
18 I think that actually is quite useful in
19 having sort of a agnostic person help sort of
20 tee up what the debate discussion is. And I
21 think just think that's really kind of a neat
22 model if you want to have a debate on

1 something like whether its these or whatever
2 else.

3 And lastly, is that one thing I
4 would recommend, I talked to Jennifer. It
5 might be good as in conjunction is to schedule
6 some meeting rooms afterwards so we can
7 actually work on the text in realtime. I'm
8 sort of use to the IT model where we basically
9 change to a computer some place in some God
10 forsaken hole in Geneva and have to bang out
11 texts in realtime. In the end that's it all
12 comes down to the text. And so it is better
13 to just sometimes have a physical meeting or
14 at least provide for that, that we can do that
15 if we needed to.

16 MR. TRAMONT: Janice.

17 MS. OBUCHOWSKI: I would like to
18 turn to international. We have the WRC coming
19 up. You saw it in Guadalajara a lot of
20 countries besides ourselves were thinking
21 very, I mean we weren't along and thinking
22 very strategically about what to do with the

1 radio spectrum. Was it an accident that the
2 French won the chair of that particular
3 bureau? And I would like to sort of look at
4 the positive, sort of sit back and say what
5 makes us great? What, using this resource
6 differentiates the U.S., makes us great, could
7 be done better so that could shape up some of
8 our thoughts going forward.

9 MR. STRICKLING: So how should I
10 articulate that?

11 MS. OBUCHOWSKI: Well that could
12 be tied in a little bit to bringing in
13 experts. I mean, for example, I can talk
14 about the DoD side of things. Somebody like
15 John Stenowitz, defines net centric work
16 there. I mean that's a very defining thing
17 about U.S. strategy. I'm sure there are four
18 or five experts on other sides, the space
19 policy, unlicensed policy, somebody a top guru
20 from one of the best operating wireless
21 companies. I would like to hear from them.
22 I would like to shape that debate on sort of

1 a high road of what we ought to be doing with
2 spectrum that could make ourselves even better
3 both domestically and internationally.

4 MR. STRICKLING: Okay, good.
5 Mark.

6 DR. McHENRY: I think these
7 meetings are too short. I mean we had ten or
8 15 minutes of discussion on a topic and its
9 over and then we go to the next one. It is a
10 lot of trouble coming here and setting it up.
11 We ought to spend the whole day and spend and
12 hour or two on this. This whole thing today
13 with incentives, it was very interesting and
14 it was over.

15 MR. STRICKLING: What about other
16 things, let's just draw poles. Longer
17 meetings? People generally like that idea?
18 Don't like that?

19 MR. PEPPER: I think the Boulder is
20 an example of that because we were offsite.
21 We spent more time and we actually longer
22 deeper discussions that actually I think led

1 to some things. So, we actually have a
2 natural experiment.

3 MR. STRICKLING: So people
4 generally like this idea, longer meetings?

5 MR. SALEMME: That was Rick's idea
6 of having time to work after the meeting
7 officially.

8 MR. STRICKLING: And maybe come
9 back to the group as a whole.

10 MR. SALEMME: And it would be
11 advanced scheduling.

12 MR. STRICKLING: Okay, good.
13 Bryan anything you want to add?

14 MR. TRAMONT: I'm good.

15 DR. LEWIS: I am not quite sure
16 how to do this. Maybe not making the members
17 of the group would be good but when you go to
18 other spectrum you have always these kids
19 coming up to you and saying they have new
20 thing. I don't know if we got populated
21 enough with that. So maybe having some way to
22 advise people and what, we don't want to do

1 plans that are only going to be good for the
2 next couple of years. What is five years to
3 ten years and Dale you said you use to do this
4 with the FCC. You had all sorts of crazy
5 people.

6 MR. HATFIELD: A lot of this need
7 to be done with some sort of funding for
8 academics because a lot of this really meets
9 that as being done by young academics who
10 cannot afford to come here. So I realize that
11 funding is an issue. Maybe we should pass the
12 hat, I don't know, among us or something to be
13 able to encourage really the right and yet up
14 and coming technology people to communicate to
15 us.

16 MR. STRICKLING: Maybe we could
17 start the Dale Hatfield CSMAC public interest
18 internship.

19 MR. GURSS: I agree with bringing
20 more experts and some of these new ideas but
21 at the same time I think its really helpful to
22 hear from the current, I'm sorry the community

1 because for every great idea there's an impact
2 on an incumbent. And so when we talk to
3 people from the federal side, the actual user
4 community of whether its not federal side. I
5 think that helps bring some of the theory into
6 reality.

7 MR. STRICKLING: Do we have people
8 on the phone, do we have access. Marty spoke.
9 We'll come back around. David anything
10 additional?

11 MR. DONOVAN: Yes. I don't know
12 if this is appropriate or not. I mean we talk
13 about special policies and investment and
14 developing for jobs and what have you but
15 should we hear from folks in the investment
16 community who are dealing with high tech
17 investments on a regular basis? What are they
18 looking at? I mean we are talking about
19 fundamental property rights and interference
20 rights. It would seem to some extent we might
21 want to see what they are thinking now. That
22 can be scary. I do understand that. My

1 401(k) certainly knows that. But I think it
2 might be something worthwhile.

3 DR. LEWIS: Just to elaborate on
4 that a little bit. I think we are saying the
5 same thing. These don't have to be new
6 members.

7 MR. STRICKLING: Mark, anything
8 additional?

9 MR. CALABRESE: This needs to be
10 vetted a little further again because it
11 changes sometimes and some people said no,
12 some people yes. But you know one of the
13 things that the FCC is working on, on many
14 applications is what you have to submit to get
15 your license renewed. And it seems like they
16 have taken a bold step on a renewal and there
17 is a lot of feedback. In other words have
18 been cited? How are using? Where are your
19 sites? What are you charging? Are you
20 promoting secondary markets? All these type
21 of things. You can see that it sort of
22 leading up to whether you get a renewal or

1 not. And it maybe something of an alternative
2 with fees but maybe something we can look at.
3 In other words, do you automatically get a
4 renewal? By simply saying well I'm working on
5 it and we bid some innovative technology and
6 that's all you need to send, you get another
7 ten years. What do you get here? 100 years?

8 MR. REASER: Three to five,
9 sometimes 90 ninety days.

10 MR. CALABRESE: Really? 90?

11 MR. REASER: I do this. If I ever
12 got a five year, I've never gotten a five year
13 assignment at NTIA yet. I haven't got one
14 yet. Typically for a fielded operational
15 system that has been in the field for 30
16 years, I get like a two or three year
17 assignment. And then we have to do a renewal.
18 And I hate to say this, but part of this is
19 good because I'm going to tell you there is,
20 I didn't say this but there's some dead wood
21 in the database that we do need to somehow
22 deal with. Some of these things, there are

1 systems that don't exist anymore. We are
2 going through and retiring those. This five
3 year renewal, five year review process we are
4 going through every year and so we try to say,
5 okay we don't need this, we don't need that.
6 So having time lines does force you to go back
7 and say you know I had this carton of milk in
8 the refrigerator. Hmmmm that's three years
9 ago. And that's kind, I think its important.
10 But five years is sort of the max and I
11 haven't gotten one of those yet, in four
12 years.

13 MR. NEBBIA: You are just one of
14 the people on our list Rick.

15 MR. STRICKLING: Susan, anything
16 additional?

17 MS. CRAWFORD: Just having
18 thoughts. More academic members and better
19 liaison to the FCC I think are two suggestions
20 that would be helpful.

21 MR. STRICKLING: Okay. Michael.

22 MR. CALABRESE: Yes, I think I

1 would second, in terms of the diversity a
2 little more, a few more non-industry members
3 whether academic or not. And building on what
4 I said before, if we are going to expand the
5 amount of discussion time we have at the
6 general meetings through longer meetings and
7 more meetings, that I think we should also not
8 limit the discussion to the, we've been
9 dealing with sort of intermediate issues. In
10 other words things that are right in front of
11 NTIA perhaps now in terms of, you know,
12 incentives or whatever. But also have maybe
13 some time set aside to talk about long range
14 national spectrum policy. Maybe that's where,
15 maybe that's where some of the experts that
16 Jan has mentioned come into play but what are
17 some of the big things that maybe people
18 whether they are industry or government have
19 their heads down on what they have to get done
20 in the next year or two while I'm thinking
21 about. A little more bigger term discussion.

22 MR. STRICKLING: Good, good. Dale

1 anything new?

2 MR. HATFIELD: No, I think I am
3 good.

4 MR. STRICKLING: Gerry, anything
5 additional?

6 MR. SALEMME: I just think the
7 reality check that Janice raises all the time
8 regarding budget, so whether its OMB budget
9 considerations, congressional budget office.
10 I mean I do think a lot of the things that we
11 are talking about are driven by an industry or
12 an academic perspective with really the real
13 world was the daily budget issue that's being
14 dealt with.

15 MR. STRICKLING: So what would
16 like me to board?

17 MR. SALEMME: You know, more
18 participation of congressional and
19 administration budget considerations.

20 MR. STRICKLING: Okay. Julie,
21 anything that we don't already have up here?

22 MS. ZOLLER: No.

1 MR. STRICKLING: John? Jennifer?

2 MS. WARREN: I am done too. In
3 associations a lot of time non-participation
4 over a period of time results in, you know you
5 get kicked off the committee. You don't have
6 a right to vote. I think something to ensure
7 ongoing participation by members is a good
8 thing. And then building on Janice's point,
9 I think perhaps an educational brief on the
10 international regulatory requirement. Really
11 what is the ITA and what does it do? Because
12 a lot of times people know it exists but only
13 at a certain level. And I said third. With
14 the offsites that somebody suggested or maybe
15 several did. That might be an opportunity to
16 bring in local folks in those areas wherever
17 we have that as opposed to just trying,
18 dealing with Dale's travel issue, academics or
19 young folks. This might be a way where in
20 California taps some expertise there or ideas.

21 MR. PEPPER: Okay. So just
22 unpacking the panels. One of the things we've

1 done in the past which was very effective was
2 actually, it was a subcommittee but anybody
3 from the committee of a whole that wanted to
4 would be three things by the agencies.

5 Remember Janice we did that? It was extremely
6 effective to really understand their
7 perspectives and that to me is a little
8 different than sort of panels. It is sort of
9 deeper. We could put it under that but it's
10 a deep dive with the user community, the
11 federal user community.

12 MS. WARREN: I think we did one or
13 two.

14 MR. ROSSTON: I would be happy to
15 host at Stanford so if you wanted to get some
16 input.

17 MR. STRICKLING: Okay, this is
18 very, very useful. Good discussion. I think
19 we got a lot of good ideas out here. We'll
20 take these back and come back to folks with
21 some suggestions for how we think this group
22 could be even more helpful to us than it is

1 now. And I think these will go a long way
2 toward doing that. But in the meantime if
3 anybody wants to add any thoughts or send
4 anything to me privately that you didn't want
5 to express in front of everybody else like you
6 really got to rid of so and so. Just send
7 those to my e-mail address and we'll take
8 that. So I'm going to return the mic back to
9 our co-chairs, Bryan and Dale.

10 MR. TRAMONT: All right. Thank
11 you. Thank you very, very much. That was
12 very helpful. We are now going to open up for
13 public comment in reaction to the meeting
14 today.

15 MR. FELD: Thank you. I wanted to
16 place before you here for the committee.
17 You've done some work on openness and
18 transparency and I read the recommendations of
19 the transparency working group and the report.
20 And these are all very good, very positive.
21 What I would like to actually propose for the
22 committee to consider and I say this as coming

1 from an organization where one of our goals is
2 to try to facilitate public debate on a number
3 of policy issues and if anybody has seen our
4 website, we try to break these things down for
5 public participation. There is a tremendous
6 opportunity and need to focus on even more
7 basic government ideas about openness. I say
8 this with the following. Number one, I
9 recognize the agency has made quantum leaps
10 forward in the last year and a half with
11 regard to its efforts to do outreach to the
12 public and try to facilitate transparency.
13 Public transparency is expensive and it is
14 more resource intensive I know than people
15 tend to give it credit for, which is another
16 very difficult problem. It is very easy when
17 you look at a well organized website that
18 flows easily and explains basic concepts about
19 the agency. To think well that's easy,
20 everybody ought to be able to do that. I
21 recognize that from an agency perspective this
22 is difficult. The issue though for us is we

1 have been trying to explain things like what
2 is federal spectrum? What is NTIA? What is
3 the relationship between NTIA and the FCC? Is
4 that there is a lot of confusion and
5 misinformation even among people who are
6 participants in federal policy. And my issue
7 is I've mentioned to some NTIA staff is I
8 don't have time to spend trying to explain to
9 people how their conceptions of this are wrong
10 and neither does anybody here in this room.
11 What I would like to ask this committee to
12 consider as recommendations to the agency and
13 since the assistant secretary is here that we
14 as public knowledge and I've spoken to New
15 America Foundation and I suspect that there
16 other others such as Sunlight Foundation would
17 be very interested in helping the agency
18 trying to develop materials that could be
19 hosted either on the agency's website or on
20 our website, depending on I know sometimes
21 there are legal issues with regard to the
22 accepting of help from the private sector and

1 non-profits. With regard to some of the basic
2 issues of what is going on here and try to
3 break these down. Try to highlight some of
4 the things that the agency is doing, point
5 people in the right direction if their issues
6 are addressed through other sub-parts of the
7 agency or at the FCC. In addition, we think
8 that there is a need for a debate on where the
9 debate should take place. As everybody is
10 aware here in this room there are a lot of
11 issues now in policy. While I do not want to
12 pretend that suddenly this has become the
13 issue on which the election turned or anything
14 like that. Nevertheless it is true that the
15 number of people who are actually interested
16 in this and trying to find out information and
17 trying to determine where you go to have
18 debates about things like spectrum sharing and
19 federal spectrum and private sector use of
20 spectrum and spectrum efficiency, is again
21 just growing astronomically as compared to the
22 minuscule number who had previously been

1 interested in such things. So we would just
2 like to raise this for this committee. I
3 would like to offer our assistance as an
4 organization in trying to provide some recent
5 sources for this and I expect that if the
6 committee made a recommendation that the
7 agency expressed interest that we would not be
8 alone in wanting to facilitate this sort of
9 basic transparency for the agency that would
10 help to inform this debate. Thank you.

11 MR. TRAMONT: Great. Thank you
12 very much. We will have to think about it as
13 we move forward. Yes?

14 MR. SNIDER: Jim Snider. I would
15 like to elaborate on Harold's comments about
16 the transparency, this committee and agency
17 more broadly. First of all I want to thank
18 the committee. I was at the last session for
19 a fairly extended discussion about the
20 transparency, the practices on the committee.
21 I recall I raised those issues at the last
22 four or five meetings. Some of them I

1 consider quite significant issues. One great
2 breakthrough is it appears to be readable. I
3 read it. I understood it. That's a real
4 change and I appreciate that. Now, some of
5 the things that still have not been done? One
6 of the questions is Snider's question has been
7 raised at the last meeting. So I will raise
8 some of the ones that -- so video. As of last
9 night the video of the last meeting is not,
10 it's a webcast of the meeting. Now unlike
11 previously where there's a little placeholder
12 for video that wasn't put up. In this case,
13 there's not even a placeholder, which maybe
14 the policy of putting the video has been
15 abandoned. I don't know. It was webcast but
16 there is no video placeholder and its now
17 several months later and there is no video of
18 the meeting.

19 Last night I checked two of the
20 draft reports presented today were not there.
21 The incentives and the unlicensed, if you look
22 at the reports, they were dated November 4 and

1 November 1. At a minimum the dates should
2 accurately reflect when they are publically
3 available. The impression was that some
4 people on this committee had gotten those
5 ahead of time and seen them but they are
6 absolutely not up on the website. The general
7 principal the open government community uses
8 is outsiders should have equal access to
9 public information as insiders. And this
10 committee has not followed that in multiple
11 ways. And I'll give you one which is
12 particularly annoying to me and I consider to
13 be very important and that is notice for these
14 meetings. So let me first of all, how many
15 people on the committee brought their notice
16 from going to the website for this meeting
17 today or going to the federal register to get
18 notice of this meeting. How many of you used
19 that as your vehicle forgetting? Okay, well
20 I have requested repeatedly over the last year
21 to get e-mail notification of these meetings.
22 That is how it is done for busy people. I

1 cover more than 400 organizations and
2 websites. I do not have the time to
3 constantly go check those websites to see if
4 a regularly scheduled meeting may or may not
5 be posted. I have had no success in getting
6 that. I have gotten private e-mails from
7 certain officials when I beg and plead tell me
8 when its going to happen. But I have not been
9 able to get those meetings. Not only are you
10 able to get them but all the lobbyist and
11 others affiliated with your organizations have
12 been able to get those. The public should be
13 able to get those notices and the public
14 should be able to get them. So when you decide
15 to have the meeting on a specific date, the
16 public has equal access to that information.
17 Now at the last meeting I did try to call in.
18 So I was told it was going to be webcast. So
19 I had an iPhone, I happened to be in New York
20 City. Well sure enough the webcast did not
21 work on the iPhone. Now why? I don't know.
22 I think because you actually may use Flash and

1 there's this thing with the iPhone. But there
2 was no disclosure that the webcast would not
3 work with the iPhone or Flash and I e-mailed
4 several times afterwards to find out why I
5 could get access and was not told. I also
6 called in. That was the second method to
7 access the meeting. And there I was able to
8 get through but the quality was quite poor and
9 I know you had a number of complaints about
10 the quality. Some things I could hear and some
11 things I couldn't. There was a lot of ambient
12 noise in the background. But mostly I could
13 only follow a small bit. And then also not
14 being able to see the presentations. You are
15 very much a second class citizen and it didn't
16 work out. I also tried to call in and didn't
17 work for the public comment specifically
18 because it was asked whether all of Snider's
19 comments were addressed. And I wanted to
20 respond to that question. So another issue
21 led to this insider/outsider what should be
22 the standard of compliance. So we have this

1 lofty rhetoric in the charter and the
2 administrator and said oh we believe in
3 transparency but if you actually look even at
4 the discussion at the last meeting. It is
5 very clear that the standard of compliance is
6 we are going to do the minimum amount required
7 by the law. We are going to do what the law
8 requires and no more. This whole notion of
9 Open Government directive and the spirit of
10 transparency that is not how it is being
11 implemented. But even worse and this is
12 something you probably are not familiar with
13 is we know that the transparency laws are very
14 poorly enforced, the particular FOIA. I have
15 been doing a series of FOIA requests of this
16 agency for more than a half a decade. And the
17 agency knows that there is no real enforceable
18 mechanism on FOIA and when they are
19 controversial requests, has ignored them. And
20 that has continued very much through the
21 present administration. So we get this lofty
22 rhetoric but when you want to ask something,

1 simple things one block after another is
2 created and it doesn't work. The FOIA is
3 broken in this agency and there's been no
4 serious attempt to fix it. So I can go with
5 the details there but the main request that I
6 have of you today is that when you apply to
7 this committee, you submit an application with
8 a statement of interest and qualifications.
9 That application is legally public
10 information. And it should be disclosed
11 online. Now there is a reason that
12 application is required to be disclosed
13 publically. It is so that the public can
14 assure the accountability of both the person
15 making these statements of claims about their
16 credentials and also the government officials
17 who are suppose to be supervising the accuracy
18 of those claims. Clearly government officials
19 have an interest in looking at credentials to
20 assure that there is no political
21 embarrassment associated with the statement of
22 credentials. But, there are many other issues

1 that don't fall in the realm of political
2 embarrassment that are important. Like
3 fraudulent credentials, misstatements or
4 exaggerations which an NTIA official may have
5 no interest to actually investigate but are in
6 the public interest and by requiring these
7 things be publically disclosed, these things,
8 there is a disincentive to submit that type of
9 application. And that's why we have that law.
10 So to test out the laws regarding FOIA and
11 FACA how they were being implemented, I
12 submitted a FOIA request for the statement of
13 credentials for one member of this committee
14 who I personally knew had a long history of
15 eflating his credentials including acclaiming
16 creative work as his own that was done by
17 others. My theory was that he would
18 rationally assume that no one would ever have
19 the ability or incentive to either verify or
20 punish him for claiming other's work as his
21 own in his statement of qualifications.
22 Accordingly I filed a FOIA request for the

1 relevant statement of credentials and was
2 rejected by the NTIA. I filed an appeal and
3 was rejected by the NTIA again. But after I
4 appealed the rejection of the appeal to OGIS,
5 the president's new super level of appeal
6 agency, the NTIA did choose to comply with the
7 law. It released the statement of credentials
8 which was filled with the type of misleading
9 credit taking that I expected. I do not want
10 to have to come back to this committee to
11 detail all the ways that the statement of
12 credentials was fraudulent. That would be
13 embarrassing for me and I think it would be
14 embarrassing for the committee. And let me
15 qualify to say that someone who misstates his
16 credentials to say that somebody misstates
17 their credentials is no comment on that
18 person's intelligence or their relevant skills
19 to serve on this committee. They may do an
20 outstanding job of serving on this committee.
21 That doesn't mean they didn't misstate their
22 credentials in their application. Thus, I

1 request that both Dale and Bryan propose a
2 resolution immediately after my statement is
3 complete requesting that the NTIA henceforth
4 post the statements of credentials online of
5 any appointed committee member to prevent this
6 type of situation from occurring again. Here
7 is the wording of the resolution I propose.

8 "Whereas the statement of credentials for
9 successful applicants to the special
10 management advisory committee are public
11 records. NTIA's administrators should
12 henceforth post online the official statement
13 of credentials of all applicants approved to
14 serve on the spectrum management advisory
15 committee and do so on the same day or before
16 that the names of the appointees are published
17 in the federal register or otherwise made
18 public."

19 Just one other thing that came up
20 in the meeting here. It is quite different
21 and this is a question that you might just
22 want to consider in terms of transparency of

1 subcommittees as opposed to the committee of
2 the whole. If you now decide to have your
3 correspondence as part of the committee of the
4 whole, you may be subject to the much stricter
5 disclosure requirement. Now you could pretend
6 it's a subcommittee and do the same thing and
7 then you are okay. But if you want to openly
8 say it's a committee of the whole, I suspect
9 you will be subject to the transparency
10 requirements of somebody like me would be able
11 to. If you have anything to hide or anything
12 like that but you might want to know that I
13 believe that if you call it a committee of the
14 whole you are going to be subject to the FOIA
15 laws and transparency.

16 And lastly I would encourage you,
17 Fred Matos has offered to do a training for
18 the public. I think consistent with Harold's
19 comments the public interest can very much
20 support more training in this issue. They
21 have a great resource and clearly the public
22 interest community when it comes to technical

1 issues on spectrum, they are great on many
2 things. Their eyes blur over. They have the
3 same problems as often the general public. So
4 you get a little bit more technological
5 sophistication in the debate. I think Fred
6 could really contribute to that. I think that
7 would be a great benefit. I do hope that
8 Bryan and Dale will now introduce that
9 resolution. So its coming up right away so
10 people should be given advance notice when
11 they file applications that they are
12 potentially public and consistent with the
13 Open Government directive and all the spirit
14 about transparency. They should be posted
15 online in a timely way with the goal of
16 detouring this type of behavior because the
17 people know when they submit these
18 applications they are public. They are not
19 going to do some of the things that they might
20 do otherwise. I think that's in the public
21 interest. Thank you.

22 MR. HATFIELD: Thank you. Let me

1 respond by saying I don't feel comfortable
2 being able to respond on the spot without
3 getting some legal counsel and so forth as to
4 what the various tradeoffs are here in terms
5 of what's really as I just frankly don't
6 understand all that. Not going to the merits
7 of what you are saying at all, but I can't do
8 that without further help.

9 MR. TRAMONT: As we did last time,
10 we will look at some of the issues you've
11 raised closely on transparency. We have tried
12 to improve our performance in that regard in
13 response to your comments last time and we
14 will continue to try to increase the
15 transparency level in our performance on those
16 fronts. So thank you for that Jim.

17 MR. HATFIELD: You might say with
18 the meeting of the whole we understand.

19 MR. TRAMONT: Yes and of course
20 the meeting of the whole will be on the public
21 record and consistent with FOIA as we are
22 advised by NTIA to ensure compliance with

1 those laws. So, with that and scheduling
2 issues -- oh yes, I'm sorry. Another public
3 comment. I apologize.

4 MR. MILLER: I am Joe Miller from
5 the Joint Center for Political and Economic
6 Studies and just in the spirit of the big
7 board here, one of the recommendations that I
8 would make as a member of the committee is the
9 priority seems to be, the priority should be
10 education and jobs and I just would have liked
11 to have seen a more conspicuous engagement on
12 those issues and how they tie in to spectrum
13 policy. To Janice's and Jim's point, there
14 are a lot of ideas that can come from a lot of
15 different places and certainly perspectives
16 from folks who engage on education and jobs
17 should have a seat at the table. So I won't
18 go on too long. I don't want to take up your
19 time. I just want to make that point and hope
20 to see wireless mics next time.

21 MR. TRAMONT: Thank you for this
22 comment. And I apologize before. Are there

1 other comments from the public? I didn't mean
2 to short circuit that process. Or anyone on
3 the phone?

4 Okay, I'm hearing none. We
5 discussed earlier the need to have a meeting
6 before the terms expire for many members.
7 That date is the 13th of January. Based on
8 schedules we are hoping to propose a January,
9 based on data just in this morning, a January
10 5 date in the morning of January 5 or longer,
11 depending on what time my flight leaves on the
12 night of the 5th. So that is a tentative date
13 barring some emerging consensus from the group
14 that does not work. We will shoot for the 5th
15 and apologies. I agree with the
16 recommendation we should try and schedule
17 meetings earlier. Rest assured that
18 scheduling issues are not always as easy as
19 they might appear.

20 MR. CALABRESE: To be clear though
21 the members of the public have heard the 5th.

22 MR. TRAMONT: Yes, that si our

1 hope.

2 MR. CALABRESE: We won't have a
3 long diatribe on not knowing about the date
4 beforehand. So everybody knows, heard the
5 date. 2011.

6 MR. TRAMONT: Okay. It's a
7 Wednesday, January 5. Subject to NCIA
8 feedback 9:30 is our general start time. I
9 suspect it will be the same. Any other
10 comments for the good of the order before we
11 adjourn? Thank you all very much.

12 (Whereupon the above-entitled
13 meeting was concluded at 12:52 p.m.)

14
15
16
17
18
19
20
21
22

A				
abandoned 131:15	activities 87:5	advanced 2:14,24 116:11	agreed 43:9 51:16	anyway 53:19 83:7
ability 137:19	actual 11:9 38:22 42:11 118:3	advances 86:11 91:12,13	agreement 35:14 43:11 46:9,10 80:15	apologies 30:4 144:15
able 15:4 49:15 60:22 68:14 71:17 87:8 88:6 90:10 95:12 105:10 110:22 117:13 127:20 133:9,10 133:12,13,14 134:7,14 140:10 142:2	Adaptrum 2:12	advancing 90:15	agreements 10:7 14:12	apologize 143:3,22
above-entitled 145:12	add 61:20 88:14 116:13 126:3	advantage 108:13	ahead 67:20 132:5	apparently 38:1
absolute 29:3	added 12:2	advice 76:6,7 98:4	airborne 2:18 13:16	appeal 138:2,4,5
absolutely 31:13 60:2 62:17 132:6	addition 11:17 23:12 37:17 74:21 129:7	advise 116:22	Alar 89:15	appealed 138:4
academia 101:15	additional 10:14 19:16 25:12 31:7 37:10 44:10 118:10 119:8 121:16 123:5	advised 142:22	Aligning 109:19	appealing 14:7
academic 109:4 121:18 122:3 123:12	Address 3:16 20:3 33:1 39:10 55:8 56:10 65:16 126:7	advisory 1:4,12 4:6 9:9 32:18 45:20 55:13,14 68:6 97:15 103:18 108:18 139:10,14	Alliance 1:25 5:15	appear 26:21 144:19
academics 117:8,9 124:18	addressed 129:6 134:19	affair 20:11	allocated 8:16,17	appears 131:2
accepting 128:22	adjacent 18:13 54:19 65:17	Affairs 2:5,21	allocates 46:16	appended 37:9
access 18:14 22:4 22:22 23:5,11,14 23:19 31:1 54:20 62:2 118:8 132:8 133:16 134:5,7	adjourn 3:22 145:11	affiliated 133:11	allocation 51:22 88:22 89:9	appendix 37:10,10 58:21 59:5 65:5 74:21 75:1,4 82:16 83:17
accident 114:1	Adjunct 1:16	affiliations 108:21	allocations 18:4 88:20	applaud 66:2
acclaiming 137:15	Adler 1:18 6:16,16 85:18	afford 117:10	allow 23:13 66:21 88:1	applicants 139:9 139:13
accommodating 17:7	administration 11:18 60:7 65:22 66:1 86:19 123:19 135:21	afraid 32:6	alternative 37:4,16 38:11 54:10 84:14 85:3 120:1	application 136:7,9 136:12 137:9 138:22
account 30:8 60:3	administrative 62:15 80:19	agencies 9:9,14 12:12 13:1 17:9 39:13 40:16 41:3 45:6 47:7,20,21 49:19 50:11,19 51:2,6 57:20 125:4	ambient 134:11	applications 119:14 141:11,18
accountability 38:18 39:17 136:14	administrator 135:2	agency 15:2 17:15 23:8 39:5 49:10 50:16 51:1 57:14 127:9,19,21 128:12,17 129:4,7 130:7,9,16 135:16 135:17 136:3 138:6	amendment 34:15	applied 32:21 57:22
accrue 50:10	administrators 139:11	agency's 128:19	America 1:1 128:15	apply 55:9 58:22 59:9 62:10 136:6
accrued 50:19	admire 99:1	agenda 4:7	American 1:21 5:11	appointed 139:5
accuracy 136:17	adopt 34:14 35:19	aggregated 23:19	amount 57:10 79:6 122:5 135:6	appointees 139:16
accurate 24:6	adopted 18:15 35:1	agnostic 112:19	analysis 16:16,22 38:11,16 39:4 95:3	appreciate 15:3 54:14 55:7 72:8 131:4
accurately 132:2	adoption 7:17 18:18	ago 19:14 26:6 121:9	analyzed 16:7,19	approach 13:3 20:6 20:13 21:13 27:8 34:13 46:14 54:13 59:21 63:3 67:16 76:9 78:19 86:4 86:14 87:1 100:9
achieve 31:3 32:8 61:22	advance 28:2 44:18 44:19 79:11 83:4 92:14 105:8,9 141:10	agree 43:2 46:12 51:1 59:10 61:22 72:17 81:11,11 87:10 90:14 101:2 117:19 144:15	ANDREW 2:8	approaches 12:7
acknowledged 41:17			and/or 62:19	appropriate 22:19 23:4,8 24:12 87:19 118:12
act 40:10			annoying 132:12	appropriated 41:8
			answer 81:5	approval 106:10
			answers 37:3	approve 13:3 42:17
			anti-revenue 47:3	approved 23:6
			anybody 6:4,12 7:20 96:6 102:9 104:20 109:9 112:6 125:2 126:3 127:3 128:10	
			anymore 121:1	

139:13	40:14 41:3 43:6	backwards 82:1	Bazon 64:5	39:16 41:18 42:5
approximately	43:22	bad 30:3	bear 60:13	79:17 101:21
10:1,11	auctions 11:8 58:8	bake 39:17	beaten 56:1	105:17 114:12
April 71:1	authoritatively	baked 101:17	beg 133:7	119:4 134:13
area 15:12 39:21	100:15	balance 21:12 23:3	began 54:3	141:4
50:7	authorized 26:2	25:11 32:8,13	beginning 7:7 50:2	block 136:1
areas 124:16	40:19	64:15	50:5 66:6	blue 72:7,12
arguments 112:17	automatically 76:3	balanced 20:6,13	behavior 70:12	blueprint 35:11
ArrayComm 1:22	120:3	21:13 54:13,18	141:16	blur 141:2
article 64:7	available 8:13,19	63:2,10	beliefs 84:18	board 56:8 123:16
articulate 114:10	9:3 11:2,12 12:1	balancing 49:9	believe 7:5 14:19	143:7
aside 60:15 106:1,7	16:13 22:20 59:18	59:15 60:1 67:15	15:12 19:19 64:12	Bob 5:20 58:18,19
122:13	80:1 132:3	band 10:18,20	65:15 70:16	63:2
asked 11:18 100:21	Avenue 1:13	11:21 12:2,11	105:17 135:2	Bob's 78:5
134:18	avoid 21:16	13:7,13,15,20,21	140:13	body 37:15 54:12
aspect 26:1 42:18	aware 7:15 91:16	14:3,7,10,12	benefit 37:6 38:16	54:17 60:10
45:11	129:10	15:11 16:7,17,20	39:4 43:15 49:1	bogey 92:11
aspects 41:18	awful 19:22 73:22	17:13 18:13 51:14	49:19,20 50:12	bogie 83:14
assessment 71:18	74:3	51:14,22 52:4	57:10 63:5,17	bold 72:12 119:16
assigned 40:5	AWS-3 16:20	54:19	76:11 87:8 105:21	bolded 36:3
assignment 94:7,9	Aye 34:20	banding 52:20	108:1 141:7	bolts 103:6
120:13,17	A-11 38:6,21 39:1	bands 8:16,17 10:4	benefits 25:13	Borth 1:19 6:7,7,8
assistance 18:1	54:7 74:5 75:18	10:6,17 11:21	50:10 57:5 60:17	bothers 95:8
130:3	81:4	12:9 13:8 14:20	61:14,16 68:7	bottom 14:9,18
assistant 6:20 9:10	a.m 1:13 4:2 95:19	40:5 41:3,3 44:3	best 21:4 26:5 67:5	37:2 82:18,19
13:4 128:13	95:20	52:10,13 53:4	67:19 78:19 91:22	Boulder 18:16,21
associated 55:22		69:3	97:2,22 98:13	19:13 25:1 27:18
136:21	B	bandwidth 52:3	103:14 114:20	36:2 115:19
association 2:2,5	B 65:7 75:14,14	bang 113:10	bet 106:15	break 66:18 94:2,9
5:19,20 56:1	97:4	bar 24:20	better 24:5 66:21	94:18 95:16 98:16
associations 124:3	back 7:3 28:7 33:4	Barbara 112:5	70:7 91:2 100:5	127:4 129:3
assume 9:5 59:5	34:6,10 50:11,15	Barker 1:18	103:22 105:6	breakthrough
96:3 137:18	53:17 56:1 61:14	barriers 59:17 88:1	110:22 111:20	131:2
assuming 7:12	61:16 65:8 66:19	barring 144:13	113:12 114:7	Brian 2:2 6:11
assumptions 96:3	75:12 77:16,17	base 17:2	115:2 121:18	35:20
96:19	78:5 95:17,20	based 16:17 19:10	beyond 9:13 43:4	bridge 6:3
assure 136:14,20	98:19 100:22	33:8 62:4 82:8	60:19	brief 7:1 58:22 68:5
assured 144:17	101:5 103:15	144:7,9	bid 120:5	124:9
astronomically	104:18 105:2,16	basic 103:4 127:7	bidding 43:21	briefings 69:17
129:21	107:19 111:4	127:18 129:1	bids 39:8	briefly 70:5
attempt 20:13,18	112:7 114:4 116:9	130:9	big 51:14,22 73:16	bring 82:20 100:14
45:14 61:13 136:4	118:9 121:6	basically 51:21	83:14 99:13 110:2	118:5 124:16
attention 14:5	125:20,20 126:8	66:15 113:8	122:17 143:6	bringing 114:12
98:16	138:10	basis 10:19 16:19	bigger 122:21	117:19
attract 47:17 48:10	background	16:22 21:4 25:7	billion 51:13	brings 73:13
48:13	134:12	30:20 37:7 43:4	bipartisan 56:3	broad 55:15 56:13
auction 40:12,13	backgrounds 109:5	118:17	bit 15:11 29:2	80:15 86:3 103:20

108:15 109:2 broadband 7:17 8:14,19,21 9:1 10:13 broaden 67:20 broadened 40:21 broader 41:21 42:9 50:9 61:5 108:18 broadly 50:8 130:17 broken 136:3 brought 100:8 101:13 109:9 110:15 132:15 brown 55:21 brunt 60:13 Bryan 1:13,17 7:21 8:8 54:1 72:15 78:12 81:14 96:9 101:9 116:13 126:9 139:1 141:8 Bryant 3:4 budget 42:6,20 46:11,17 47:12 48:17,20 49:6,6 49:14 50:8 56:3,3 57:11,12 58:12 60:21 61:9 69:15 123:8,8,9,13,19 budgets 41:9 48:1 49:10 57:17 building 1:12 122:3 124:8 bullet 26:14,15 28:1,21 111:8,17 bullish 87:15 bunch 7:19 51:15 bureau 114:3 bureaucracy 62:15 burning 97:6 business 22:16 33:19 53:14 busy 8:3 64:6 132:22 butchered 29:6 butchering 29:8 buy 69:21 75:21	C	30:5,12,20 33:11 43:1 48:4 59:1,4 63:21 94:16 119:1 143:15 certification 43:19 certified 23:6,10 chair 55:3 90:9 114:2 chaired 55:21 Chairman 1:22 18:20 24:14 30:3 55:16 64:3 chairs 67:19 73:3 chance 102:10 change 18:2 34:8 57:16 95:9 97:5 104:11,21 113:9 131:4 changed 24:22 108:14 changes 17:10 24:15 33:18 70:12 119:11 changing 48:19 71:10 channel 65:17 channels 53:1 chapter 71:7 charge 71:4,5 98:16 111:1 charging 119:19 chart 7:9 103:19 charter 7:6 71:1 76:5 135:1 chartered 71:9 cheapest 32:2 check 123:7 133:3 checked 131:19 checklist 39:3 checkmark 105:2 chief 1:25 2:2 51:9 Chinese 57:1 choose 17:1 94:15 138:6 chooses 16:15 circuit 144:2 circular 38:5,21	39:1 54:7 circulate 88:6 circulated 83:12,17 circumscribed 110:17 Cisco 2:15 5:1 cited 119:18 citizen 134:15 City 133:20 claim 22:2 claiming 137:20 claims 136:15,18 clarify 53:11 class 98:19 134:15 clear 54:4 58:2 67:7 74:10 75:1 77:5 78:8,21,22 79:4 135:5 144:20 clearly 107:7 136:18 140:21 Clearwire 2:22 close 82:16 closely 55:22 56:10 142:11 closer 36:20 81:11 closure 72:9 74:14 80:17 coast 29:7 codes 51:11 cognizant 88:10 Coleman 64:5 collect 95:13 color 72:14 Colorado 1:17 come 7:3 8:15 10:22 12:18,21 28:3 29:11 30:12 30:15,19,21 32:11 36:5 42:22 47:13 47:17 53:16 57:18 66:18 77:17 80:17 81:6 88:2 90:22 95:17 97:16 98:19 103:15 104:3 105:16 107:19 111:4 116:8 117:10 118:9	122:16 125:20 138:10 143:14 comes 53:7 72:10 113:12 140:22 comet 19:3 comfortable 27:9 34:13 142:1 coming 34:10 91:19 104:4,18 113:18 115:10 116:19 117:14 126:22 141:9 commander 67:2 67:22 commended 64:9 comment 19:16 29:8 47:1 50:16 72:1 96:12 126:13 134:17 138:17 143:3,22 comments 7:13 44:10 45:3 46:1 54:15 81:19 83:21 91:7 102:3,11 130:15 134:19 140:19 142:13 144:1 145:10 commerce 1:1,4 8:10 17:15 41:12 commercial 33:11 40:10 44:2 Commere 4:5 commission 10:12 11:4 16:14 65:1 Commissioner 78:1,4 commitment 14:20 committee 1:4,12 4:6 7:5 9:9 18:12 19:5,8,20 20:22 23:17 27:2,17 31:10 32:18 35:7 35:17 37:13 44:9 44:13 45:20 55:5 55:8,13,14 64:11 65:3,13 68:6,7,19 71:9,15 76:5,12
---	----------	---	---	---

76:18 79:2,19,20 80:5 82:12,22 83:8 84:6 85:7 89:22 92:12 96:13 97:18 98:3 99:2 103:20 104:8 106:6,9,11 108:19 110:21 111:19 124:5 125:3 126:16,22 128:11 130:2,6,16,18,20 132:4,10,15 136:7 137:13 138:10,14 138:19,20 139:5 139:10,15 140:1,3 140:8,13 143:8 committees 64:22 93:11 97:15 103:19 committee's 20:7 20:10 24:17 66:7 71:2 common 51:20 communicate 117:14 communication 20:8 21:7 32:10 64:18 Communications 2:6,7 5:21 community 54:20 64:21 117:22 118:4,16 125:10 125:11 132:7 140:22 companies 59:19 114:21 companion 12:4 company 2:11 4:16 51:20 56:13 compare 76:2 compared 80:13 129:21 competition 67:6 competitive 67:22 complaints 134:9 complete 35:14	44:17 81:21 139:3 completed 9:21 completely 72:17 complex 14:1 compliance 134:22 135:5 142:22 complications 68:10 comply 138:6 component 18:2 components 9:12 compound 107:8 comprised 85:17 computer 113:9 concept 89:4 conceptions 128:9 concepts 127:18 conceptual 86:8,17 concern 20:22 21:10 28:10 30:4 46:6 55:11 concerned 42:12 concerning 13:16 37:1,11 concerns 20:2 22:15,22 75:22 90:17 concluded 145:13 conclusion 12:18 conditions 41:1 conduct 99:20 conducting 11:8 conference 4:13 6:3 82:21 configuration 16:18 conflating 90:18 conflict 79:17 confusion 21:15 128:4 congratulate 66:13 99:7 Congratulations 35:1 Congress 46:16 congressional 123:9,18	conjunction 113:5 connect 45:12 cons 59:15 60:17 63:3,6 consensus 36:11 38:4 72:19 73:12 73:16 75:5,17 77:12,18 78:17 80:9,15 81:1,3 82:17 85:1 93:6 144:13 consider 10:14 25:15 76:4,8 103:17 126:22 128:12 131:1 132:12 139:22 consideration 12:6 56:8 66:7 considerations 37:11 39:18 123:9 123:19 considered 14:21 38:8 43:14 consistent 19:12 20:14 22:22 30:6 31:5 33:22 82:5 89:20 140:18 141:12 142:21 conspicuous 143:11 constantly 133:3 constituted 108:11 constitutes 24:20 108:2 Constitution 1:13 constraints 12:5 15:13 60:21 Consultant 1:15 consumed 93:21 contain 23:19 contained 23:17 contentious 35:9 CONTENTS 3:1 context 14:22 21:2 21:2 35:11 44:10 57:16 60:2 62:1 67:12	contexts 110:6 continue 14:21 44:15 90:1 94:16 96:5 97:4 108:15 112:2 142:14 continued 95:5 135:20 continuing 47:15 57:13 contribute 141:6 contribution 45:15 control 67:3,22 controversial 60:8 135:19 convene 82:21 conversation 4:8 50:5 conversations 110:2 convert 86:10 Cooper 1:22 6:5 85:18 88:15 112:1 Cooper's 86:7 coordination 102:16 copies 7:18 copy 19:14 64:10 Corporation 2:8,22 2:23 5:5 correct 20:19 65:10 correctly 81:20 correspondence 140:3 cost 28:13 37:6 38:16 39:3 40:16 42:10 62:15 costs 11:7 24:9 30:13 31:2 36:9 40:3 41:5 60:17 Council 9:11 counsel 142:3 counter 76:22 countries 51:16 113:20 country 53:9 58:13 county 53:12 couple 7:18 64:3	69:10 90:4,10 95:11 99:5 100:14 117:2 course 14:3,5 16:16 22:14 36:21 41:12 44:16 55:21 57:1 70:18 142:19 courses 59:14 cover 30:13 133:1 co-chairs 1:14 126:9 Co-Founder 1:22 Crawford 1:23 5:12,12 45:4,5 70:4,5 105:3 121:17 crazy 117:4 create 16:3 59:17 created 14:1 17:13 41:11 136:2 creates 40:11 creative 137:16 credentials 136:16 136:19,22 137:3 137:13,15 138:1,7 138:12,16,17,22 139:4,8,13 credible 13:2 credit 127:15 138:9 crisis 58:13 critical 22:7 56:6 92:19 Crosby 1:25 5:14 5:14 68:5 cross 53:9,12 crucial 99:18 CSEA 11:6 18:3 40:9 43:5 CSI 102:6 CSMAC 1:4 3:15 4:7 35:18 38:1 81:22 92:14 93:15 94:12 95:4 117:17 CSMACs 60:6 current 10:20,21 43:5 117:22 currently 8:16
--	---	---	---	---

10:10 14:13 15:19 40:1	87:11 99:1,2,21 100:1,17 101:3 112:14,20,22 114:22 127:2 129:8,9 130:10 141:5	delicate 32:12 delivery 101:17 demonstrate 39:3 department 1:1 2:18 8:10 41:12 48:7 97:11 103:21 departments 47:7 47:20 depending 57:14 128:20 144:11 depleting 41:8 depth 10:19 46:19 Deputy 2:19 describe 57:5 described 84:19 Description 3:2 deserve 20:9 desirable 57:18 desire 37:13 despite 56:2 detail 19:6,22 27:4 138:11 detailed 46:14 70:9 details 23:18,20 136:5 determine 129:17 determined 96:14 determining 11:13 38:14 detouring 141:16 develop 8:11 62:16 87:2 103:3 128:18 developed 54:11 developing 108:4 118:14 development 25:16 48:1 61:1 87:3 device 43:19 devices 14:17 23:6 23:9 43:21 devoted 48:1 74:19 DHS 47:21 52:12 diatribe 145:3 difference 52:17 62:13 80:18 99:3 differences 54:4 85:2	different 12:7 17:3 40:18 76:7 84:18 86:14 106:17,18 109:5 110:6 125:8 139:20 143:15 differentiates 114:6 difficult 66:15 68:21 69:18 88:19 127:16,22 difficulty 9:19 49:9 dilemma 51:5 dimed 45:7 dimension 63:9 dimensions 63:7,8 diminish 74:7 dinner 92:9 direct 12:14 directed 8:10 direction 51:11 98:21 129:5 directionally 80:10 directions 108:14 directive 135:9 141:13 directly 76:3 director 1:21 2:5,6 2:9,14,19,24 47:5 disagreement 35:15 37:7 43:7 disciplined 89:22 disclosed 38:17 136:10,12 137:7 disclosure 134:2 140:5 discourage 32:5,12 discuss 20:17 22:2 27:14 31:6 43:12 80:7 93:17 discussed 21:8,22 26:22 41:17 46:19 65:2 77:9 144:5 discussion 3:8,13 19:1 22:8 24:1,18 32:14 33:2 37:21 46:7,21 57:9 60:9 61:20 63:19,21	66:6 67:4,18 69:9 69:22 74:6 76:12 80:21 85:14 86:5 94:17 95:14 106:1 106:2,8 107:3 112:20 115:8 122:5,8,21 125:18 130:19 135:4 discussions 35:22 50:1 66:19 101:13 115:22 disincentive 40:3,8 137:8 disincentives 87:22 dispute 74:6 disputes 107:10 disservice 71:11 dissipated 49:16 distance 105:5 distances 17:2 distracted 90:5,6 distributed 83:22 dive 70:9 125:10 divergence 87:13 diverging 108:3 diversity 122:1 divided 78:18 Division 2:25 document 18:2 19:10,18,19,21 20:4,20 21:8,12 21:22 22:12 25:5 55:7 72:6,9 75:15 111:15 documents 73:11 DoD 47:6,22 48:2 112:13 114:14 doing 37:7 38:2 46:3 49:5 63:14 68:9 69:8 73:1 87:20 94:22 95:1 95:4,6,7,9,10 97:3 97:4 107:16,16 109:10 115:1 126:2 129:4 135:15 dollars 28:12,14,19
D				
daily 123:13 Dale 1:13,15 3:4 6:22 75:17 107:4 109:19 117:3,17 122:22 126:9 139:1 141:8 Dale's 75:6,10 124:18 Darrin 2:12 6:9,10 data 23:17,19 24:2 26:13,17 51:20 52:1 68:13 70:7 71:15 144:9 database 22:10,19 23:5,7,10 24:2,6 24:11 120:21 databases 22:13 24:3 date 85:10 92:15 133:15 144:7,10 144:12 145:3,5 dated 131:22 dates 132:1 David 1:19 2:1 3:8 5:18 6:7,8 18:12 18:16,18 27:16,16 63:22 85:17 89:21 99:7 118:9 David's 72:6 89:18 day 15:7 68:12 88:11,11 104:10 115:11 139:15 days 83:5 120:9 dead 120:20 deadline 9:21 deal 53:14 58:12 86:18,22 120:22 dealing 9:15,16,17 102:18 118:16 122:9 124:18 dealt 123:14 debate 16:9 36:7,16 52:7 62:9 73:11	debates 22:7 99:20 103:4 129:18 debating 103:9 decade 135:16 December 82:22 83:1,8 92:5,12 93:3,7 decent 112:13 decide 30:16 31:10 81:15 133:14 140:2 decided 29:13 93:13,22 deciding 77:7 decision 11:22 12:11 48:6 77:3 decisions 96:18 declining 57:17 dedicate 79:2 deep 71:18 99:15 125:10 deeper 115:22 125:9 deepest 30:3 deeply 45:17 78:18 defense 59:18 112:10 deficiencies 50:13 deficit 61:13 define 20:18 47:10 110:5 defines 21:1,5 114:15 defining 33:14 48:17 107:7 114:16 definitely 90:8 definitive 12:18 degree 59:13 deliberations 8:6 112:12			

28:20	E 1:19,25	efficiently 52:14	enhanced 33:12	47:10 48:16 57:19
domestic 56:22	earlier 7:16 64:22	effort 9:21 54:6	enhancement	105:22 114:13
domestically 115:3	111:7,19 144:5,17	59:1 66:3	40:10	115:20
dominate 55:18	early 17:18 73:20	efforts 127:11	enlarged 100:8	examples 51:8
Donovan 2:1 3:8	82:22 83:7 88:4	eflating 137:15	enormous 78:14	excellent 34:22
5:18,18 18:19	96:11 106:2 111:9	eight 38:21	ensure 49:13 62:3,5	92:10,11 93:2
24:22 25:18 30:2	early/mid 82:22	either 9:5 32:16	124:6 142:22	exception 40:7
32:7 35:1,2 64:1,2	earmarked 40:14	48:13 87:22 99:5	Enterprise 1:25	55:16
65:12 72:13 73:8	easily 127:18	101:14 106:11	5:15	excluded 59:3
85:17 89:12	easy 45:19 127:16	107:17 128:19	Enterprises 2:4	exclusion 13:9 16:4
102:20 118:11	127:19 144:18	137:19	5:17	exclusive 8:20
Donovan's 18:13	eating 92:8	elaborate 119:3	entire 82:22	91:14
dove 104:16	economic 2:19 9:11	130:15	entirely 102:4	executive 1:22,25
Dr 4:15 5:16 6:1	29:21 38:10 50:21	elaboration 76:12	entities 26:2,8	2:2,21 20:12
64:13,16 66:9,11	58:2 63:8 87:22	elect 47:20	entity 31:1	exercise 38:14
70:4 72:15 73:14	99:9 143:5	election 129:13	entrant 28:11	exhaustive 96:21
78:11 79:10 80:22	economically 28:15	element 46:11	environment 56:17	exist 58:14 121:1
81:4 100:21 102:2	29:4	else's 80:7	57:11 99:10	existing 48:21
103:12,16 109:14	economist 29:5,22	embarrassing	EPSTEIN 2:1	49:10 51:12 52:4
109:17 115:6	64:5	138:13,14	equal 132:8 133:16	52:13 62:3
116:15 119:3	economists 31:11	embarrassment	equipment 24:9	exists 58:13 124:12
drab 98:2	109:3	136:21 137:2	30:14	expand 122:4
draft 3:8 18:17	ecosystem 61:7	embedded 49:8	ESA 7:19	expanding 62:2
35:4,20 37:9	edit 19:17 22:12	embedding 50:3	especially 110:6	expect 15:14,15
43:17 44:12,14,17	23:16 25:8	Emergency 2:2	essentially 12:9	108:5 130:5
49:8 58:15 60:5	editorial 18:15	emerging 144:13	84:6	expectation 54:16
74:18,20 75:5	edits 19:8,9,11,15	emissions 14:9	establish 92:11	expectations 56:14
81:21 83:11,16	25:3 82:12 84:9	employment 93:12	established 32:2	expected 138:9
88:5 91:19 131:20	92:5,12 93:4,7	encourage 112:1	EVDO 52:4	expecting 54:12
drafted 41:16	education 143:10	117:13 140:16	even-handed 55:10	expensive 127:13
drafts 18:11 72:20	143:16	encouraging 29:17	everybody 7:2 8:9	experience 47:4
81:18 105:10	educational 124:9	35:21	80:7 88:16 89:5	64:21 65:1 70:10
111:7	effect 21:6 22:18	ended 36:16 79:3	95:21 96:1,15	experiment 116:2
draw 9:21 115:16	effective 52:4 62:19	endorse 43:9	126:5 127:20	expert 106:21
drive 30:8 62:18	107:9 125:1,6	ends 52:22	129:9 145:4	expertise 104:1
73:12 86:15 87:5	efficiencies 58:11	enforceable 135:17	everybody's 95:13	108:17 124:20
87:16	64:9	enforced 135:14	everyone's 82:8	experts 100:8,10
driven 84:16 86:2	efficiency 24:5	enforcement 25:22	evil 53:15	101:12,20 114:13
87:6 123:11	33:14 39:11 48:8	26:10 86:20 92:17	evolution 88:21	114:18 117:20
driving 84:21	50:19 53:4 58:6	engage 143:16	93:12	122:15
DTV 40:13	62:2,12 87:9	engaged 109:8	evolutionary 89:7	expire 71:2 96:11
dug 36:21	88:18 129:20	engagement 143:11	exact 37:3	96:16 144:6
duty 112:10	efficient 24:10	engaging 99:2	exaggerations	explain 128:1,8
dynamic 22:4	28:16 29:4 30:11	engineer 51:9	137:4	explaining 22:1
D.C 1:13	39:7 41:2 48:3	Engineering 2:16	examination 82:16	explains 127:18
	49:12 50:18 53:18	2:25	example 10:4,7	explanation 28:9
	62:19 107:9	engineers 109:3	26:6 30:10 39:5	explicated 106:6
<hr/> E <hr/>				

explicitly 90:19	far 83:4 103:20,22	68:8,22 69:21	fix 136:4	forth 48:8 52:8
exposed 112:4	fashion 87:19 90:1	74:7,19 80:19	fixed 8:13	142:3
express 126:5	fast 6:11 11:19 12:6	82:20 105:22	flag 35:15 36:10	forthcoming 35:12
expressed 130:7	38:1 64:22	109:21 120:2	flagging 25:3	Fortunately 17:17
expression 79:18	favor 20:5 25:6	feet 7:20	flap 97:20	forum 108:2
extended 130:19	28:7 29:20 34:19	FELD 126:15	Flash 133:22 134:3	forward 3:12 4:8
extensive 24:14	FCC 8:11 14:15	fellow 2:6,8 17:14	flat 36:18	7:2,12 8:6 30:20
extent 19:12 31:14	23:7 32:18 55:9	felt 12:17 27:9 54:5	flavor 35:18 100:1	34:11 36:5 46:13
38:10 42:13 44:1	55:12,20 86:2	field 120:15	flight 144:11	49:11,21 50:1,4
49:9 65:4,5 82:14	102:16 110:15,18	fielded 120:14	flip 24:8	54:21 56:4 61:3
118:20	111:2 117:4	figure 28:17 52:3	floor 57:9	63:20 66:3 68:15
External 2:21	119:13 121:19	57:15 79:6 84:22	flows 127:18	74:9 75:7,11
extra 7:18 106:13	128:3 129:7	85:4 110:18	flush 73:2	77:10 78:19 84:6
extract 88:16	FDD 16:18	figuring 46:13	focus 80:20 94:11	85:22 86:3 87:1
extremely 104:16	fed 102:15	file 141:11	110:1 127:6	88:2,11 94:14
125:5	federal 8:15,16 9:9	filed 19:3 137:22	focused 7:10 54:6	99:9 114:8 127:10
eyes 141:2	33:15 36:14 37:6	138:2	FOIA 135:14,15,18	130:13
e-mail 95:15	39:13 40:6,7,22	filled 138:8	136:2 137:10,12	foster 36:2
102:12 126:7	42:22 43:2 44:2	final 18:11,17,18	137:22 140:14	Foundation 1:21
132:21	47:12 52:20 55:19	35:19 37:20 42:18	142:21	5:11 69:1 128:15
e-mailed 134:3	58:11 59:3 97:15	44:18,19 54:21	fold 93:14	128:16
e-mails 133:6	102:18 118:3,4	59:6 78:22 79:11	folded 75:4 93:17	Founder 2:13
	125:11 128:2,6	79:13,14 81:19	folks 111:4 118:15	four 36:13 37:2
	129:19 132:17	92:14 96:18	124:16,19 125:20	62:7 74:18,22
	139:17	101:19 106:9	143:16	114:17 121:11
F	fee 36:18,19 37:1	finalist 108:17	folk's 93:21	130:22
FAA 47:21	58:22 81:5,7	finalize 82:8	follow 46:4 95:15	frame 12:17 71:16
FACA 137:11	100:15	finalizing 46:22	110:13 134:13	87:12 93:4
facilitate 41:2 66:2	feedback 35:21	finally 11:9	followed 10:18	frames 79:1
87:3 127:2,12	37:18 44:4 82:15	finance 46:11	132:10	frankly 21:20
130:8	82:19 83:15 89:11	find 23:4 28:9	following 4:9,11	55:12 57:19 142:5
facilitating 29:17	101:7 104:14,18	70:14 129:16	25:14 52:7 105:3	fraudulent 137:3
31:18 64:17	111:10 119:17	134:4	127:8	138:12
facilities 15:22 16:5	145:8	finding 99:4	Fontes 2:2 6:11	Fred 140:17 141:5
fact 10:19 28:3	feel 10:5 13:2 14:15	fine 24:21 76:17	footnote 26:22 34:9	free 28:19 38:8
29:19 36:12 42:3	30:3 62:22 73:18	finish 79:3	58:4	52:15 96:7 102:11
43:16 56:2 76:6	96:7 102:11 109:7	first 14:19 20:3	force 121:6	Freedom 2:13 4:18
factors 39:11	142:1	21:17,18,19,22	forced 91:5	French 114:2
facts 70:15 100:18	feels 37:19 96:6	27:22 28:4 35:4	foregoing 95:18	frequencies 40:18
100:20	fees 36:9 37:5,11	36:3,8 55:3 59:10	foreseen 22:17	frequently 104:2
failed 73:15	37:17 43:14,18,19	74:2 85:8 104:15	forever 60:5	fresh 86:1
failure 50:20	43:22 54:2,8,14	130:17 132:14	forgetting 132:19	friendly 34:15
fair 85:8 92:5 102:4	55:10 56:1,7,16	fit 25:19	form 111:16	friends 30:1
fairly 36:6 38:6	57:22 59:2,2,8	five 12:1 26:22 94:2	format 3:12 111:8	front 8:3 86:12
95:2 112:13	60:3,6,18 61:5,20	114:18 117:2	formation 74:14	122:10 126:5
130:19	62:9 64:8,19	120:8,12,12 121:2	former 47:5	fronts 142:16
fall 92:22 137:1	65:19 67:13 68:8	121:3,10 130:22	forsaken 113:10	fruitful 45:17
familiar 135:12				
fan 73:16				

frustration 109:21
full 24:17 35:16,18
 46:7,9,10 64:11
 75:17 76:11 79:1
 79:19,20 106:6
fully 34:1
fund 39:22 40:11
 40:15,20,21 41:10
 41:21 42:19 43:4
 43:6,10 44:6 46:5
 46:14 47:8 54:7
 58:6 74:5 75:18
 80:11
fundamental 84:17
 118:19
funded 47:12 48:19
funding 17:8 18:4
 42:1,22 48:11
 58:10 61:1,6
 117:7,11
funds 47:17 48:12
 48:21 62:16
Furchtgott-Roth
 2:4,4 5:16,17,17
 78:11 79:10
 103:12,16
further 10:3 32:14
 34:10 35:22 76:12
 99:17 119:10
 142:8
future 1:21 7:5
 21:7 27:5 32:5
 43:1 49:20 86:9

G

GARY 2:1
GATTUSO 83:5
gee 109:10
general 17:16 20:2
 68:22 75:18 99:21
 107:2 122:6 132:6
 141:3 145:8
generally 38:8
 46:10 57:22 59:3
 115:17 116:4
generating 62:11
 62:21

Geneva 113:10
geo 22:6
geographic 13:9
GERARD 2:21
Gerry 3:10 5:6
 35:6 76:15 85:14
 89:11,13,18 91:17
 92:5,12,13,16
 93:3,7,18 107:11
 111:5 123:4
Gerry's 44:22
 71:20
getting 22:6 37:17
 52:11 61:16 73:21
 83:15 86:4 133:5
 142:3
give 8:4 11:14
 12:22 18:16 28:11
 51:8 64:15 69:4
 71:12 92:6 94:6
 97:1,2,13 98:13
 101:3 102:8
 103:14 106:9
 127:15 132:11
given 14:4,5,13
 17:6 107:14
 141:10
giving 39:16
global 2:14 103:9
globalization 25:9
globally 59:18
globe 57:4
go 4:12,12 6:11
 7:11,12 12:13
 13:18 14:3 16:16
 17:21 19:22 24:17
 27:3 33:9 43:18
 44:5 47:4,9,14
 49:16 53:2,21
 54:20 56:4 60:16
 61:9 68:15 70:1
 72:21 75:11 84:9
 94:3,22 96:16
 97:1 98:19,20
 104:1,2 106:4
 107:7,20 112:4,7
 115:9 116:17

121:6 126:1
 129:17 133:3
 136:4 143:18
goal 11:1,10 23:20
 33:14 92:4 141:15
goals 66:20,21
 127:1
God 113:9
goes 9:13 17:16
 52:18 61:12 75:12
 107:3
going 7:3,4,9 8:1,4
 8:6 10:14 11:3,11
 12:15,16,21 13:1
 17:19 18:16 30:20
 32:22 33:1,9 35:8
 37:6 38:16 44:22
 46:12,15 48:5
 49:21 50:1,4,15
 51:10,15 52:2,5
 52:16,22 56:10
 57:15 59:8,9 60:9
 61:2,3 63:13
 65:14 66:8 67:9
 70:7,20 72:18
 73:10 76:16 77:8
 77:10 78:19 79:5
 80:3 82:6 84:6
 85:11,21 88:18
 90:15 92:16,19
 93:16 94:1,14
 95:14 96:5 98:11
 98:12 99:8,9,10
 99:18 102:2 105:8
 105:12 107:5
 108:14 110:13
 112:9 114:8 117:1
 120:19 121:2,4
 122:4 126:8,12
 129:2 132:16,17
 133:8,18 135:6,7
 140:14 141:19
 142:6
goldplated 42:15
good 4:4,7,10 25:21
 40:9 46:6 76:20
 97:10 98:7 100:9

100:19,20 103:10
 113:5 115:4
 116:12,14,17
 117:1 120:19
 122:22,22 123:3
 124:7 125:18,19
 126:20 145:10
Google 1:18 6:17
gotten 120:12
 121:11 132:4
 133:6
govern 14:13
government 2:5
 8:17 15:22 23:3,8
 29:14 30:9,16
 31:17,22 32:6
 48:12 62:10 88:9
 91:15 99:17
 101:14 122:18
 127:7 132:7 135:9
 136:16,18 141:13
government's 87:5
GPS 10:10 47:11
 51:10 88:7
great 18:8 27:16,18
 46:2 50:4 60:12
 74:8 85:13 86:11
 87:13 90:16 104:8
 114:5,6 118:1
 130:11 131:1
 140:21 141:1,7
greater 62:19
Greg 4:21 98:14
 107:20 108:14
 110:5,11
GREGORY 2:19
ground 33:21
group 7:11 9:8,13
 9:20 36:16 66:17
 66:18 67:11 71:13
 85:4,8 96:4,6
 101:21 102:4
 109:15 112:12
 116:9,17 125:21
 126:19 144:13
groups 9:15 103:22
growing 129:21

Guadalajara 56:19
 113:19
guarantee 12:22
guardband 28:13
 31:3
guardbands 21:17
 22:3 28:4
guess 29:6 30:14
 31:12 95:7 101:10
guest 29:7
guidance 86:8
guiding 62:8
gums 97:20
Gurss 2:5 5:20,20
 58:20 77:14,22
 102:15 117:19
guru 114:19
guy 29:10 47:2,3
 103:6 106:15
guys 107:15

H

half 70:21 71:1,10
 79:5 94:4 96:12
 127:10 135:16
hall 7:20
hallway 7:19
hand 42:13 59:20
 87:17 98:20
handed 56:5
handicapped 42:5
handing 15:5
handset 16:17
happen 48:11 53:2
 56:19 66:8 69:3
 105:12 133:8
happened 133:19
happening 52:22
happens 26:1 99:14
happy 24:16 27:14
 125:14
hard 37:22 69:22
 77:17,19 104:9
 109:22 110:1
harmful 20:18 21:1
 26:4
harmonization

25:6,9,14,16	henceforth 139:3 139:12	56:7 58:7 79:4 84:21 97:2 98:13 101:8,12 102:22 103:7 111:13 115:17 116:4,5 118:1	137:2	Independent 1:15
Harold 2:4 5:16 103:11	Herbert 1:12	ideas 46:20 90:18 94:20 100:17 111:18,22 117:20 124:20 125:19 127:7 143:14	importantly 94:13	indicated 45:5
Harold's 130:15 140:18	herd 66:14	ideally 83:12	imposition 65:19	indicating 22:13 25:8
hat 117:12	hesitate 34:7	ideas 46:20 90:18 94:20 100:17 111:18,22 117:20 124:20 125:19 127:7 143:14	impossible 105:6	indicative 39:5
hate 74:6 120:18	he'll 92:7	identified 15:17 61:12	impression 132:3	individual 10:18 50:16 51:1
Hatfield 1:13,15 3:4 4:3 6:2,8,10 6:15,18 27:16 29:12 31:9 32:4 32:14 34:3 50:14 55:16 73:17 83:2 84:5 107:5 117:6 117:17 123:2 141:22 142:17	hide 140:11	identifies 49:1	improbablistic 27:6	industry 122:18 123:11
hat's 89:14	high 14:4 24:20 25:19 26:20 115:1 118:16	identify 6:5 12:12	improve 28:14 94:14 142:12	influence 111:9
Head 2:17	higher 50:22	identifying 9:22 11:7	improved 99:20	inform 8:6 130:10
headed 82:19	highlight 129:3	ignored 135:19	improving 23:15 88:18,19	informally 45:12
headings 72:5	highlighting 49:2	IKO 14:12	inappropriate 72:14	information 14:16 22:19 23:5 26:13 68:6 129:16 132:9 133:16 136:10
heads 122:19	highlights 49:1	immediate 13:8	incentive 35:5 40:2 50:17 51:2 54:7 62:1 80:11 86:6 137:19	informed 108:16
health 26:7	Hill 58:9	immediately 139:2	incentives 9:16 18:1 35:9,13 90:6 115:13 122:12 131:21	initial 42:21 71:4
healthy 99:1 101:16	hire 112:15	impact 25:9,15 62:12 118:1	include 11:3 22:3 42:10 43:16,17 82:15	initially 36:18,19 81:6
hear 44:22 70:15 89:5 100:11 110:7 114:21 117:22 118:15 134:10	historical 21:20	impactful 36:7	included 10:11,12 24:11 25:12 38:10 39:9 92:20 93:9	innovate 53:5
heard 6:5 66:15 144:21 145:4	history 137:14	impacts 56:11	includes 9:10	innovation 25:10 39:22 41:10,21 46:5 67:6,9,22 74:5 75:18 91:4
hearing 34:22 144:4	Hmmmm 121:8	implementation 37:1,4	including 41:5 60:6 99:13 137:15	innovations 67:10
heart 62:9,13 110:8	holding 13:7	implemented 76:3 135:11 137:11	incorporate 48:18	innovative 25:17 74:4 104:12 120:5
heck 109:15	hole 113:10	implementing 68:8	incorporated 19:9 54:12	input 35:16 79:19 95:13 110:16 125:16
help 70:2 97:17,19 103:3 111:8,9 112:16,19 128:22 130:10 142:8	holiday 83:18	implication 65:6	incorporating 49:12	insert 24:11
helpful 37:19 70:9 91:10 98:5 104:11 104:13,17,20,22 105:13 111:11 117:21 121:20 125:22 126:12	homeowners 69:8	implications 88:12	increase 36:20 142:14	insiders 132:9
helping 33:13 128:17	homework 96:2 106:4 107:17	implied 73:7	increased 50:13	insider/outsider 134:21
helps 118:5	honest 64:17	imply 65:21	increment 42:21	inspection 75:18
	HONORABLE 2:13	importance 21:6 85:21	incumbent 8:22 9:2 28:7,14,18,18 29:21 30:12 31:15 67:8 68:1 85:6 99:15 118:2	inspector 23:3
	Hoover 1:12	important 23:9 26:19 33:17 34:4 35:10 46:16 47:8 47:16,16 48:10 49:5 62:6 63:1 65:16 68:11 72:1 72:10 78:21 79:15 85:6 88:15 97:21 99:9 100:5 103:1 121:9 132:13	incumbents 11:15 20:5 67:9	instance 10:9 17:1 instances 22:4 59:17
	hope 15:2 39:17 88:16 92:21 141:7 143:19 145:1			Institute 2:19
	hopefully 58:15			instituting 36:17
	hoping 144:8			integrated 63:1,10 75:15
	host 125:15			Intel 2:7 6:12
	hosted 128:19			intellectual 99:14
	hour 7:4 79:5,6 115:12			intelligence 138:18
	hours 78:15 92:1			
	huge 45:6 52:8 59:12 64:20 80:14			
	hung 77:19			
	Hussey 41:13			
	I			
	idea 13:14 22:9 25:21 44:16 50:2			

<p>intensive 127:14 intent 20:10 interaction 105:7 interest 20:15 23:12 29:1 30:7 31:6 34:1 98:6 117:17 130:7 136:8,19 137:5,6 140:19,22 141:21 interested 23:15 48:12 102:13 128:17 129:15 130:1 interesting 66:13 90:13 115:13 interference 16:6 20:18 21:2,17 26:4,5,9 27:2,7 65:17 110:4,6 118:19 interference/dyn... 18:13 54:19 interim 25:10 74:1 intermediate 122:9 internalize 36:8 internalized 49:18 60:22 international 2:10 10:6 25:7 56:11 56:17 60:2 63:7 67:12 113:18 124:10 internationally 59:12 115:3 Internet 56:21 internship 117:18 interpret 51:4 introduce 89:2 141:8 introduced 53:6 inventory 104:13 invest 47:20 investigate 137:5 investigation 10:4 investing 53:17 investment 21:7 32:9,22 50:18</p>	<p>52:21 64:19 118:13,15 investments 20:8,9 32:5 118:17 involved 11:6 17:7 51:19 97:16 involvement 33:12 involving 11:7 iPhone 133:19,21 134:1,3 Iraq 9:14 issue 9:17 14:1 20:17 21:5 25:5 26:20 35:9 47:14 54:1,8 56:9 60:3 64:20 65:3,16 66:18 75:19 78:20 92:17,18 103:9 109:7 117:11 123:13 124:18 127:22 128:6 129:13 134:20 140:20 issues 3:12,15 14:6 17:12 20:17 22:16 27:6,15 30:21 49:8 55:9 60:7,18 66:16 68:1 71:19 75:3 86:18,21 88:7,8 89:19 99:12 101:22 104:3 109:21 110:1 122:9 127:3 128:21 129:2,5,11 130:21 131:1 136:22 141:1 142:10 143:2,12 144:18 ITA 124:11 items 3:21 28:1 ITT 2:24 5:4 ITU 14:12</p> <hr/> <p style="text-align: center;">J</p> <hr/> <p>James 2:8 64:1 Jan 122:16 Janice 2:13 4:17</p>	<p>53:21 55:1 59:11 60:13 77:14 98:20 98:21 101:11 113:16 123:7 125:5 Janice's 124:8 143:13 January 71:3 73:20 74:11 82:3 83:12 85:10 92:15 96:11 144:7,8,9,10 145:7 Jennifer 2:22 5:2 46:3 61:18 75:7 85:18 108:12 113:4 124:1 Jennifer's 45:5 Jim 6:1 102:1 130:14 142:16 Jim's 143:13 job 60:12 89:16 97:10 138:20 jobs 64:19 118:14 143:10,16 Joe 143:4 John 114:15 124:1 Joint 143:5 jot 94:19 Jr 2:17 judgments 65:22 68:15 Julie 2:24 5:4 53:20 53:21 82:6 107:20 123:20 July 18:21 jumped 28:5 jumping 100:16 June 8:9 jury 77:17,19 justified 47:13 J.D 1:23</p> <hr/> <p style="text-align: center;">K</p> <hr/> <p>Kahn 2:6 6:12 Karl 3:6 8:1,4,7 15:9 17:5 18:9 42:4 70:2 72:22</p>	<p>86:19 100:21 110:13 Karl's 104:14 keep 26:12,13 29:22 49:18 88:18 89:18 90:15,16 103:2 112:17 keeping 26:17 kept 64:6 89:22 Kevin 2:6 6:12 key 25:19 32:16 kicked 124:5 kicking 71:14 kids 116:18 kind 15:13 33:2 36:17 38:15 47:19 65:6 69:5 95:7 103:6 109:10 112:21 121:9 kinds 61:1 Knauer 1:18 knew 137:14 know 11:2 24:13 41:16 44:3 47:22 53:6 55:12 60:21 63:18 67:17 69:4 75:12 80:22 81:17 82:10 88:13 89:15 91:19 94:3 95:12 102:3 108:5 110:7 111:10 116:20 117:12 118:11 119:12 121:7 122:11 123:17 124:4,12 127:14 128:20 131:15 133:21 134:9 135:13 140:12 141:17 knowing 12:15 105:7 145:3 knowledge 128:14 known 60:5 knows 8:2,9 64:14 75:13 119:1 135:17 145:4</p>	<hr/> <p style="text-align: center;">L</p> <hr/> <p>L 2:1 Lab 2:7 lack 14:13 lagging 73:18 laid 87:17 102:21 language 22:18 25:12 29:13 30:6 31:7 33:21 34:8 38:22 46:22 74:21 79:13 large 66:16 67:12 Larry 1:18 3:4 5:7 6:16,20,21 7:22 71:11 85:18 lastly 9:2 113:3 140:16 late 54:8 Laughter 90:7 107:13 launch 57:3 law 1:24 135:7,7 137:9 138:7 laws 135:13 137:10 140:15 143:1 lawyers 109:3 lay 97:11 laying 43:12 lays 10:16 lead 59:20 leadership 61:3 leading 9:19 119:22 leaps 127:9 learned 27:19 leasing 43:22 leave 44:7 leaves 144:11 leaving 109:4 led 115:22 134:21 legacy 60:19 legal 2:5 26:2,8,11 128:21 142:3 legally 83:5 136:9 legislation 41:16 legitimate 54:4 lengthy 19:21</p>
---	---	---	---	--

let's 28:11 70:14 96:2,3 112:7 115:16	LLP 1:18	113:19 115:10	59:21 67:2,15,21	meet 53:9,9,13 80:6 80:6 83:8,13 85:11 106:12
level 9:10 25:19 26:20 50:22 69:13 124:13 138:5 142:15	lobbyist 133:10	117:6,8 119:17	markets 44:1 119:20	meeting 1:6 3:21 4:5 7:3,8 15:6 18:21,22 19:2,7 27:11 36:1,1 44:18,19,20 50:6 54:3 60:16 70:6 70:21 74:13,16 78:22 79:12,13,14 81:22 92:14 99:22 100:14 101:1,18 102:14 105:7 113:6,13 116:6 126:13 131:7,9,10 131:18 132:16,18 133:4,15,17 134:7 135:4 139:20 142:18,20 144:5 145:13
Lewis 2:8 6:1,1 66:9,11 72:15 73:14 80:22 81:4 102:2 109:14 116:15 119:3	local 124:16	123:10 124:3,12	Martin 1:22 2:23 5:3	
liaison 121:19	location 22:6	125:19 128:4	Marty 6:5 85:18 86:7 88:4,13 89:10,13,14 90:14 118:8	
license 8:21 9:5,6 44:2 91:12 119:15	Lockheed 2:23 5:3	129:10 134:11	marvelous 64:7	
licensed 59:2	lofty 135:1,21	143:14,14	match 89:8	
licensing 8:21 14:14 86:13 87:21	logical 59:7 91:1	lots 52:18	matching 16:20 88:20	
lifetimes 64:22	logistically 79:9	love 15:4 17:13	material 55:11	
light 91:17 93:10	long 35:8 57:18 75:19 122:13 126:1 137:14 143:18 145:3	low 36:18 69:13	materials 75:2 128:18	
liked 71:19 143:10	longer 14:3,22 106:12 115:16,21 116:4 122:6 144:10	lstrickling@ntia.... 102:12	Matos 140:17	
limit 23:4 122:8	look 7:2 10:16 11:19 17:22 26:1 27:5,13 29:14 34:10 48:7 55:7 55:12 57:19 58:14 61:21 65:14 66:3 76:5 86:9 112:2 114:3 120:2 127:17 131:21 135:3 142:10	lurks 110:3	matter 18:20 33:17 57:6 70:11 87:14 95:18	
limited 47:18	looked 19:5 28:8 99:6	<hr/> M <hr/>	matters 33:6	
line 6:4 48:6 51:7,7 82:20	looking 4:8 16:3,11 29:5,22 48:2 54:14 57:17 59:13 64:12 81:20 86:3 87:1 89:7 92:17 93:19 110:16 118:18 136:19	M 2:5,12	Matthew 41:13,16 45:13	
lines 36:13 41:15 72:22 82:18 108:3 108:10 110:19 121:6	loop 50:11	main 37:14 136:5	max 121:10	
link 91:1	loose 56:18	maintenance 26:17	maximize 87:8	
links 51:21	lose 81:12 103:6,7	major 15:21 16:4 21:9 24:15,20 47:5 57:14 58:10 88:3	Maximum 5:19	
list 10:20,21 19:20 72:7 96:21 121:14	loss 67:14	47:5 57:14 58:10 88:3	McHENRY 2:10 4:15,15 100:21 115:6	
listed 21:17	lot 26:8 27:19 33:7 47:11 48:1 53:3 57:20 59:7 61:21 67:3 68:13 74:1,3 90:4 91:11 93:18 93:20 96:10 104:9 104:10 110:14	majority 36:17 76:19	mean 10:22 27:7 50:8 52:8 77:15 79:17 89:16 104:14 106:11 110:4,5 113:21 114:13,16 115:7 118:12,18 123:10 138:21 144:1	
listen 101:20		making 9:3 16:13 17:9 19:3 45:6 59:17 78:12 116:16 136:15	meaning 25:13	
listening 21:16		makings 11:5	meaningful 45:10 46:15 54:9 104:21	
listing 28:3		manage 51:6 108:5	means 11:13	
little 18:17 29:2 34:7 40:1 51:13 69:14,15 101:21 102:8 105:17 114:12 119:4,10 122:2,21 125:7 131:11 141:4		managed 41:11	measurements 14:8	
live 13:1		management 1:4 2:18 4:6 59:14,22 66:21 139:10,14	mechanism 33:15 135:18	
lively 19:1		Manager 1:18	mechanisms 59:20 67:2,15	
LLC 1:22		managers 23:3		
		Managing 1:17 2:14		
		mandate 55:8,15		
		manifested 58:16		
		manner 54:21 55:10		
		Mark 1:25 2:10 4:14,15 5:14 66:10 68:3 104:6 105:4 115:5 119:7		
		market 33:8,10 36:19,21 50:20		

14:6 53:14 63:2 64:4 96:10 108:8 122:16 128:7 mercifully 55:2 merits 142:6 met 1:12 78:14 85:19 method 134:6 methods 12:19 17:8 27:1 48:14 108:1 metro 88:17,18 mic 126:8 Michael 1:20 3:9 5:10 15:10 35:4 44:15 45:21 55:3 55:4 60:11 64:4 64:13 66:3,14 72:3 82:9,13 83:9 83:16,22 86:5 90:5,5 93:4 121:21 Michael's 54:15 100:2 Michigan 1:23 microphone 4:10 mics 143:20 migration 61:2,17 Mike 85:17 milestones 81:17 military 13:18 51:11 62:6 milk 121:7 Miller 143:4,4 million 28:12,14,19 28:20 29:14,15 32:1,1 mind 31:13 89:18 90:16 minimum 34:5 42:1,8 132:1 135:6 minority 76:19 78:3,6,7,8 minuscule 129:22 minute 94:1 minutes 7:10 94:2	115:8 mirroring 43:4 Misc 3:21 misinformation 128:5 misleading 138:8 mission 41:8 misstate 138:21 misstatements 137:3 misstates 138:15 138:16 mobile 6:14 8:13 16:6,17 model 86:16 112:13,22 113:8 models 27:6 moderating 56:20 moderator 112:16 modernizing 40:22 moment 45:1 93:13 MONDAY 1:9 money 29:11 46:16 47:9 48:2,5,13 53:7 61:8,11 69:20 monitize 68:21 monitor 69:18 monster 53:19 months 8:3 12:9,20 13:4,11 105:8,9 131:17 morning 4:4 7:16 15:4,8 144:9,10 motion 34:14 move 13:11,12 18:9 18:18 34:11 49:11 66:9 67:20 71:20 72:9,15 74:9 75:6 98:7 130:13 moved 34:17 38:19 39:2 moving 13:19 88:10 112:17 MSTV 2:1 multiple 11:4 132:10	Mylet 2:12 6:9,9,10 M2Z 19:3 27:11 <hr/> N <hr/> N 1:15 named 89:15 names 139:16 narrative 111:16 narrow 10:5 41:21 52:20 74:20 80:18 104:1 108:16 NASA 47:22 56:14 national 2:2 9:11 9:11 10:12 22:14 23:1,18 69:1 89:4 89:6 122:14 natural 116:2 nature 30:14 NCIA 145:7 nearing 15:1 70:22 neat 112:21 Nebbia 3:6 5:9,9 8:2,8 15:16 17:11 71:22 92:16 121:13 necessarily 12:6 29:19 31:21 52:14 65:21 90:20,21 necessary 16:21 need 16:10 29:13 35:16 50:12 55:9 55:13 56:10 59:11 60:2,15 61:3,15 66:19 67:5,11,20 69:5 70:7,14 71:22 72:17 73:19 74:12,14 75:5 77:19 79:4,21 81:22 97:17,19 103:7 109:16 117:6 120:6,21 121:5,5 127:6 129:8 144:5 needed 90:3 113:15 needs 11:15 19:17 20:21 46:13,18 61:6 62:6 82:17	97:11 106:11 119:9 neglected 99:5 negotiation 31:1,19 negotiations 29:18 neither 128:10 nest 98:10 net 69:3 114:15 networks 57:3,3 neutral 42:20 45:11 46:11,17 47:3 48:4,16,17 49:7 50:9 81:9,10 never 14:9 79:3 120:12 Nevertheless 129:14 Neville 2:15 6:13 new 1:21 5:11 12:21 13:3 17:7 25:16 28:11 30:11 30:13 40:16 48:5 51:10,10 52:10 64:20 65:7 69:21 73:14 86:15 87:9 88:1 104:11,12 116:19 117:20 119:5 123:1 128:14 133:19 138:5 nice 48:22 nickel 45:7 night 27:20 131:9 131:19 144:12 nine 38:21 39:14 105:8 ninety 120:9 NOAA 15:11 17:13 17:15,15 noise 134:12 non 23:18 40:6 60:21 non-federal 8:18 33:16 39:13 59:3 non-industry 122:2 non-participation 124:3	non-profits 129:1 non-realtime 23:14 non-revenue 62:11 62:21 noon 94:5 normal 9:14 18:4 normally 28:13 note 21:14 44:11 55:15 56:4 58:20 74:17 noted 13:5 20:20 43:20 notice 28:21 132:13 132:15,18 141:10 noticed 83:3 93:8 notices 133:13 notification 132:21 notion 50:21 135:8 notwithstanding 109:20 November 1:9 131:22 132:1 NTAA's 35:11 NTIA 5:8,9 7:16 8:3,11 9:7 14:8,14 17:14 23:7 41:11 42:4,17 72:6 103:21 110:18 111:2 120:13 122:11 128:2,3,7 137:4 138:2,3,6 139:3 142:22 NTIA's 139:11 nuances 50:15 number 2:2 8:20 11:6 15:21 16:4 25:1 73:9 78:15 85:19 95:3 127:2 127:8 129:15,22 134:9 nuts 103:6 N.W 1:13 <hr/> O <hr/> objections 73:1 objectives 56:15 observation 70:20
---	---	---	--	--

obstacles 87:20	121:5,21 123:20	option 43:1,2,10	124:22 125:8	Pepper 2:14 5:1,1
Obuchowski 2:13	124:21 125:17	options 42:8 43:8	paper 94:19	34:17 48:15 59:10
4:17,17 32:15	132:19 140:7	43:13 46:8	paragraph 22:1	80:9 81:2 82:2
55:2 77:2,7 98:22	144:4 145:6	orbiting 15:20	part 15:21 28:3	109:17,18,19
100:7,18 113:17	OMB 9:12 18:4	order 29:17 145:10	31:12 59:14 71:4	115:19 124:21
114:11	38:5 42:16 45:12	organization 127:1	71:5 92:19 101:18	Pepper's 64:13,16
obvious 93:5	45:22 123:8	130:4	120:18 140:3	perceive 67:14
obviously 35:9 66:8	omissions 92:18	organizations 16:1	participants 128:6	perfect 111:15
69:12 96:2	once 13:10 26:10	133:1,11	participate 105:5	perfectly 26:7
occur 11:14 92:15	82:8 112:2	organized 127:17	participation 69:16	performance
occurred 36:16	ones 131:8	oriented 59:21 67:8	98:6 123:18 124:7	142:12,15
occurring 139:6	one-sided 20:4,11	original 24:3	127:5	performed 14:8
occurs 91:4	ongoing 35:15	OSTP 9:13	particular 43:3,9	period 7:14 11:16
October 9:20 11:22	37:21 42:20 43:4	other's 137:20	43:13 66:1 71:7	12:14 44:14 124:4
54:9	46:21 124:7	ought 63:16 65:13	114:2 135:14	permission 31:4
offer 11:22 44:9	online 136:11	84:19 89:3,5 97:9	particularly 25:6	permit 41:1
130:3	139:4,12 141:15	115:1,11 127:20	36:14 37:5 40:6	person 28:17 55:18
offered 10:2,5	onset 87:5	outcome 14:18	43:20 45:10 46:1	112:19 136:14
34:16 140:17	open 3:13 45:2 79:3	16:21 63:10	132:12	personally 137:14
office 41:13 123:9	79:22 94:21 95:2	outcomes 36:2	parties 23:14 31:19	person's 138:18
officer 1:25 2:2	126:12 132:7	outline 111:18,19	Partner 1:17	perspective 26:18
69:20	135:9 141:13	111:20	parts 98:1	56:21 123:12
officers 53:8	Opening 3:3	outlived 96:7	pass 73:5 98:17	127:21
offices 7:20	openly 140:7	outreach 127:11	112:8 117:11	perspectives 37:16
official 137:4	openness 126:17	outside 69:16	passion 98:6	56:22 125:7
139:12	127:7	101:14	passive 10:7	143:15
officially 116:7	operating 3:16	outsiders 132:8	path 55:18	philosophy 75:22
officials 2:6 5:21	14:17 26:2 57:13	outstanding 138:20	pay 28:17,18 29:9	phone 18:8 79:11
133:7 136:16,18	114:20	overall 48:4,19	29:10 31:2,3 33:9	111:5,22 112:7
offset 73:10	operational 23:2	49:6	41:4 69:21 98:15	118:8 144:3
offsite 112:2	23:11 120:14	overlay 62:15	pays 99:15	physical 113:13
115:20	operations 2:16	overly 105:19	people 16:10 21:18	Ph.D 2:19
offsites 124:14	13:20	oversight 22:21	24:7 32:5 48:13	pick 32:1
OGIS 138:4	opinion 76:19,19	overstated 91:6	49:3 52:22 53:16	piece 12:4 86:8,17
oh 53:15 107:1	80:18 87:14 99:3	overview 8:4	68:14 69:11 73:17	86:18 88:3 94:19
111:4 135:2 143:2	opportunities		84:18 90:4 91:5	pieces 86:21
okay 4:4 6:8,11,18	52:19	P	95:1,15 96:12	piggyback 101:11
15:7 25:4 31:4	opportunity 3:19	pack 17:19 52:1	98:19 100:14,17	pipeline 48:4
34:13 46:2 47:19	11:22 36:9 49:3	page 3:2 26:14,21	101:14 104:8,10	place 75:6 82:3
47:19 65:12 83:6	49:17 80:5 89:1	27:22 36:4 37:2	115:17 116:3,22	102:5 113:9
84:4,8,9 85:5,12	91:15 98:4 124:15	39:14 41:20 43:17	117:5,14 118:3,7	126:16 129:9
92:3,15 93:2,3,8	127:6	pages 38:21 74:18	119:11,12 121:14	placeholder 131:11
94:5 101:8 102:1	opposed 27:7 34:21	74:22	122:17 124:12	131:13,16
102:3,9,19 103:16	46:17 61:8 67:2	pain 70:19	127:14 128:5,9	places 82:16 112:3
104:6 105:1,14	79:12 124:17	panel 101:11,20	129:5,15 132:4,15	143:15
106:20 111:3,21	140:1	106:21 112:12	132:22 141:10,17	plan 8:12 9:8,22
115:4 116:12	opposition 65:4	panels 112:11	people's 98:5	10:13,16 11:17

14:4,22 89:4	portfolio 93:20	presenters 68:20	57:10,20 65:15	2:24 8:1 47:5,6
planning 17:22	portion 17:20 18:1	president 1:20,25	69:16 89:20 90:3	49:2 51:6,7,8
41:6 42:10	58:21	2:1,4,10,13,15,21	91:22 109:1	52:12 69:15
plans 13:10 17:16	portions 14:11	2:22 8:10	135:12	programs 51:19
117:1	pose 13:14	president's 56:3	probe 101:20	progress 61:11,21
platforms 87:6	position 20:7 26:9	138:5	problem 45:14	80:14
play 122:16	positions 60:20	presiding 1:14	52:6,8 61:11	projects 3:15 48:21
plead 133:7	positive 114:4	presume 93:16	68:22 97:15	promising 38:4
please 4:4,10	126:20	presumption 22:17	127:16	promote 87:2
plenty 92:6	positives 75:16	23:21 28:6 29:20	problems 88:19	90:21
point 14:14 16:13	possibilities 8:20	pretend 129:12	141:3	promoted 91:12
17:11 20:1,1	possibility 8:19 9:1	140:5	procedures 3:16	promoting 62:2
27:10 28:21 29:18	79:17 94:15	pretty 32:19 33:3	proceed 77:1	87:19 91:16
30:4 32:20 44:12	possible 3:13 12:10	44:8 97:10	proceeding 86:2	119:20
45:18,20 46:6	35:18 82:14 105:9	prevent 29:3,3	proceeds 40:12,14	proper 22:21 99:16
57:8 58:5 70:6	possibly 43:14 58:4	139:5	process 10:17 11:1	property 31:15
71:16 73:8 74:2	post 19:7 139:4,12	prevented 12:6	11:9,11,19 15:2	32:3,21,21 99:15
75:6 78:5 80:12	posted 133:5	prevents 52:15	15:17 16:3 17:18	103:5 118:19
84:5 88:16,21	141:14	previous 60:6	18:20 26:16 38:7	proposal 73:19
100:16 104:4	potential 9:3 10:3,6	previously 129:22	38:17 39:4,19	75:11 76:14 77:1
124:8 129:4	13:8 16:19 21:6	131:11	42:14 44:12 45:1	proposals 73:21
143:13,19	25:15 41:6 67:13	price 33:10 69:2	50:10 52:20 54:11	propose 16:15
points 78:12 95:11	67:13,15	70:11,12	61:10 66:13 67:7	126:21 139:1,7
111:17	potentially 11:4	pricing 60:7 80:19	70:17 72:19 73:2	144:8
polar 15:20	32:16 91:18	prime 81:13	73:12 75:6 77:13	proposed 38:19
poles 115:16	141:12	Princeton 5:13	78:13,21 81:16	82:6
police 53:8 69:19	practical 38:10	principal 132:7	84:10 85:5 90:9	pros 59:15 60:17
policies 87:2	86:4,21 88:11	principals 62:8	94:22 96:17	63:2,6
118:13	practice 89:7	103:4	101:16,17 105:11	protected 16:5 20:9
policy 2:9,14,19,21	practices 130:20	principles 61:21	106:2 111:9 121:3	protection 11:14
2:23 9:8 26:18	precedent 40:9	prior 81:21	144:2	62:5
114:19,19 122:14	preceding 42:7	priorities 48:21	processes 17:18	protects 23:20
127:3 128:6	precisely 38:7	55:20	18:5 40:4	proven 11:15 12:20
129:11 131:14	predictable 107:9	prioritization	procurement 39:18	provide 20:13
143:13	predominantly	10:17	42:14	22:20 42:1 54:17
policymaker 63:16	15:19	priority 14:4 21:19	produce 67:6,8	76:6 87:11,21
76:8	prefer 20:1 31:8	143:9,9	produced 76:2	91:7 98:3 101:7
policymakers	premature 78:9	private 22:16	producing 67:10	103:8 113:14
25:14 63:4 76:4	present 1:15 37:15	128:22 129:19	product 1:18 63:16	130:4
political 136:20	135:21	133:6	productive 7:2	provides 49:3
137:1 143:5	presentation 3:5	privately 126:4	66:22 85:20	providing 54:10
politically 59:8	13:6	privilege 9:19	productively 109:8	102:22
pollute 74:7	presentations	privileges 18:16	professional	provisions 23:13
poor 134:8	69:11 70:1 134:14	probablistic 27:1	112:16	PTs 80:10
poorly 135:14	presented 13:16	probably 26:5 27:5	Professor 1:16	public 2:9 3:19
pop 65:20	18:15 19:13 37:20	27:14 28:2 29:13	profound 32:19	20:14 22:10,14,20
populated 116:20	131:20	40:2 42:3 47:4	program 1:21 2:9	23:21 26:7 29:1

30:6 31:5 33:22 44:13 59:4,9 62:6 62:6 69:19 117:17 126:13 127:2,5,12 127:13 128:14 132:9 133:12,13 133:16 134:17 136:9,13 137:6 139:10,18 140:18 140:19,21 141:3 141:12,18,20 142:20 143:2 144:1,21 publically 80:1 132:2 136:13 137:7 Public-Safety 2:6 5:21 published 139:16 pulled 86:6 pumped 38:22 punish 137:20 punitive 58:1 purchase 30:12 purposes 40:20 62:21 71:6 96:4 104:17 pursue 99:6 pursuing 46:1 push 81:9 pushed 81:8 put 10:20 17:1 19:19 26:14 30:5 30:9 31:5,6 65:7 67:11 69:1 71:6 75:13 93:22 97:4 98:9 105:1 125:9 131:12 putting 98:9 131:14 P-R-O-C-E-E-D... 4:1 p.m 145:13 P1 51:7	136:8 137:21 qualified 39:8,8 qualify 138:15 quality 134:8,10 quantum 127:9 quasar 32:3 question 30:15 31:18 32:19 44:5 45:5 48:17 75:10 81:5 95:3,5 100:15 105:22 131:6 134:20 139:21 questions 15:9 17:4 18:8 21:1 36:22 37:3 45:3 94:20 95:10 104:5 131:6 quick 72:1 quicker 53:6 quickly 66:9 87:7 87:15 90:3 103:17 quite 19:4 63:13 99:13 112:18 116:15 131:1 134:8 139:20 quorum 108:11	Raytheon 2:18 4:20 112:15 reach 77:12 93:6 reached 78:17 reaching 45:22 56:14 react 44:14 69:12 reaction 34:4 104:15 126:13 read 72:4,4 126:18 131:3 readable 131:2 reading 27:19 28:5 ready 21:9 50:6 81:13 107:21 110:12 111:5 real 23:4,11 24:11 25:11 38:16 49:1 52:17 54:9 61:11 62:8 68:5,12 87:11,11 112:4 123:12 131:3 135:17 realism 57:11 58:14 reality 57:17 60:20 118:6 123:7 realize 106:10 117:10 really 13:15 16:11 27:3,18 30:17 35:16 38:12 45:13 48:22 51:18 52:14 57:7 60:15 62:7 62:12 65:13 67:4 72:8 74:8,12 78:20 79:4 86:15 90:12,19 96:7 101:11,12 102:17 104:16 105:21 109:22 110:9,19 111:10 112:21 117:8,13,21 120:10 123:12 124:10 125:6 126:6 141:6 142:5 realm 137:1	realtime 23:19 24:2 24:4,6 113:7,11 reapply 96:16 Reaser 2:17 4:19 4:19 29:9 31:12 33:4 47:2 51:5 53:12 68:18 84:11 90:12 97:9 112:9 120:8,11 reason 26:3 42:4 47:18 65:19 93:5 136:11 reasonable 14:2 87:13 reasons 23:22 24:8 59:7 84:17 recall 130:21 receive 25:7 received 18:22 19:2 19:7 receivers 13:12 28:15 receiving 16:1 recharged 93:15 recharter 96:5 recirculating 44:17 recognize 127:9,21 recognizes 26:15 recognizing 25:13 55:19 recommend 32:17 42:19 113:4 recommendation 21:19 38:3 39:21 40:19 41:19 42:19 56:5 72:3 89:3 101:2 107:8 130:6 144:16 recommendations 36:5 42:17 63:11 63:12 72:4,11,18 72:21 75:21 80:11 87:18 88:3 97:13 100:22 101:8 103:1,3,8 110:21 126:18 128:12 143:7	recommended 25:20 41:9 reconcilable 85:2 reconvene 94:2,5 record 4:11 56:5 95:19,20 142:21 records 139:11 red 72:13 reduction 61:13 refer 55:9 reference 58:22 71:4 referenced 75:17 referring 108:21 reflect 82:18 132:2 reflected 19:1,18 63:10 85:3 reflects 21:13 60:11 reform 61:17 reforming 49:12 61:2 refrigerator 121:8 regard 86:20 127:11 128:21 129:1 142:12 regarding 21:5 23:1 24:1 27:7 103:4,5 123:8 137:10 regardless 109:8 regime 90:19,20 regimes 87:21 register 132:17 139:17 regular 118:17 regularly 105:10 133:4 Regulation 2:23 regulator 33:5 regulators 33:13 regulatory 90:19 124:10 reimburse 40:16 reinforce 78:12 reinforces 104:3 rejected 138:2,3
<hr/> Q <hr/> qualifications	<hr/> R <hr/> r 2:21 51:7 radars 13:12 radio 41:7 114:1 radioastronomy 69:2,7 radios 47:10 53:1 53:14,16,19 69:21 radiosondes 17:21 raise 130:2 131:7 raised 27:10,11 32:20 75:4 130:21 131:7 142:11 raises 123:7 range 14:10 15:19 16:2 48:18 122:13 rates 36:21 rationales 58:2 rationality 137:18 Ray 2:15 6:13,13			

rejection 138:4	106:10 126:19	retiring 121:2	risks 40:3	saw 13:7 54:18
related 42:15	reports 3:7,8 15:1	return 54:8 55:6	RMD 61:2	56:19 59:4 105:21
relationship 17:14	18:10 27:5 35:4	126:8	road 115:1	113:19
128:3	101:18 105:10	reuse 51:11	Robert 2:5,14 5:1	saying 49:4 51:4
relatively 24:20	106:16 131:20,22	revenue 43:3,7,10	robust 85:14	68:9 77:15 90:20
36:18 66:9 74:20	represent 37:8	45:10 47:19 48:4	101:13	116:19 119:4
release 90:3	108:17	48:16 49:14 50:9	role 4:13 33:5 67:1	120:4 142:1,7
released 7:16 138:7	representation	69:14 81:9,10	85:21 99:16	says 22:18 25:12
relevant 36:7 43:20	108:15 109:2	review 10:18 15:2	rolling 10:19 96:13	27:4 38:7
63:9 98:3 138:1	reprogramming	19:20 86:13 121:3	room 1:12 4:12	scale 30:10,19
138:18	48:20 49:4	reviewing 108:4	29:5 77:17 97:1	scary 118:22
relocate 40:18 41:1	request 136:5	revised 81:18 83:11	98:13 128:10	schedule 3:21 82:9
relocation 11:5,9	137:12,22 139:1	revisions 19:15	129:10	105:8 113:5
12:8 17:7 30:13	requested 132:20	84:10	rooms 113:6	144:16
31:2 40:11,15,20	requesting 139:3	revolving 40:21	Rosston 2:19 4:21	scheduled 133:4
43:6 58:8	requests 135:15,19	rewritten 38:19	4:21 98:15 110:12	schedules 11:8
remain 56:13	require 13:9 33:2	re-charter 7:12	125:14	144:8
remarks 3:3 7:13	required 62:4	re-circulate 92:7	rough 82:6	scheduling 116:11
Remember 125:5	135:6 136:12	92:13	roughly 74:22	143:1 144:18
remote 52:7,9	requirement 14:14	re-engage 81:16	round 32:17	School 1:24
renewal 7:6 119:16	124:10 140:5	re-reading 27:20	routinely 33:3	SCIC 6:1
119:22 120:4,17	requirements	RFP 39:9	rule 11:5 38:1	Science 69:1
121:3	39:10 140:10	rhetoric 135:1,22	110:18	Sciences 2:25
renewed 119:15	requires 65:18	RICHARD 2:17	rules 16:15	scientific 89:8
renown 55:22	135:8	Rick 4:19 50:16	run 99:16	scope 41:22 42:9
reopen 34:7,7	requiring 137:6	66:10 68:3,17	runaround 42:13	screws 39:15
reorganization	research 2:20 41:5	121:14	R&D 49:21 50:17	SEALMME 76:16
48:13	41:5 42:2 47:22	Rick's 104:4 116:5	61:17	seat 143:17
repeatedly 132:20	reservations 81:8	rid 126:6	R1 51:7	seated 95:22
replace 39:1	reserve 102:3	right 31:14,16 32:3		second 28:21 38:3
replanning 17:19	resolution 57:13	33:7 35:13 36:3,7	S	56:8 64:12 90:9
replenish 43:3	139:2,7 141:9	36:10 38:6 39:1	S 97:5	95:5 96:9 106:7
replenishing 43:10	resolve 14:6 99:13	42:2 46:8 59:16	safety 26:7 59:1,4,9	122:1 134:6,15
replenishment	resolving 107:10	66:16 72:3 85:13	62:7 69:19	secondary 44:1
49:21	resource 38:9	90:21 94:4,5	Salemme 2:21 3:10	119:20
report 7:17 18:10	114:5 127:14	104:19,20 106:14	5:6,6 85:15 89:21	Seconded 34:18
18:14 19:13 27:4	140:21	107:20 117:13	90:8 91:9,21 92:8	secretary 6:20 9:10
27:19 28:8 34:14	resources 41:4	122:10 124:6	92:21 107:12,18	13:5 128:13
34:22 35:13,19	respect 104:13	126:10 129:5	107:21 111:6,14	section 38:19,20
37:15,20 44:21	respond 34:1 75:10	141:9	116:5,10 123:6,17	45:16 74:20
45:9,17 54:13,17	134:20 142:1,2	rights 26:10 32:21	Santa 112:5	sections 72:5
54:18,21 56:9	respondents 39:10	32:21 67:8 99:16	satellite 13:11 57:3	sector 33:11 128:22
58:17 59:6 60:5	response 25:2	103:5 107:8	satellites 10:8	129:19
71:7,21 78:3,7	142:13	118:19,20	15:20,20 17:17,21	security 9:12 22:14
81:19 84:13 89:19	Rest 144:17	right-hand 4:14	save 7:13 94:11	23:1,18 56:15
89:20 93:9,14	results 124:4	ripe 46:12	savings 28:22	57:20
101:19 102:6	retain 61:3	risk 68:9	49:10,15,18	see 15:3 20:12 22:8

26:14 29:6,8 35:10 41:12,19 53:17 54:16 57:1 58:7,21 61:13 63:17 67:19 69:20 72:2 74:9 76:18 77:19 79:17 82:17 95:4 105:10 111:4 118:21 119:21 133:3 134:14 143:20 seeing 110:20 seek 12:16 seeking 31:1 seen 14:9 58:12 127:3 132:5 143:11 selected 39:6 selection 96:16 self-financing 44:6 selling 69:7 Senator 41:13 send 64:10,11 77:16 82:7,12 93:7 101:4 102:11 108:6 111:17 120:6 126:3,6 Senior 2:6,8,14,15 sense 29:15,22 30:22 36:14 50:9 61:5 67:17 82:10 83:19 96:14 106:5 sensing 10:8 22:5 52:7,10 sensitive 23:20 sent 19:14 83:22 separate 37:10 81:4 series 135:15 serious 65:18 136:4 seriously 60:14 serve 19:20 138:19 139:14 Service 5:19 services 8:22 9:2,4 9:5,6 21:7 25:17 32:10 59:1 64:18	servicing 62:5 138:20 session 80:6 96:4 130:18 set 19:8 51:13 60:15 70:11 78:9 83:10 106:1,7 109:7,9 122:13 sets 108:21 109:2 setting 87:20 102:5 103:18 115:10 settle 108:2 shape 114:7,22 share 9:2 29:10 39:12 40:4 51:16 shared 2:10 4:16 8:22 41:2 sharing 9:18 11:12 11:14 12:17,19 13:14 18:12 21:3 33:1 87:6,19 90:18,22 93:8,14 99:8,11 110:8 129:18 shelve 93:13 shepard 44:15 Sherry 86:14 shifting 27:9 shoot 144:14 short 69:10 115:7 144:2 shorter 93:4 shortly 15:3 shortness 93:11 si 144:22 side 4:14 24:8 33:11 37:15,16 112:10,11 114:14 118:4 sides 114:18 sign 58:15 signal 16:1 signals 51:13 significance 21:21 significant 12:8 14:20 16:9 17:12 33:18 131:1	signing 56:6 siload 105:20 similar 40:12 simple 34:8 36:18 136:1 simply 78:18 120:4 single 84:13 sit 65:8 114:4 site 118:3 sites 69:8 119:19 situation 28:10 139:6 six 27:22 105:9 sixth 4:5 skeptical 37:12 skill 108:21 109:2,7 109:9 skills 138:18 small 134:13 smaller 103:18,22 smart 104:10 Snider 130:14,14 Snider's 131:6 134:18 Snowe's 41:13 Software 47:10 sold 58:8,9 solicit 100:10 solution 28:16 39:7 solutions 62:4 somebody 33:8 89:6,6 97:6,8 110:15 114:14,19 124:14 138:16 140:10 someway 28:18 somewhat 71:16 106:12 soon 83:7 sooner 53:6 sophistication 141:5 sorry 77:5,11 108:7 111:5 117:22 143:2 sort 12:16 20:5,11 26:6,20 27:8 28:4	28:4,6,22 29:7,16 31:15,22 33:7,13 34:5 37:16 39:17 50:2 54:13,17 60:1 65:3 73:11 73:12,19 90:17 91:4 102:20 103:3 110:3,17 112:19 112:19 113:8 114:3,4,22 117:7 119:21 121:10 122:9 125:8,8 130:8 sorts 117:4 sound 94:4 sounds 99:22 source 43:3 sources 47:18 130:5 space 2:18 56:14 86:2 114:18 speak 15:21 SPEAKER 53:10 78:2 special 80:6 118:13 139:9 specific 20:16 39:2 91:7 97:12,12,13 97:13,17 98:11 100:22 103:2,8 104:2,4 133:15 specifically 11:20 16:7 134:17 specification 38:12 specificity 102:22 specifics 22:7 108:9 specify 12:11 43:8 spectrum 1:4 2:10 2:17 4:6,16 8:3,13 8:15 9:3,16,20 10:14 11:1,12 12:4,13 16:10 18:14 22:4,5 23:15 24:4 28:12 28:20 31:16 32:3 32:11 33:16 35:11 36:9,15 37:5,11	37:17 38:7,15,20 39:6,11,12,22 40:1,10,11,15,20 41:10,20 42:15 43:1,2,5,15,15,17 43:22 46:5,10 47:12 48:3,7 51:10,12,18 52:5 52:15,16 53:15,16 54:7,19 56:12 58:5,8 59:2,14,18 59:21 61:4,7,14 61:16 62:3,4,9,20 64:8 65:19 66:22 67:16 81:7 85:16 86:13 87:9 88:20 89:1,2,4,6 91:13 102:18 107:7 114:1 115:2 116:18 122:14 128:2 129:18,19 129:20,20 139:14 141:1 143:12 speculation 62:17 speed 52:19 spend 7:9 79:5 115:11,11 128:8 spent 78:15 115:21 spin 103:2 spirit 135:9 141:13 143:6 split 65:9 75:2 spoke 118:8 spoken 128:14 spot 142:2 spring 96:6 staff 9:12 101:3,7 105:2,6,6 128:7 stage 78:9 stand 72:16 standard 72:1 95:2 134:22 135:5 standing 75:19 standpoint 23:2 91:22 stands 16:22 56:12 72:2
---	---	--	---	--

Stanford 2:19,20 4:22 125:15	105:1,14 106:20 107:2,11,14,19	141:17	surprising 36:4	talking 29:7 53:7 53:13 56:20 67:21 74:19 90:13 102:17 110:9 118:18 123:11
start 4:14 16:14 18:12 67:21 75:16 87:2 95:6,16 96:22 97:7 98:10 98:11 110:2,7 111:17 117:17 145:8	108:7,12,20 109:6 109:17 110:11 111:3,12,21 112:6 114:9 115:4,15 116:3,8,12 117:16 118:7 119:7 121:15,21 122:22 123:4,15,20 124:1 125:17	submitted 76:10 137:12	surveillance 13:17	taps 124:20
started 4:4 93:19 95:22 98:1	stricter 140:4	subsequent 71:8	Susan 1:23 5:12 45:4 46:2 68:4 105:2 121:15	targeted 42:6
starting 35:4 71:13	strictly 102:18	substance 37:18 94:21 107:6 109:20 110:13	suspect 79:8 128:15 140:8 145:9	targets 81:18
statement 136:8,21 137:12,21 138:1,7 138:11 139:2,8,12	strike 27:21	substantial 25:2 104:15 106:8	sympathize 82:13	task 97:14
statements 91:3 136:15 139:4	strikes 60:4	substantive 45:9	system 21:3,3 39:6 39:12 41:7 42:11 47:6 49:19 62:5 120:15	TBDD 17:2
STATES 1:1	strongly 37:19 39:19 62:22 103:17 105:19	substantively 106:18	systems 2:15,18 12:8 13:12,17,17 13:18 20:8 38:11 40:4,16,17,22 52:9 58:11 59:19 121:1	tech 118:16
stations 17:2	structure 97:18 102:21	sub-parts 129:6		technical 55:14 88:1 140:22
status 3:7 93:12	structured 100:4	success 133:5	T	technique 12:22
steering 9:8	structures 76:9	successful 139:9	T 6:13	techniques 13:3 21:16 22:5
Stenowitz 114:15	struggling 85:9	suddenly 32:10 129:12	table 3:1 8:12 9:22 11:18 15:5 73:21 75:13 93:1 94:15 143:17	technological 86:11 91:11 141:4
step 99:17 119:16	studies 2:10 42:2 143:6	Sufficed 20:1	tack 64:13	technologies 2:13 4:18 9:18 25:17 49:13,22 52:11 53:5 86:15 87:4 87:10,12 88:2,8 89:2,9 90:22 110:4
stepped 32:6	study 42:7	sufficient 10:3 19:6 27:3	tackled 67:4	technology 2:7,9,14 2:22 47:21 49:20 87:6,16 88:17,21 90:13,14,18 117:14 120:5
steps 11:4,7	stuff 97:19	suggest 12:20 34:7 38:13	tackling 35:8	tee 74:11 99:4,11 112:16,20
stimulate 32:9	stumbling 45:6	suggested 16:10 42:16 102:5 124:14	tactical 13:18	teleconference 1:19 1:19,23 2:1,3,8,12 2:17 79:22
stimulating 64:18 85:20	subcommittee 3:7 18:10,14 19:15,17 35:5 36:12 37:14 37:22 45:11,17 50:3 54:3 55:5 60:4,11 62:1,22 75:13 76:10 78:13 85:16 86:1,6 93:9 93:14,20 100:2 106:3,4,16 107:3 125:2 140:6	suggestion 20:21 24:3 97:6 100:13	take 4:13 30:7 32:11 45:22 48:7 60:3 64:15 73:5 82:2 86:3,14 87:1 94:1,18 95:16 99:12,17 111:1 125:20 126:7 129:9 143:18	Television 5:19
stood 55:13	subcommittees 63:15 105:20 111:7 140:1	suggestions 13:15 19:4 39:19 103:13 121:19 125:21	taken 30:5 110:10 119:16	tell 72:16 120:19 133:7
stop 27:14 91:19 95:9 97:5 107:15 107:16	summary 20:12	summarize 78:6	talk 7:4 28:8 68:20 100:15 102:10 114:13 118:2,12 122:13	ten 8:14 11:2 14:22 28:12,19 29:14 31:22 94:1 115:7 117:3 120:7
Strategic 2:9	Sunlight 128:16	summary 20:12	talked 58:5 69:6,13 84:12 110:14 113:4	tend 127:15
strategically 113:22	super 85:6 138:5	super 85:6 138:5		tentative 144:12
strategist 109:16	supervising 136:17	supervising 136:17		Tentatively 96:14
strategy 2:21 77:15 109:14,15 114:17	support 58:7 63:12 63:13 105:6 140:20	support 58:7 63:12 63:13 105:6 140:20		ten-year 11:11
streamline 26:16	supported 36:17	supported 36:17		term 14:4 122:21
strengthen 38:5	suppose 8:15 136:17	suppose 8:15 136:17		
Strickling 3:4 5:7,7 6:20,22 13:5 94:6 94:10 96:1 98:8 98:18 99:19 100:12,20 101:6 102:1,9,19 103:10 103:14 104:6	subdivided 9:14	sure 14:16 35:17 45:7 50:14 51:3 53:22 58:3 63:4 77:20 87:18 107:1 109:4 114:17 116:15 133:20		
	subject 22:14 37:21 140:4,9,14 145:7			
	submit 119:14 136:7 137:8			

terms 11:5 15:12 22:5 24:7,9 25:21 33:18 36:13 37:19 43:12 48:3,5 49:6 52:6,17 64:17 71:2 81:18 82:19 94:12,21 96:10,15 100:2 109:6 122:1 122:11 139:22 142:4 144:6	115:12 116:20 119:5 124:8 134:1 139:19 140:6 things 19:4 24:9 25:1,2,20,22 30:14 33:14 42:14 46:18 47:11,13 48:19 49:5 51:6 51:15,17 53:2 66:2 68:21 69:5,6 69:17 74:12 81:15 84:11 95:3 97:12 97:12,14 98:2 104:11,12,12,21 106:5 110:20 111:1,2 112:17 114:14 115:16 116:1 119:13,21 120:22 122:10,17 123:10 124:22 125:4 127:4 128:1 129:4,18 130:1 131:5 134:10,11 136:1 137:7,7 141:2,19	66:15,20 67:3,5 67:11,19,20 68:11 69:9,14 70:1,8 71:1,5,11 72:20 73:6,22 74:3,9,12 75:3,5,12 76:17 76:20 77:9,9,12 77:14 78:5,16,17 78:20,22 79:14 80:12,13,14 81:14 81:22 82:9 84:5 84:15,19,20 85:22 86:7,19,22 87:7 87:10 88:2,9 89:17,20,22 90:9 90:15,16 91:21 94:12 96:20,22 97:9,11,20 98:5 98:22 100:18 101:12,15 102:20 102:22 103:19,21 104:3 105:12,18 105:19 106:13 107:6,15,22 108:16 109:20,22 110:9,14,16 111:6 111:8,14,18 112:18,21,21 115:6,19,22 117:21 118:5 119:1,4 121:9,19 121:22 122:7 123:2,6,10 124:6 124:9 125:12,18 125:21 126:1 127:19 129:7 130:12 133:22 138:13 140:18 141:5,6,20	26:12 31:13 41:22 64:4 65:18 86:17 100:7 101:4 102:8 thoughts 64:3 70:17 82:13 114:8 121:18 126:3 threat 56:18 three 9:15 12:9,20 13:4 36:5,6,13 37:13 48:14 63:17 70:18 94:20 95:10 97:2 120:8,16 121:8 125:4 three-month 12:14 throw 13:22 77:16 throwing 26:3,8 46:20 thrown 61:9 thumb 30:10,19 tie 24:16 143:12 tied 14:11,11 106:21 114:12 ties 32:22 tighter 39:16 time 7:7,14 8:12 9:22 11:18 12:5 12:17 14:2,6 15:3 19:3 23:4,12 24:11,17 35:19 36:20 44:14 51:7 51:9 54:2 57:18 60:14,15 69:22 71:16 73:15 79:1 79:1,6 80:13 81:13 82:4 87:12 92:6 93:4,11 94:11 95:13 96:21 106:1,7,8,13 107:21 108:3,10 109:13 115:21 116:6 117:21 121:6 122:5,13 123:7 124:3,4 128:8 132:5 133:2 142:9,13 143:19 143:20 144:11 145:8	timely 141:15 times 78:14 85:19 124:12 134:4 timing 78:13 88:7 91:22 tiny 69:14,15 today 4:7 7:3,10 15:6,6 33:19 34:11 77:3,5,6,13 94:13 102:11 115:12 126:14 131:20 132:17 136:6 today's 66:5 told 72:13 88:5 133:18 134:5 tool 17:3 55:10 56:7 57:6 toolbox 22:3 tools 21:16 top 14:9,17 15:18 36:3 48:5 56:11 114:19 topic 32:16 55:6 71:3 75:8 94:16 99:8,11 115:8 topics 98:9 99:5 total 10:13 totally 95:2 touch 54:1 touches 89:19 tough 32:13 99:12 town 64:6 track 11:19 12:6 26:12,13 53:9 104:19 trade 55:22 tradeoffs 24:5 142:4 tradition 4:9,11 traditional 27:8 60:19 67:16 training 140:17,20 Tramont 1:14,17 3:4 7:22 15:9 17:4 18:7 24:19 25:4 33:20 34:12
---	--	--	--	--

34:19,21 35:3 44:11 45:21 53:20 55:1 58:18 61:18 63:22 65:11 66:5 68:3,17 70:4,16 73:6 74:17 76:15 76:22 77:4,11,20 78:1,4 79:8,21 82:4 83:4,6 84:1,4 84:8,20 89:10,17 91:17 92:3,10 93:2 94:8 95:21 101:10 109:12 113:16 116:14 126:10 130:11 142:9,19 143:21 144:22 145:6 transcript 19:2,11 22:9 transfer 62:16 transition 12:12 13:22 40:13 transitional 13:14 transitions 45:8 transmit 16:2 transparency 22:21 23:13 39:16 126:18,19 127:12 127:13 130:9,16 130:20 135:3,10 135:13 139:22 140:9,15 141:14 142:11,15 travel 124:18 tremendous 127:5 trial 77:16 tricky 36:22 tried 32:8 134:16 142:11 trivial 60:22 trouble 115:10 true 70:13 129:14 truly 65:15 try 31:6 64:9 71:20 78:16 80:16 83:14 85:9,11 88:12 91:7 95:14 98:8	121:4 127:2,4,12 129:2,3 133:17 142:14 144:16 trying 25:18 30:8 30:18 52:1,2 57:15 64:15 79:12 79:13 89:8 105:4 110:18,19 124:17 128:1,8,18 129:16 129:17 130:4 TT 78:2 turn 6:3,19 8:1 31:11 35:6 56:2 78:5 107:5 113:18 turned 129:13 turning 39:15 40:21 85:14 tweak 31:14 101:5 twice 112:3 two 15:1 18:11 19:14 26:2,7 35:3 38:5 41:18 72:20 73:10 75:20 83:17 91:2 96:2,19 106:13 115:12 120:16 121:19 122:20 125:13 131:19 type 30:22 72:11 119:20 137:8 138:8 139:6 141:16 types 33:6 typically 47:15 48:11 120:14 T-Mobile 2:16	101:1 118:22 125:6 142:6,18 understanding 19:10 105:11 understood 81:20 131:3 undertake 40:3 45:2 unilaterally 32:6 UNITED 1:1 units 16:6 University 1:16,23 2:20 UNKNOWN 53:10 78:2 unlicensed 9:1,4 35:6 43:21 85:16 85:21 86:10,22 90:20 91:13 114:19 131:21 unpacking 124:22 unprepared 98:17 98:19 unwanted 92:18 update 18:11,17 upgrade 40:4 upgraded 40:17 66:11 upgrades 41:7 42:11 58:10 upsets 95:8 upside 59:22 up-front 41:5 42:1 USA 2:17 usage 107:7 use 4:10 12:16 15:14 16:12 23:7 23:10,11 24:2 27:1,8 41:2 44:2,2 49:17 51:18,18 52:13 56:12 62:8 62:19 66:22 68:8 68:14 97:5 100:16 103:22 112:11 113:8 117:3 129:19 133:22 useful 43:20 45:15	68:19 73:2 112:18 125:18 usefulness 96:7 user 43:14 68:8 118:3 125:10,11 users 8:18 17:8 36:15 37:6 40:1,7 43:15 62:10,11 uses 132:7 usually 77:15 98:18 utilization 23:15 U.S 7:17 56:11,20 59:19 61:7 78:19 114:6,17	76:13 78:18 80:8 83:15 84:14,16 85:3 100:10 108:3 108:16 visionaries 104:9 visionary 86:8 voluntary 29:17,18 vote 44:17,20 74:15 75:3 76:18 77:3,8 77:8 106:9 124:6 voted 18:21 voting 77:4,6 79:19 108:8
				W
				wait 15:7 70:13 waiting 111:15 walk 24:14 83:9 want 7:1 23:9 24:14,16 27:12,17 32:9 33:12 35:17 47:7 52:9,22 53:21 55:5 58:20 59:10 65:6 66:1 66:13 70:19 73:4 73:5 74:17 75:7 76:17 78:11,16 81:6,12 86:20 88:14 89:12,13 93:16 94:11,19 95:4 96:20 97:7 97:14 99:7 102:7 103:5,7 112:22 116:13,22 118:21 126:4 129:11 130:17 135:22 138:9 139:22 140:7,12 143:18 143:19 wanted 21:12 34:6 36:2 46:8 52:19 53:4 55:3 61:22 75:9 125:3,15 126:15 134:19 wanting 130:8 wants 7:21 29:10 33:8 79:2 89:18

5th 144:12,14,21
50 7:10,20
50-50 65:9
500 8:12

6

6 3:4
6.25 53:3

8

8 1:9 3:5,6
85 3:10

9

9:30 145:8
90 120:9,10
96 3:12

C E R T I F I C A T E

This is to certify that the foregoing transcript

In the matter of: Commerce Spectrum Management
Advisory Committee

Before: US Department of Commerce

Date: 11/08/10

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.

Neal R Gross

Court Reporter

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701