

**Minutes of the  
U.S. Department of Commerce  
Commerce Spectrum Management Advisory Committee  
May 30, 2007**

***Meeting Date and Time:***

May 30, 2007, 2:00 p.m. to 3:45 p.m.

***Location:***

Herbert C. Hoover Department of Commerce Building  
1401 Constitution Ave. NW, Room 4830  
Washington, DC 20230

***Committee Members in Attendance:***

Dale N. Hatfield (Chair); Dr. David E. Borth; Martin Cooper; Mark E. Crosby; James B. Goldstein; Alexander H. Good; James Andrew Lewis; Dr. Mark A. McHenry; Darrin M. Mylet; Janice Obuchowski; Robert Pepper; R. Gerard Salemme; Bryan Tramont.

***NTIA Staff:***

John M.R. Kneuer, Assistant Secretary for Communications and Information  
Meredith Baker, Deputy Assistant Secretary and Designated Federal Officer  
Eric Stark, Associate Administrator for Policy Analysis and Development  
Joe Gattuso, Senior Policy Advisor  
(Additional NTIA staff also observed the meeting)

***Public Attendance:***

Approximately 25 members of the public and press were present at the meeting.

***Meeting Agenda:***

The meeting followed the issues presented in the meeting agenda (Attachment A)

*1. Call to Order and Welcoming Remarks:* Chairman Hatfield opened the meeting and gave welcoming remarks. Assistant Secretary (A/S) Kneuer expressed his appreciation to the committee members for their participation and work. Chairman Hatfield announced the attendance of a new member, Mr. John Hoadley, Wireless CTO at Nortel, who introduced himself to the committee.

Chairman Hatfield briefly summarized the committee's initial meeting before describing the tasks undertaken by each of the two subcommittees. He said the purpose of the present meeting is for the committee to consider the status reports from the subcommittees and to discuss the test bed initiative report. He introduced Mr. Bryan Tramont as chair of the subcommittee on technical efficiency and Mr. Jim Lewis as chair of the subcommittee on operational efficiency.

2. *Subcommittee Reports:*

a. *Subcommittee on Technical Sharing Efficiencies:* Mr. Tramont distributed copies of a draft report, which is the product of one of the five working groups under this subcommittee, Working Group 1. He said the other working groups will produce subsequent reports and explained how the current draft report fits into the larger work plan for the subcommittee. He stated the goal was to adopt the report that day if consensus emerged. He explained that comments received by the FCC and NTIA on the test bed concept, an outgrowth of the President's spectrum policy initiative, formed the basis for the subcommittee's initial assessment of the test bed ideas. He said two additional factors the subcommittee considered were the continued imperative for broadband deployment and the examination of new paradigms for spectrum sharing between public safety entities and commercial entities. He thinks both factors influence the subcommittee's approach to federal versus non-federal spectrum sharing described in the test bed proposal.

Mr. Tramont said that the subcommittee identified various permutations on the sharing paradigm, and explained the draft report recommendation that the test bed explore as many of these permutations as possible to maximize experience with and build policy around each method of sharing. He stated that based on the criteria set forward by NTIA, proposals in the public record, and the work in the subcommittee, adaptive radios and broadband were seen as the key technological drivers for possible test bed use. He stated the subcommittee felt that as many test beds as possible would maximize data and allow for a variety of conditions, allowing in turn for more informed government decisions regarding spectrum sharing prospects. He acknowledged resource constraints in having multiple test beds and conveyed the subcommittee idea to lessen the financial burden on the federal government by providing a vehicle for the commercial sector to fund all or a part of their own test bed experiments.

Mr. Tramont also conveyed the subcommittee conclusions that it would be best to maximize the number of serious test bed participants and diversify the frequencies and geographic areas used, including urban and rural environments, in order to maximize testing variables. He explained the subcommittee consensus that the initial test should be in an area with fewer incumbents in order to minimize interference and provide for control. He stated the goal as initially to target underutilized bands where sharing will increase efficiency, conveying support for testing below 1 GHz and above 4.9 GHz. He also conveyed subcommittee consensus on the sufficiency of a 90-day period for test bed duration, but noted the subcommittee felt the period should be extended by NTIA beyond the December 2008 schedule if at all possible to maximize data and allow for subsequent permutations of initial test bed results.

Regarding test bed requirements, Mr. Tramont explained that to provide essential incumbent interference protection, it is important to choose areas that are not congested, and that there be pre-field paper review, controlled lab measurements and testing and transparency measurements in the initial field test. Regarding status reports and peer review, Mr. Tramont explained the importance of test bed participants setting forth terms of the experiment clearly and publicly, in a transparent way to promote rigorous scientific dialogue and public assessment. He said the subcommittee further suggested monthly reports to NTIA during the test bed process, as well as a final public report.

Dr. McHenry questioned whether there is sufficient incentive for private parties to participate in the test bed, noting the expense of test participation. He raised the possibility that someone would request a pioneer preference and want to use the spectrum in the future, which would parallel the current experimental license process. He suggested offering some type of financial incentive. Mr. Tramont noted that the incentive for participation would also include the potential to have access to federal spectrum in the first instance followed by some commercial long-term interest.

Dr. McHenry mentioned participants would want an incentive to go first due to testing expense and risk of public failure, and Dr. Borth agreed. Dr. McHenry suggested some period of privacy to prepare.

Dr. Pepper indicated that there were other ways of providing financial incentives to make the substantial investment and mentioned the advantage of intellectual property rights.

A/S Kneuer pointed out that it would also be an opportunity for commercial entities to collaboratively work with a federal partner to demonstrate the applicability of the technology and then move forward with the federal partner as a client or customer while bringing a demonstrated, verifiable technology to the market in an accelerated time frame.

Dr. McHenry inquired about the advantage of the test bed versus a company's private test. A/S Kneuer responded that there is no substitute for being involved as a federal partner during the test and having access to the federal band in real world conditions.

Dr. Pepper pointed out the advantage of the test bed over an experimental license as the opportunity to push the edge and learn where the failure line is, and to therefore learn more than under the conservative interference-minded restrictions of an experimental license. Dr. McHenry said the opportunity to go to the failure line would be desirable.

Chairman Hatfield agreed and also pointed out, in agreement with Dr. Pepper, that the intellectual property rights obtained would provide an additional marketplace incentive.

Mr. Salemme added that the peer review and risks assumed are positive as they will draw attention to the work and noted the advantage of having those as a substitute for a pioneer

preference. Dr. McHenry indicated the intent is to open the band for similar service after successful testing.

A/S Kneuer said it would be helpful to think about legal implications and the equities that agencies may be willing put on the table, as well as to consider some rewards to balance some of the risks, acknowledging the need for incentives for commercial industry involvement. He said the subcommittee needs to think about appropriate incentives and resultant legal implications and concisely incorporate those into the report.

Mr. Tramont proposed the subcommittee draft text on incentives for NTIA to explore in its deliberations about the test bed and said the licensing regime issues are worth exploring. He also mentioned creating a competency test as a type of screen to determine seriousness of intent on the part of potential test bed participants.

Dr. McHenry elaborated that it would be more of a competency check, an inquiry into whether potential participants are careful and responsible and to get a pass or fail indication on each from ITS.

Chairman Hatfield indicated this would be like a pre-bidders' qualification, Dr. Pepper indicated there is a due diligence process precedent, and Mr. Tramont mentioned financial qualifications and bond requirements.

Chairman Hatfield inquired into the existence of language addressing such qualifications and Mr. Tramont replied that selection criteria in terms of seriousness were not articulated. Mr. Tramont suggested adding text to outline a measure of seriousness to be used by NTIA in selection criteria. Mr. Pepper mentioned the additional consideration of technical competence.

Mr. Tramont inquired about NTIA institutional precedent on this issue. A/S Kneuer responded that he did not know what NTIA would do in evaluating potential creative partners, but indicated the desire for a demonstration of value to the government.

Mr. Cooper mentioned the inclusiveness of the report and inquired about evaluation of practicality. Mr. Tramont said he thought NTIA's eight criteria could be used as a baseline to prioritize but indicated the difficulty of engineering criteria without yet knowing the availability of resources.

Dr. McHenry asked if the tests were to be unmonitored and indicated the limiting effect of monitoring.

Mr. Tramont expressed the consensus that additional discussion of technical rigor and seriousness screens are useful and to be added to the report.

Ms. Obuchowski expressed her support of a screen but also suggested imposing a timetable to prevent a long process of qualification. She also mentioned including an element of mentoring and an interim review or evaluation as an advantage to the test bed.

Mr. Tramont asked for additional comments, received no response, and indicated revisions would be circulated to reflect the discussed amendments to the draft report. He reiterated that there would be three subsequent working groups of the subcommittee and that subsequent reports would be devoted to efficiency.

Mr. Cooper reiterated his previous comment that there ought to be some criterion to reflect the practicality of accomplishing useful results within the specific lifetime of the administration. He also said he didn't understand the two selected areas of interest, broadband and adaptive radio, and suggested that the two technologies of dynamic spectrum access and multiple antennae signal processing are "the real hope of the future."

Regarding practicality and feasibility, Mr. Tramont indicated the criterion identified by NTIA of ready availability of the equipment for the proposed test bed contains inherent tensions between seeking tangible results in a limited time frame and the apparent contradiction of readily available yet innovative technology.

Mr. Cooper responded that for a new technology to become practical takes a long time and that while he believes the committee ought to be looking at new technologies, they ought to be expected to be practical within a specified number of years.

A/S Kneuer asked whether the goal is to shorten the time it takes for a new technology to become practical or if it is to make practical technologies viable, demonstrating to a broader class of people that it is practical and there are demonstrable benefits. He further inquired whether there is a relevant distinction between the two and, if so, should focus be on one rather than the other.

Mr. Tramont said the subcommittee struggled with deciding whether the goal is to push new technology or to prove that existing technology allows for sharing and that sharing itself is the new development. Chairman Hatfield point out that static sharing has been occurring and that the novelty is sharing on a more dynamic, minute-by-minute basis. Mr. Cooper affirmed that he suggests dynamic sharing.

Mr. Salemme commented that a 90-day test is sufficient in a location with few interference concerns, but that such an environment may not provide the full benefit of a test bed. He said subsequent testing beyond the 90 days is important to subject the best technology from the test bed to the pressure of a real RF environment. Chairman Hatfield indicated this point in the report could be reinforced. Mr. Tramont agreed. Dr. McHenry agreed that not as much would be learned if testing were limited to 90 days.

A/S Kneuer recounted the barriers of bringing the practical, demonstrated technology of 5 GHz in DFS to the commercial marketplace. He said federal users also want access to new capabilities, and that in thinking about a culling process a showing might be required that does not foreclose someone coming in with something new that can advance the state of the art.

Mr. Mylet asked if there is a procedure in place that is sufficiently transparent for people to identify opportunities for a test bed. Chairman Hatfield differentiated between an experimental license and the test bed which he described as more cooperative and sophisticated. He also expressed a need to clarify language in the draft report as did Mr. Tramont.

Mr. Tramont said the subcommittee would have drafts of the subsequent reports in 30 to 60 days and hoped to then have the first working group report finalized and released within 30 days.

*b. Subcommittee on Operational Sharing Efficiencies:* Mr. Lewis said the subcommittee analyzed four sharing programs. He said static sharing is common and listed metrics for possible use in sharing program analysis such as incentives, funding, user categories and number of users. He stated the importance of the issue of incumbents and noted the seeming unimportance of the urban versus rural geographic differences. Other suggested metrics included technology requirements, licensed versus unlicensed allocation issues, program duration and priorities, and dispute resolution mechanisms. He also said that like uses and users with similar missions made sharing easier. He mentioned public safety entities as potential participants because they have incentives to share and accept the idea of sharing due to a commitment to interoperability. They also have guidance from a number of agencies and funding that might not be available in other places.

Public safety worked through a number of issues and developed mechanisms for dispute resolution. He affirmed the need to reduce risk of interference to both incumbents and new users. He mentioned high transaction costs as another deterrent to sharing. He said broadband is most attractive due to new capabilities. He also mentioned a need for a standard protocol or a model of best practices.

Mr. Mylet noted the inclination against sharing in the spectrum marketplace, both public and private. He emphasized a need for transparency in spectrum use to facilitate the operational process of accessing spectrum. He said he would like to see the subcommittee create recommendations on improving such transparency. He said the dynamic access spectrum technology is one of the driving forces to creating utilization because it might allow operators to make the necessary investment.

Mr. Lewis asked A/S Kneuer and Chairman Hatfield what was needed in terms of subcommittee recommendations.

A/S Kneuer responded that he would not necessarily look at operational sharing as linked to the test bed. He asked the subcommittee to identify the transparencies that facilitated the sharing arrangement and to identify operational needs parties might value greater than what they would be asked to give up in exchange for access to spectrum to fill the operational need, as well as how individual transactions take place. He also asked that the subcommittee identify potential barriers to the transaction. He acknowledged that there are unique complications when the input is spectrum. He asked how parties could open

up the process and reduce the complications so that more parties can understand the value of these transactions and enter into them more freely.

Ms. Obuchowski emphasized the need for transparency and the general disinclination to share, pointing out the psychology involved. She also mentioned the role of leadership and responsibility in effecting change in the Alaska sharing experience.

A/S Kneuer said that rather than transactional arrangements or changing the environment, the focus should be on sharing as a principle for widespread adoption. He asked what tools are needed to identify opportunities for entities or licensees to leverage an existing resource in exchange for another resource to gain efficiencies.

Mr. Lewis said it might be useful to focus on facilitating entry into such arrangements and how regulators could use the regulatory process to lower risks and costs. Dr. Pepper said it is all about creating incentive structures.

To reinforce what Mr. Mylet said, Chairman Hatfield pointed out that identifying licensees in order to enter into an arrangement can be difficult as a first step in a transaction and drives up costs.

Mr. Hoadley stated that good data is necessary for good sharing arrangements and transactions and expressed an interest in creating metrics in terms of spectrum use within common use areas and showing users' utilization levels to facilitate sharing arrangements.

Mr. Lewis said he has learned there is a fear among some of the federal agencies about the consequences of sharing. Chairman Hatfield said economists in the private sector would attribute this to ambiguity in the property right. He added that if the property right were stronger concern about loss would be mitigated, but acknowledged disadvantages to making such a property right too strong.

Mr. Tramont emphasized the importance of standardization of the sharing arrangements to increase predictability and certainty as well as to reduce transaction costs. Mr. Lewis said he did not have a good way to determine the requisite level of certainty to make federal users sufficiently comfortable with sharing, but that a degree of certainty was necessary to encourage voluntary sharing.

Mr. Cooper suggested that any test not conducted under fully realistic conditions in a contentious environment would be worthless, adding that spectral efficiency had no meaning at all without loaded conditions and that the test bed will improve nothing if it is done in an area without need for sharing.

Mr. Lewis said the risk of testing in a mixed environment might be over-estimated and suggested considering how to design test duration and an ability to intervene, if necessary, to reduce risk. He pointed out the efficacy of heavily used, high-trafficked programs to reinforce this point.

Dr. McHenry stated there would be a lack of control in initial testing in a complex environment. Chairman Hatfield said this goes back to the necessity for proper instrumentation to identify the source of interference. He asked if there were other comments and received no response.

Dr. Pepper said a government advantage in terms of transparencies and efficient information measurement is the existence of databases of government spectrum users. Mr. Mylet said the FCC has not had any access to such records and that he thinks it is classified to some degree. He said the subcommittee has been focused only on FCC, FAA, third party and their own records.

Dr. Pepper stated that knowing who a potential non-government participant's government partner would be is a critical piece of information and that thought needs to be given to what information on government partners can be made available to potential sharing arrangement participants.

Chairman Hatfield asked if there was any further discussion and received no response before asking A/S Kneuer to comment.

The conversation then shifted to scheduling. Mr. Lewis said that they would want to split the tasks into two or three parts, and work back from the date of the next meeting. A/S Kneuer said reasonable periodic deadlines maintain focus and productivity and said that once a quarter would set the next committee for September. He encouraged members to remain open to the concept that the committee does not need to be a Washington, D.C. operation.

*3. Discussion led by Assistant Secretary John Kneuer on Spectrum Valuation:* A/S Kneuer then addressed OMB Circular A-11, which gives guidance to federal agencies in submitting their budgets, highlighting a new requirement in Section 33.4 that a federal agency making a budget request for a spectrum-dependent system must demonstrate they have taken into account the value of the spectrum, evaluated the cost of gaining spectral efficiency, examined less spectrum-dependent alternatives, and demonstrated their decision-making. A/S Kneuer asked for future thoughts from the committee on how to best make an assessment of whether to enter into a sharing arrangement, how a commercial industry makes such an assessment in purchasing, deployment and system architecture decisions, and how the value of spectrum is weighed in those kinds of decisions. He said that analyzing how this sort of decision is made in the commercial world could provide guidance to the federal agencies in balancing such choices and demonstrating that the balance has been made effectively.

Mr. Lewis said there are models for doing that and asked if there were people in the committee who would be willing to discuss them. A/S Kneuer expressed interest in whether a member or members of the group would be willing to give a brief presentation on the matter at the next meeting.

Mr. Mylet asked if A/S Kneuer was seeking comparables or recent transactions from lower to higher bands, to which A/S Kneuer agreed and said that an agency should consider the economic value of the spectrum when using the major spectrum-dependent systems in their economic justification for a budget request, and that such an analysis is conducted frequently in the commercial realm. He asked how federal agencies can best learn to conduct such an analysis and what choices should be considered in doing so.

Mr. Tramont asked A/S Kneuer if models existed. A/S Kneuer responded that a model had been submitted, task groups had been conducted, and the Defense Department has been working on a spectrum scorecard.

Mr. Crosby said that type of information may be available from enterprises that go through such a process. In support, Mr. Pepper said that government use is more analogous to enterprise users than spectrum use by service providers.

Chairman Hatfield supported A/S Kneuer's idea of setting up a presentation on the matter. Mr. Pepper suggested such a presentation might not need to wait for the quarterly meeting, but A/S Kneuer said he believed all formal input should be done at the public meeting. Chairman Hatfield agreed that working group levels could have discussions with companies in such a manner but that results should be brought to the group.

Chairman Hatfield then opened up the meeting to public comment.

*4. Public Comments:* Mr. Frank Lopez, President and CEO of the United States Hispanic Chamber of Commerce Foundation, Mr. Lopez, spoke about comments his organization submitted by e-mail earlier in the afternoon, regarding changes in the Designated Entities program established by Congress. He asked permission to submit more detailed comments.

Chairman Hatfield thanked Mr. Lopez for his input and said he would like to look over the email submitted by Mr. Lopez more closely, but expressed concern that Mr. Lopez's comments do not fall within the scope of the work of the advisory committee. A/S Kneuer also thanked Mr. Lopez for his input and invited him to schedule an appointment with NTIA. A/S Kneuer said Mr. Lopez's concerns might not be relevant to the technical issues discussed in the advisory committee

Chairman Hatfield asked if there were further comments from the public and received no response.

Mr. Cooper commented on spectral efficiency and mentioned progress in commercial systems that use spectrum more effectively than existing technologies, stating that if those kinds of systems were deployed widely the committee would have no function. He expressed concern about deploying more spectrum "to people who plan to use it in the old way and not use this new available known technology."

A/S Kneuer asked Mr. Cooper why he believed this, to which Mr. Cooper replied that it is being bought at auction by people who have not represented how they are going to use the spectrum. Mr. Cooper stated that these people are relieved of the pressure of adopting new technologies in a timely way.

A/S Kneuer said that Mr. Cooper is presuming the outcome of an auction that is yet to be scheduled or held and pointed out that the existence of such new technologies would create market pressure on incumbents for a wiser, better use of spectrum as well as an economic justification for such a user to bid more. Mr. Cooper said that the reality turns out otherwise.

Chairman Hatfield said that the commercial solutions don't necessarily carry over entirely to federal government requirements in certain usage areas such as radar.

Chairman Hatfield asked for further comments and received none. He thanked everybody before asking A/S Kneuer for closing comments.

*5. Closing Remarks and Adjournment:* A/S Kneuer stated that the value of today's meeting far outweighed the administrative burdens. He expressed appreciation for members' participation in the committee.

Chairman Hatfield concluded the meeting at 3:45 p.m.

Respectfully submitted,

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Meredith Baker  
Designated Federal Officer

Date:

I hereby certify that these minutes of the May 30, 2007 Commerce Spectrum Management Advisory Committee are true and correct to the best of my knowledge.

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Dale N. Hatfield  
Chair

Date: