



PUBLIC NOTICE

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FEDERAL COMMUNICATIONS COMMISSION SEEKS PUBLIC COMMENT ON CREATION OF A SPECTRUM SHARING INNOVATION TEST-BED

ET Docket No. 06-89

Comment Date: July 10, 2006

Reply Comment Date: July 24, 2006

Demand for spectrum by federal and non-federal users has been increasing and this trend is expected to continue as new and enhanced services and applications and new requirements are identified and developed. Recognizing this trend, the Commission and the National Telecommunications and Information Administration (“NTIA”)¹ seek to evaluate innovative methods for spectrum sharing among disparate users to enable more intensive use of the finite radio spectrum. One way of accomplishing this task is to set up a test-bed where both federal and non-federal users could undertake one or more studies and experiments to test these ideas. This Public Notice seeks comment on a wide range of issues that are integral to the creation of such a test-bed, which will be called the Spectrum Sharing Innovation Test-Bed (“Test Bed”). NTIA is also soliciting comment on many of these same issues through a Notice of Inquiry.²

By way of background, on May 29, 2003, the President established the “Spectrum Policy Initiative” by issuing an Executive Memorandum to initiate an examination of the existing legal and policy framework for spectrum management in order to better optimize the use of U.S. spectrum assets for federal and non-federal users.³ The Commission was encouraged to participate in this review and to provide input to the NTIA on these issues.

¹ The NTIA serves as the President’s principal adviser on telecommunication and information policies and as manager of the federal government’s use of the radio spectrum. 47 U.S.C. § 902(b)(2).

² NTIA is also soliciting comments on many of these same issues through a Notice of Inquiry, President’s Spectrum Policy Initiative – Spectrum Sharing Innovation Test Bed, released June 8, 2006.

³ *Presidential Memorandum on Spectrum Policy for the 21st Century*, 69 Fed. Reg. 1568 (January 6, 2004).

In June 2004, the U.S. Department of Commerce issued two reports with policy recommendations for improving spectrum management. One report addressed federal spectrum use and the other addressed commercial and state and local public safety spectrum use.⁴ Both reports included a recommendation that the Commission and the NTIA develop a Spectrum Sharing Innovation Test-Bed for use in planning how spectrum can best be shared between federal and non-federal users. Specifically, the test-bed recommendation states:

Within two years of this report's publication, NTIA and the FCC should establish a pilot program to allow for increased sharing between federal and non-federal users. NTIA and the FCC should each identify a segment of spectrum of equal bandwidth within their respective jurisdiction for this program. Each segment should be approximately 10 MHz for assignment on a shared basis for federal and non-federal use. The spectrum to be identified for this pilot program could come from bands currently allocated on either an exclusive or shared basis. Two years after the inception of the pilot program, NTIA and the FCC should provide reports outlining the results and suggesting appropriate procedures for expanding the program as appropriate.

To assist the Commission in developing its recommendations on this issue, we are requesting that interested parties submit comments and information on a Test-Bed program to study the feasibility of increasing the efficient use of spectrum that is shared between federal and non-federal users. To provide guidance to the public, we are including, as part of this public notice, specific questions/issues relating to the Test-Bed pilot program. These questions/issues are intended to promote discussion and comment across a range of issues and are not intended, in any way, to limit the scope of the comments filed in response to this Public Notice. In this regard, parties are encouraged to file comments on related issues even if they do not respond directly to any particular question posed.

To ensure that the results of experiments using the Test-Bed are informative for evaluating possible federal and non-federal sharing opportunities, we believe that the goal(s) of the Test-Bed must first be defined (*i.e.*, description of the issues to be studied) and then appropriate spectrum can be identified. For convenience, we have divided the questions/issues into three categories: A) Goal and Scope of the Test-Bed program; B) Logistics to create and implement the Test-Bed program; and C) Conclusion and evaluation of the Test-Bed program. In providing answers to the questions below, we ask that commenters provide details regarding specific experiments for the Test-Bed.

A: Goal and Scope of the Test-Bed Program

To define the Test-Bed program more precisely so that it can provide the greatest benefit for all spectrum users (federal and non-federal), we seek comment on the following questions:

⁴ *Spectrum Policy for the 21st Century – The President's Spectrum Policy Initiative: Report 1 Recommendations of the Federal Government Spectrum Task Force (Recommendation 11)* and *Spectrum Policy for the 21st Century – The President's Spectrum Policy Initiative: Report 2 Recommendations From State and Local Governments and Private Sector Responders (Recommendation 6(b))*, NTIA, U.S. Department of Commerce (June 2004), available at <http://www.ntia.doc.gov/reports.html/>

1. The Test-Bed could be used to effectuate many goals, including testing dynamic spectrum access techniques, developing new technologies for public safety, and streamlining spectrum coordination processes between federal and non-federal users. We seek comment on these goals, as well as other goals that commenters believe will satisfy the purpose of the spectrum sharing innovation Test-Bed.
 - a. In satisfying the identified goals, are there particular technologies or areas of interest about which the Test-Bed should focus (*e.g.*, cognitive radios, smart antennas, determining different ways to measure spectrum efficiency, determining ways of increasing spectrum efficiency, determining how technology could be used more efficiently)?
 - b. What challenges are spectrum users facing that the Test-Bed can be used to resolve? What type of information should we expect the Test-Bed to produce? What type of issues should we expect the Test-Bed to resolve?
2. Should the Test-Bed encompass a single experiment or should multiple experiments be undertaken at any given time? If the latter, should there be different requirements (whether technical or legal) applied to the various experiments? If so, what should the requirements be and what are the justifications for the differing requirements?

B: Logistics to Create and Implement the Test-Bed Program

3. What criteria should be used in identifying candidate frequency band(s) for the Test-Bed program? What relationship should the frequency bands have to the goal(s) identified for the Test-Bed?
4. As stated in the recommendation, a minimum of 20 MHz (10 MHz identified by NTIA and 10 MHz identified by the Commission) is suggested for the Test-Bed program. How much spectrum should the Commission consider identifying for the Test-Bed program?
 - a. What particular portion(s) of spectrum should be identified for this purpose? Commenters should explain how the identified spectrum will facilitate satisfying the identified goals.
 - b. Based on the goal(s) identified and/or the specific experiments proposed, commenters should specify whether the Test-Bed requires contiguous or non-contiguous spectrum. For experiments requiring non-contiguous spectrum, commenters should specify the required spectrum block size and frequency separation needed (*i.e.*, tradeoffs between frequency-division multiplexing needs v. time-division multiplexing needs).

- c. Should the Commission focus on identifying non-federal exclusive or federal/non-federal shared spectrum?
 - d. How should the particular spectrum bands identified for Test-Bed use be determined? Should the bands be selected by the Commission or are there marketplace mechanisms that can be used?
5. One of the tools the Commission has at its disposal is the experimental licensing program which allows licensees to use spectrum on a non-interference basis to experiment with new technologies and innovations. Under the experimental licensing program, users may identify any spectrum of interest for experimentation and are generally authorized for up to two years with the possibility of renewal. Should users be authorized for use of the Test-Bed through use of the experimental licensing program? Alternatively, the Commission could conduct a rulemaking proceeding to specifically authorize various uses and frequency bands. We request that commenters provide details regarding which method is most advantageous for meeting the goal(s) of the program. In providing information regarding this question, commenters should keep in mind the following:
- a. Experimental licensing rules and procedures are already contained in Part 5 of the Commission's rules. Thus, these procedures could be used without further action by the Commission.
 - b. Experimental licensing is flexible (*i.e.*, under experimental licenses, licensees have no rights to use the spectrum exclusively, may not cause harmful interference to any user and are not protected from harmful interference caused by other spectrum users).
 - c. A rulemaking proceeding may need to specifically identify potential modifications to the table of spectrum allocations, usage restrictions, and licensee rights for both the Test-Bed user and any incumbent licensees. Commenters who advocate such an approach should provide details regarding spectrum bands, proposed usage, how users should be authorized for use of the Test-Bed (*e.g.*, obtain a license through one of the Commission's licensing systems), and user status (*i.e.*, primary, secondary, non-interference basis) and the relationship of the Test-Bed user to incumbents.
6. Options exist for implementation of the Test-Bed with respect to a specific geographic area. Commenters should provide details regarding the necessity for experimentation to occur over large or small areas. Similarly, commenters should provide details regarding whether experiments can be limited to rural areas or areas where there are relatively few incumbent users. One advantage to such an approach is that the risk of causing harmful interference to an incumbent user is

reduced. We seek comment on whether such a restriction should exist and on other methods of ensuring that incumbent users are protected from interference.

7. What information should be provided to the Commission prior to initiating use of the Test-Bed? For example, should the Commission require submission of pre-experiment assumptions, analysis (modeling and simulation), and pre-experiment predictions?
8. If there are competing proposals for use of the Test-Bed, what criteria should be used to select candidates? Should multiple candidates be selected? If so, what procedures are needed for these candidates to coordinate with each other?
9. Are special procedures necessary for non-federal users of the Test-Bed to coordinate usage with federal users of the Test-Bed?
10. What other issues or factors should be considered with respect to creation of a Test-Bed?
11. Should Commission personnel (along with personnel whom NTIA may assign) be appointed as overseers to gauge the progress of the program? Is a more or less active role by the FCC desired?
12. What resources, if any, including equipment to be evaluated in the Test-Bed, funding, personnel, or facilities could parties provide for the Test-Bed program? Would use of private resources potentially create conflicts of interest among Test-Bed users?
13. To promote participation by interested parties, should the creation and use of any incentives be considered? What incentives, if any, could be considered and by whom should they be created and offered?
14. Should use of proprietary technologies or information be permitted in the Test-Bed? If so, how should release of data based on their use be handled?

C: Conclusion and Evaluation of the Test-Bed Program

15. What metrics should be used in evaluating the results/accomplishments of the Test-Bed program?
16. If the program meets the performance metrics, should it be expanded to other frequency bands, and/or other locations? Why or why not?
17. What expectations should be placed on equipment and techniques developed during the experiment(s)? For example, should there be an expectation that a

successful experiment would translate into permanent usage or at the minimum a rulemaking proceeding by the Commission to explore rule changes consistent with the experiment results?

18. At the conclusion of any experiment, should users be required to submit a report detailing the experiment – goal, assumptions, methodology, and results?

Comment Filing Procedures. Interested parties may file comments no later than **July 10, 2006**. Reply comments are due not later than **July 24, 2006**. All filings should refer to **ET Docket No. 06-89**. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS) or the Federal Government's eRulemaking Portal, or by filing paper copies.

Electronic Filers. Comments may be filed electronically using the Internet by accessing the ECFS: <http://www.fcc.gov/cgb/ecfs/> or the Federal eRulemaking Portal: <http://www.regulations.gov>. Filers should follow the instructions provided on the website for submitting comments. In completing the transmittal screen, filers should include their full name, U.S. Postal Service mailing address, and the applicable docket or rulemaking number. Parties may also submit an electronic comment by Internet e-mail. To get filing instructions, filers should send an e-mail to ecfs@fcc.gov, and include the following words in the body of the message, "get form." A sample form and directions will be sent in response.

Paper Filers. Parties who choose to file by paper must file an original and four copies of each filing. Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail (although we continue to experience delays in receiving U.S. Postal Service mail). All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

- The Commission's contractor will receive hand-delivered or messenger-delivered paper filings for the Commission's Secretary at 236 Massachusetts Avenue, NE., Suite 110, Washington, DC 20002. The filing hours at this location are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes must be disposed of before entering the building.
- Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743.
- U.S. Postal Service first-class, Express, and Priority mail should be addressed to 445 12th Street, SW, Washington DC 20554.

Availability of Documents. Comments, reply comments, and *ex parte* submissions will be available for public inspection during regular business hours in the FCC Reference Center, Federal Communications Commission, 445 12th Street, S.W., CY-A257, Washington, D.C., 20554. These documents will also be available via ECFS. Documents will be available electronically in ASCII, Word 97, and/or Adobe Acrobat.

Accessibility Information. To request information in accessible formats (computer diskettes, large print, audio recording, and Braille), send an e-mail to fcc504@fcc.gov or call the FCC's Consumer and Governmental Affairs Bureau at (202) 418-0530 (voice), (202) 418-0432

(TTY). This document can also be downloaded in Word and Portable Document Format (PDF) at: <http://www.fcc.gov>.

Additional Information. For additional information on this proceeding, contact Saurbh Chhabra, at (202) 418-2266, saurbh.chhabra@fcc.gov, or Ira Keltz, at (202) 418-0616, Ira.Keltz@fcc.gov, Electromagnetic Compatibility Division, Office of Engineering and Technology.

Action by the Commission on May 25, 2006: By Commissioner Tate; Chairman Martin; Commissioners Copps and Adelstein issuing separate statements.

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**STATEMENT OF
CHAIRMAN KEVIN J. MARTIN**

Re: Federal Communications Commission Seeks Public Comment on Creation of a Spectrum Sharing Innovation Test-Bed, ET Docket No. 06-89

I am pleased that the Commission and the National Telecommunications and Information Administration (NTIA) are examining ways to share spectrum between federal and non-federal spectrum users. The President's Spectrum Policy Initiative produced many significant – and promising – policy recommendations, including the establishment of a spectrum test bed. Finding ways to share federal and non-federal spectrum could facilitate new and enhanced services for public safety, consumers, and businesses. I look forward to working with NTIA as we move forward on this initiative.

**STATEMENT OF
COMMISSIONER MICHAEL J. COPPS**

*Re: FCC Seeks Public Comment on Creation of a Spectrum Sharing Innovation Test-Bed, ET
Docket No. 06-89*

I firmly support encouraging federal and non-federal users to develop new ways to share spectrum. Indeed, I have great faith in our nation's engineers and inventors, who have consistently found ways to extract ever greater value from a fixed quantity of spectrum. Given this admirable record of innovation – awe-inspiring is not too strong a word – I believe it would be irresponsible for us *not* to investigate the questions we raise today.

I do have some concern, however, about the fact that we are initiating this process two years after the Commerce Department's recommendation.⁵ I hope that our late start will not prevent us from meeting the June 2008 recommended deadline for delivering a report outlining the results of this program and suggesting appropriate expansions.⁶

⁵ See *Spectrum Policy for the 21st Century – The President's Spectrum Policy Initiative: Report 1 (Recommendation 11)*, U.S. Department of Commerce (2004), available at http://www.ntia.doc.gov/reports/specpolini/presspecpolini_report1_06242004.htm.

⁶ *Id.*

**STATEMENT OF
COMMISSIONER JONATHAN S. ADELSTEIN**

Re: Federal Communications Commission Seeks Public Comment on Creation of a Spectrum Sharing Innovation Test Bed; ET Docket No. 06-89

I am very pleased that we finally are moving forward with the National Telecommunications and Information Administration (NTIA) on seeking comment for the creation of a joint test bed. A test bed can be invaluable for considering new methods for sharing spectrum and other important spectrum management issues in the coming years. As I have said recently, it is so important that the Commission do what it can to keep on the leading edge of spectrum-based technology and policy.

Over the past few years, a lot of creative proposals have grown out of the task force work from both NTIA and the Commission, through the Spectrum Policy Task Force. I want to make sure that sharing proposals and other forward-thinking spectrum policy considerations are fully taken into account during the creation and development of the spectrum test bed. A test bed also will be an important vehicle for considering and developing new spectrum management innovations for federal and non-federal use and operations in the future.