



Emergency Communications: Policy Options at a Crossroads

-name redacted-

Analyst in Telecommunications Policy

January 30, 2007

Congressional Research Service

7-....

www.crs.gov

RL33838

Summary

Wireless communications capacity and capability provide essential support to emergency workers. First responders, state, local, tribal and federal emergency officials, utility workers, ambulance drivers, hospital personnel, forest fire fighters, federal law enforcement agents, the National Guard, and members of all branches of the military are among those who might respond to an emergency and need to be equipped to communicate among themselves and with each other.

The management of spectrum that carries wireless communications for public safety and homeland security has emerged as a time-critical policy issue for the 110th Congress due largely to several recent actions by Congress and the Administration, some with near-term deadlines.

Congress has mandated that an important band of spectrum be released for public safety use not later than February 18, 2009 (Deficit Reduction Act, P.L. 109-171, Sec. 3002). Congress has also mandated that a billion-dollar fund for public safety communications, created by the Deficit Reduction Act, be fully distributed by the end of FY2007 (S. 2653). As part of the Homeland Security Appropriations Act, 2007, Congress put in place a number of requirements for an Office of Emergency Communications that, among other objectives, is to work with community, state and regional representatives to develop a national emergency communications capability (P.L. 109-295, Title VI, Subtitle D). Funding for part of this effort would be authorized as part of H.R. 1 (Representative Thompson).

The National Telecommunications and Information Administration (NTIA) is moving forward with the Presidential Spectrum Policy Initiative planning process which includes evaluating spectrum use for public safety and homeland security. The Spectrum Advisory Committee created for this effort has announced that it will study several advanced systems operated by public safety agencies that might serve as a model for designing a national system.

The Federal Communications Commission (FCC), in December 2006, announced a proposed rulemaking for a plan to provide a national emergency communications network using the spectrum band assigned by Congress to public safety, noted above. At the core of the FCC proposal is the appointment of a not-for-profit entity to administer access to the designated spectrum and to design a network that would be shared by public safety and commercial users.

These various initiatives appear to be moving in different directions. Congress may opt to establish policies for spectrum management that could require other approaches or objectives by the various agencies and departments involved.

This report will be updated.

Contents

Emergency Communications and Spectrum.....	1
Background: Importance of Spectrum	2
Technology-Driven Choices Influence Policy Decisions	3
Radios.....	3
Gateways	4
Networks	5
Recent Actions, Plans, and Proposals	6
DHS, Office of Emergency Communications	7
The Executive Office and the NTIA	8
FCC.....	8
Are Policy Changes Needed?	12
Possible Outcomes	13

Contacts

Author Contact Information	14
----------------------------------	----

Emergency Communications and Spectrum

Through various acts of Congress, the public safety community is poised to develop a national, wireless, emergency communications capacity with unencumbered spectrum, a mechanism for planning, and funding. With the passage of the Deficit Reduction Act, Congress established an important milestone toward improving emergency communications by providing a date certain for the release of spectrum for new radio channels.¹ Previously used for analog television broadcasting, 24 MHz of wireless capacity at 700 MHz will become available to public safety in 2009.² By requiring the Department of Homeland Security (DHS) to establish an Office of Emergency Communications, Congress has legislated the creation of a forum to reach agreement on an interoperable communications plan. Congress has not passed legislation, however, regarding how the soon-to-be-released spectrum should be used.

There are currently three major initiatives to develop plans that could incorporate spectrum at 700 MHz in solutions for public safety communications to improve interoperability and resiliency. One initiative is Congress's mandate to DHS to bring together a diverse body of experts and develop a National Emergency Communications Plan that would rely, at least in part, on shared networks.

Second, an initiative by the Administration to improve spectrum efficiency gives responsibility to the National Telecommunications and Information Administration (NTIA)³ to provide policy recommendations that include spectrum uses for homeland security and public safety. An Advisory Committee created by the NTIA is studying public safety tests of networks at 700 MHz.

The Federal Communications Commission (FCC), which has jurisdiction over spectrum used by state and local public safety agencies, is pursuing its own initiative. It is seeking comment on a plan to use spectrum at 700 MHz assigned to public safety for a shared network that would operate under its regulatory supervision.⁴

The FCC's proposal includes many elements favored by a majority of public safety participants,⁵ but—by taking over the management of public safety radio channels at 700 MHz—it would

¹ Radio frequency spectrum is measured by the frequency of cycles per second, or hertz (Hz). Standard abbreviations for measuring frequencies include kHz—kilohertz or thousands of hertz; MHz—megahertz, or millions of hertz; and GHz—gigahertz, or billions of hertz. For example, the 700 MHz band refers to those channels that are designated for technologies that transmit signals at speeds within or near 700 million cycles per second.

² P.L. 109-171, Sec. 3002 (a) (1) (B).

³ The NTIA, part of the Department of Commerce, is under the direction of the Assistant Secretary of Commerce for Communications and Information; among its responsibilities is the management of spectrum used by the federal government.

⁴ FCC, *Ninth Notice of Proposed Rulemaking*, Docket No. WT 96-86, released December 20, 2006.

⁵ See, for example, position papers by the Association of Public-Safety Communications Officials - International (APCO) at <http://www.apcointl.org/government/HSTFWP.pdf>; (continued...)

apparently minimize the role of the Department of Homeland Security (DHS) in planning for interoperable communications. Some of the unresolved policy choices brought into focus by the FCC proposal are:

- Direction of national planning for emergency communications.
- Control of network operations.
- Joint management by agencies.
- Regulatory vs. legislative authority.
- Spectrum management.
- Congressional jurisdiction.
- Funding sources and distribution.

The schedule set for rulemaking means that the FCC could move forward in the creation of an interoperable network as early as spring 2007. Congress may change the terms of the debate by setting its own timetable, objectives, and parameters for creating a national authority to manage a public safety network at 700 MHz. Options for Congress that have been suggested by public safety experts include requiring the Department of Homeland Security to expedite its own plans, requiring greater participation of the FCC in the DHS planning process, curtailing the right of the FCC to regulate network development for public safety, and turning over management of spectrum used for public safety to the NTIA. There are also other efforts and proposals, some of which are summarized in this report, that Congress may consider.

Background: Importance of Spectrum

Radio frequency spectrum is used for all forms of wireless communications. Spectrum licenses are allocated within bands of designated frequencies, divided into bandwidths, or channels. Licenses are assigned, as is the case for state and local public safety agencies, or auctioned to commercial entities. As new wireless tools are developed to help emergency responders, the demand for spectrum increases. Finding appropriate spectrum to carry these vital transmissions as well as finding ways to use spectrum more efficiently are among the policy decisions to be addressed as part of the national effort to develop a robust, interoperable, emergency communications capability.

Pricing spectrum access for all users, or auctioning all spectrum and creating property rights, are market-driven methods for allocating spectrum that could maximize economically efficient use. In the case of public safety, however, demand may be inelastic and substitution difficult with the

(...continued)

the National Public Safety Telecommunications Council (NPSTC) at

<http://www.npstc.org/documents/>

[NPSTC%20Broadband%20Position%20Final%20120806.pdf](http://www.npstc.org/documents/NPSTC%20Broadband%20Position%20Final%20120806.pdf); the Spectrum Coalition

<http://www.spectrumcoalition.dc.gov/html/home.html>; and papers from the Aspen

Institute such as *Clearing the Air: Convergence and the Safety Enterprise*, 3rd Annual

Aspen Institute Roundtable on Spectrum Policy, May 3 -5, 2006.

result that the cost to the public is increased without any compensating gains. The need for spectrum capacity among first responders and other emergency workers is variable. When radio communications are routine, public safety's demand for spectrum is modest. In times of crisis, demand for spectrum exceeds availability. Identifying spectrum that public safety can share—with commercial users for example—is also considered a possible means to use valuable spectrum more efficiently.

Although, cumulatively, radio frequencies designated for non-federal public safety total over 90 MHz,⁶ the characteristics of these frequencies are dissimilar, requiring different technological solutions. Although the fragmentation of spectrum assignments for public safety has some advantages for voice communications, it is a significant barrier to achieving needed broadband capacity for the future. It is one of the technical problems that plague public safety communications, such as out-of-date equipment, proprietary solutions, network congestion, and interference among systems. Providing new spectrum at 700 MHz for broadband communications capabilities,⁷ including interoperable connectivity, is viewed by many as the optimal solution for overcoming problems caused by incompatible radio frequencies and technologies, as well as for enhancing communications capacity for public safety. Because 700 MHz is viewed as highly desirable for consumer-oriented applications, some believe that a means should be found for public safety and commercial users to share radio frequencies in this band.

Technology-Driven Choices Influence Policy Decisions

As noted above, the FCC has proposed the building of a network, accessible nationwide, that would require standardized interfaces. This model, which mirrors the organization of commercial wireless service in the United States, represents a significant departure from existing public safety radio operations. Like most public safety support services, radio communications have historically been built primarily for local operations, often with proprietary solutions that limit interoperability. With post-9/11 emphasis on improving interoperability, three technology-based solutions for nationwide interoperability have dominated policy making. These are: radios—pursued primarily through standard setting; gateways—supported through guidance from DHS and federal grants; and networks—recognized as a potential solution but not developed.

Radios

One solution for achieving interoperability is to build it into the radios carried by first responders and other emergency workers, requiring standardized models that work on multiple systems.

⁶ Estimated at approximately 97 MHz in Testimony of Michael K. Powell, Chairman, Federal Communications Commission, at Hearing of Senate Committee on Commerce, Science and Transportation, "Spectrum for Public Safety Users," September 8, 2004.

⁷ Broadband refers to the capacity of the radio frequency channel. A broadband channel can transmit live video, complex graphics and other data-rich information as well as voice and text messages whereas a narrowband channel might be limited to handling voice, text and some graphics.

Radio standardization is part of a suite of standards being developed through an effort known as Project 25 (or P25).⁸ Project 25 is the accepted standard for radio interoperability. The radio-based solution to interoperability conforms to recommendations made in 1996 by the Public Safety Wireless Advisory Committee (PSWAC) regarding the improvement of public safety communications over wireless networks.⁹ P25 radios can be costly, from \$600 to \$1,000 for general purpose radios, and \$3,000 for radios that meet standards for federal use.¹⁰

Gateways

A second technology choice, also developed partly in response to recommendations made by PSWAC, are gateways—also known as bridges, or as cross-talk or cross-patch systems, among other terms. The gateway is a “black box” that can accept wireless transmissions on one frequency standard and resend them on other frequency standards. As a result, they are inefficient users of spectrum, since a single message is using two or more frequency assignments. Gateways can provide interfaces for modern systems but not for older, obsolete radios. Although gateways typically use Internet Protocol (IP) to connect to information technology systems, some components are proprietary and have limited interoperability with rival gateway solutions. Early gateway solutions were tested through the AGILE Program, created by the National Institute of Justice (NIJ).¹¹ Project 25 members are working to complete a standard for public safety gateways, the Inter-Sub-System Interface (ISSI), that would enable full interoperability for future gateway solutions. Gateways have become the centerpiece of current efforts by DHS to achieve situational interoperability.¹² Over the long term, DHS expects gateway solutions to evolve into a

⁸ Project 25 is chartered by the Association of Public-Safety Communications Officials - International (APCO). Meetings to develop standards are managed by the Telecommunications Industry Association, an ANSI-standards-setting body. See http://www.tiaonline.org/standards/technology/project_25/index.cfm/. Viewed January 10, 2007.

⁹ “Final Report of the Public Safety Wireless Advisory Committee,” September 11, 1996. The committee was disbanded after publication of its recommendations.

¹⁰ Speakers at a CRS-sponsored seminar provided equipment cost estimates. *Public Safety Communications: Interoperability Technology Workshop*, November 17, 2003. Estimates were reconfirmed during briefings held in December 2006.

¹¹ AGILE stands for Advanced Generation of Interoperability for Law Enforcement. It has since been absorbed into other programs carried out in cooperation with DHS. See <http://www.ojp.usdoj.gov/nij/topics/commtech/25cities/welcome.html>. Viewed January 10, 2007.

¹² See, for example Department of Homeland Security Press Conference on Assessment of Interoperable Communications, January 3, 2007 (transcript provided by Federal News Service), and Homeland Security Press release, “Remarks by Homeland Security Secretary Michael Chertoff at the Tactical Interoperable Communications Conference,” May 8, 2006 at http://www.dhs.gov/xnews/speeches/speech_0281.shtm. Viewed January 10, 2007.

“standards-based shared system.”¹³ Gateways range in price from \$500,000 for basic capability into millions of dollars for a large, customized system.

Networks

A third technology choice, considered but not adopted at the federal level, is a network solution.¹⁴ A network solution requires agreement from multiple jurisdictions to deploy compatible equipment and interfaces that can provide links anywhere in the network. A national network might be comprised of regional agreements grouping states that are working to develop networks that are available to local and tribal emergency workers. The technology exists to achieve interoperability through a network, what are lacking are a mechanism to achieve agreement and the leadership to set the mechanism in motion and guide it to resolution. The 9/11 Commission broached the subject of creating a network in its recommendation that high-risk urban areas “should establish signal corps units to ensure communications connectivity.”¹⁵ Congress embraced the 9/11 Commission recommendation and instructed DHS to explore solutions modeled on the Army Signal Corps, using a national architecture, and compatible with commercial technologies.¹⁶

The DHS has been focused on the installation of gateways¹⁷ and developing interoperability “from the bottom up,”¹⁸ and has not announced plans to use spectrum at 700 MHz to develop an interoperable network capability that could, over time, be extended through interfaces to existing systems. Reportedly, Jay Cohen, DHS Undersecretary for Science and Technology, has advocated the concept of a digital backbone to achieve interoperability.¹⁹ DHS Secretary Michael Chertoff

¹³ See Homeland Security/SAFECOM “Interoperability Continuum” at <http://www.safecomprogram.gov/NR/rdonlyres/65AA8ACF-5DE6-428B-BBD2-7EA4BF44FE3A/0/Continuum080106JR.pdf>. Viewed January 25, 2007.

¹⁴ Some states and metropolitan areas are building their own communications networks at 700 MHz to assure interoperability across functions and jurisdictions. New York State and the Washington, D.C. area are two examples.

¹⁵ The National Commission on Terrorist Attacks Upon the United States, *The 9/11 Commission Report: Final Report of the National Commission on Terrorist Attacks Upon the United States*, (Washington: GPO, 2004), p. 397.

¹⁶ These and other legislative requirements are described in CRS Report RL33747, *Emergency Communications Legislation: Implications for the 110th Congress*, by (name redacted).

¹⁷ DHS Press Release, “Fact Sheet: Rapid Com 9/30 and Interoperability Progress,” July 30, 2004 at <http://www.usdoj.gov/jmd/iwn/schedule.html>. Viewed January 10, 2007.

¹⁸ Testimony of Dr. David G. Boyd, Program Manager, SAFECOM and Deputy Director, Office of Systems Engineering & Development, Science and Technology Directorate, Department of Homeland Security, Hearing of the House of Representatives, Committee on Government Reform, Subcommittee on Technology, Information Policy, Intergovernmental Relations and the Census, “More Time, More Money, More Communication?” September 8, 2004.

¹⁹ “DHS Science Chief Backs Digital Solution to Communications Woes,” by David Perera, GOVEXEC.com, Daily Briefing, November 30, 2006.

has voiced support for an interoperable network at 700MHz if Congress decides to free up additional spectrum for that purpose;²⁰ these are recent statements, however, and not part of a formal policy.

Absent federal action for a network solution that would encompass state, local, and tribal public safety users,²¹ the private sector has responded, through comments filed with the FCC, with proposals to use 700 MHz spectrum to create the needed network for public safety. Some of the proposals would share network capacity with commercial users, offsetting the cost of building the network by charging fees for access. Although the cost for such a network is undetermined, the estimated cost for the federal Integrated Wireless Network was originally reported to be \$10 billion.²² Some industry estimates have given a \$1 billion to \$2 billion range for the build-out of a commercial broadband network reaching the top 150 markets.²³ A national network would cost more, but how much more would depend on many variables that should be resolved in the planning process. Building interoperability into a network reduces the cost for new radios, bringing the prices to public safety within the range of devices used by consumers on commercial networks.

In part because of recent actions by the FCC, new attention is being paid by policy-makers to the potential of a network solution to provide interoperability for public safety. But this approach has not been pursued by DHS since its creation. Therefore, a new debate is underway on how to build a network for public safety interoperability without a comprehensive discussion among federal policymakers about the need for such a network. The following discussion provides an overview of key actions that might frame a national debate.

Recent Actions, Plans, and Proposals

This overview does not cover all the organizational and technological solutions that are being used or tested, or have been proposed. However, the following reflects the major considerations and breadth of the debate.

²⁰ Department of Homeland Security Press Conference, January 3, 2007 *op. cit.*

²¹ A network primarily for federal users, the Integrated Wireless Network (IWN), is being planned as a joint program by the Departments of Justice, the Treasury, and Homeland Security. It is primarily for federal law enforcement. See Memorandum of Understanding Between the Department of Homeland Security, the Department of Justice, and the Department of the Treasury Regarding a Joint Tactical Wireless Communications System, at <http://www.usdoj.gov/jmd/iwn/schedule.html>. Viewed January 10, 2007.

²² "Massive Federal Wireless Project Delayed," by Wilson P. Dizard III, GCN, March 30, 2005.

²³ Reported in an overview of proposals for 700 MHz by [dailywireless.org](http://www.dailywireless.org) at <http://www.dailywireless.org/2006/12/18/fcc-moving-on-700mhz-public-safety-interop/>. Viewed January 11, 2007.

DHS, Office of Emergency Communications

The Homeland Security Appropriations Act, 2007 created an Office of Emergency Communications within DHS to lead a cooperative planning effort to create a “national response capability” for communications.²⁴ A section of this law—P.L. 109-295, Title VI, Subtitle D—the 21st Century Emergency Communications Act of 2006—established an Office of Emergency Communications and the position of Director, reporting to the Assistant Secretary for Cybersecurity and Communications.²⁵ The Director is required to take numerous steps to coordinate emergency communications planning, preparedness, and response, particularly at the state and regional level. These efforts are to include coordination with Regional Administrators²⁶ appointed by the FEMA Administrator to head ten Regional Offices.²⁷ Among the responsibilities of the Regional Administrators is “coordinating the establishment of effective regional operable and interoperable emergency communications capabilities.”²⁸

Among the key responsibilities assigned to the Director of Emergency Communications is to assist the Secretary for Homeland Security in carrying out the program responsibilities required by the Intelligence Reform and Terrorism Prevention Act in Sec. 7303 (a) (1) [6 U.S.C. 194 (a) (1)], in response to recommendations made by the 9/11 Commission. Other responsibilities of the Director include conducting outreach programs, providing technical assistance, coordinating regional working groups, promoting the development of standard operating procedures and best practices, establishing non-proprietary standards for interoperability, developing a National Emergency Communications Plan, working to assure operability and interoperability of communications systems for emergency response, and reviewing grants.²⁹ Required elements of the National Emergency Communications Plan³⁰ include an evaluation of the feasibility of developing a mobile communications capability modeled on the Army Signal Corps.³¹ General procedures are provided for coordination of emergency communication grants,³² and for a Regional Emergency Communications Coordination (RECC) Working Group.³³

In requiring broad-based representation in the composition of the RECCs, Congress responded to requests from the public safety community to include the second tier of emergency workers in interoperable communications planning. Non-federal members of the RECC include first responders, state and local officials and emergency managers, and public safety answering points (911 call centers).³⁴ Additionally, RECC working groups are to coordinate with a variety of communications providers (such as wireless carriers and cable operators), hospitals, utilities,

²⁴ More information is available in CRS Report RL33747, *Emergency Communications Legislation: Implications for the 110th Congress*, by (name redacted).

²⁵ P.L. 109-295, Title VI, Sec. 671(b) ‘Title XVIII, ‘Sec. 1801 ‘(a) and ‘(b).

²⁶ P.L. 109-296, Title VI, Sec. 671(b) ‘Title XVIII, ‘Sec. 1801 ‘(c) ‘(7).

²⁷ P.L. 109-296, Title VI, Sec. 611, ‘Sec. 507 ‘(a) and ‘(b).

²⁸ P.L. 109-296, Title VI, Sec. 611, ‘Sec. 507 ‘(c) ‘(2) ‘(C).

²⁹ P.L. 109-295, Title VI, Sec. 671(b), ‘Title XVIII, ‘Sec. 1801.

³⁰ P.L. 109-295, Title VI, Sec. 671(b), ‘Title XVIII, ‘Sec. 1802.

³¹ P.L. 109-295, Title VI, Sec. 671(b), ‘Title XVIII, ‘Sec. 1803 ‘(d) ‘(4) ‘(A).

³² P.L. 109-295, Title VI, Sec. 671(b), ‘Title XVIII, ‘Sec. 1804.

³³ P.L. 109-295, Title VI, Sec. 671(b), ‘Title XVIII, ‘Sec. 1805.

³⁴ P.L. 109-295, Sec. 671(b), ‘Title XVIII, ‘Sec. 1805 ‘(b) ‘(1).

emergency evacuation transit services, ambulance services, amateur radio operators, and others as appropriate.³⁵

The Executive Office and the NTIA

Beginning in 2003, President George W. Bush has issued several memoranda to establish and guide a national Spectrum Policy Initiative, led by the Secretary of the Department of Commerce. As required by the President, the Secretary submitted a plan to implement recommendations previously provided by the Federal Government Spectrum Task Force. The planning process is being guided by the NTIA, which has established seven projects dealing with aspects of spectrum policy, including to “satisfy public safety communications needs and ensure interoperability.”³⁶ One component of the response is to examine the feasibility of sharing spectrum among commercial, federal and local public safety, and critical infrastructure applications. In conjunction with the FCC, the NTIA is seeking to establish a test-bed of radio frequencies for shared use between federal and non-federal users.³⁷ Another component of the public safety project is the evaluation of wireless technologies by a Spectrum Advisory Committee that the NTIA has created to assist in the development of the policy initiative.³⁸ Reportedly, the committee will be studying existing public safety communications programs that might provide a model for a national system.³⁹ One of these programs is the Wireless Accelerated Responder Network (WARN) currently being tested in Washington, D.C. WARN uses 700 MHz for a network that supports broadband communications in the Washington metropolitan area. The proponents of WARN advocate a “network of networks” to resolve the nation’s need to assure emergency communications capacity and interoperability.⁴⁰

FCC

In December 2005, the FCC submitted a report to Congress on spectrum needs for emergency response providers, as required by provisions in the Intelligence Reform and Terrorism Prevention Act (P.L. 108-458).⁴¹ For the study,⁴² the FCC sought comment on whether additional

³⁵ P.L. 109-295, Sec. 671(b), ‘Title XVIII,’ Sec. 1805 ‘(c).

³⁶ *Spectrum Management for the 21st Century; plan to implement recommendations of the President’s policy initiative*, U.S. Department of Commerce, posted March 14, 2006, at <http://www.ntia.doc.gov/osmhome/reports/ImplementationPlan2006.pdf>. Viewed January 11, 2007.

³⁷ FCC, “Federal Communications Commission Seeks Public Comment on Creation of a Spectrum Sharing Innovation Test-Bed,” ET Docket 06-89, released June 8, 2006.

³⁸ See http://www.ntia.doc.gov/ntiahome/press/2006/specadvisory_110306.pdf. Viewed December 27, 2006.

³⁹ “Commerce Dept. Spectrum Advisory Committee to Study Testbed Launch,” by Howard Buskirk, *Communications Daily*, December 14, 2006.

⁴⁰ See http://www.spectrumcoalition.dc.gov/img/2007_01_11_WARN.ppt. Viewed January 9, 2007.

⁴¹ P.L. 108-458, Title VII, Subtitle D, Sec. 7502.

⁴² *Report to Congress on the Study to Assess Short-term and Long-term Needs for Allocations of Additional Portions of the Electromagnetic Spectrum for Federal, State (continued...)*

spectrum should be made available for public safety, possibly from the 700 MHz band. Comments received from the public safety community overwhelmingly supported the need for additional spectrum, although other bands besides 700 MHz were also mentioned. The FCC did not make a specific recommendation for additional spectrum allocations in the short-term although it stated that it agreed that public safety “could make use of such an allocation in the long-term to provide broadband services.”⁴³ It qualified this statement by observing that spectrum is only one factor in assuring access to mobile broadband services for emergency response. It further announced that it would move expeditiously to determine whether the current band plan for the 24 MHz at 700 MHz currently designated for public safety could be modified to accommodate broadband applications.⁴⁴ Subsequently, in March 2006, the FCC issued a request for proposals for a new band plan that would allocate spectrum for broadband use by first responders within the 24 MHz currently assigned for public safety. The same proposed rulemaking also asked for additional comment on the possible adaptation of a wireless broadband standard for interoperability.⁴⁵

The FCC received over 1,000 responses by December 2006, with many comments from the public safety community and commercial wireless interests. One petition, from a company called Cyren Call Communications Corporation, received widespread publicity in the press and through lobbying to Congress. The petition requested the reallocation of 30 MHz (half of the 60MHz currently designated for auction for commercial use by the Deficit Reduction Act)⁴⁶ to a “Public Safety Broadband Trust.”⁴⁷ According to the proposal, the trust would lease capacity not used by public safety to commercial operators that would provide the network infrastructure. The FCC denied Cyren Call’s petition, citing, among other reasons, the Congressional mandate to auction the spectrum Cyren Call proposed to use.⁴⁸ Other proposals for joint operations were also submitted. One proposal, developed by Access Spectrum and Pegasus Communications Corporation, suggested accommodating broadband wireless by rebanding the 24 MHz allocated to public safety and adding 3 MHz from existing guardband allocations, with some of the spectrum shared with commercial operators.⁴⁹ Verizon Wireless reportedly proposed to build a broadband network for public safety use on half of the 24 MHz of spectrum assigned to public

(...continued)

and Local Emergency Response Providers, Federal Communications Commission, December 19, 2005, at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-262865A1.pdf. Viewed January 17, 2007.

⁴³ *Ibid.*, paragraph 99.

⁴⁴ *Ibid.*, paragraph 100.

⁴⁵ FCC, *Eighth Notice of Proposed Rule Making*, WT Docket No. 96-86, released March 17, 2006.

⁴⁶ P.L. 109-171, Sec. 3003.

⁴⁷ For a summary of the proposal and a copy of the filing, see <http://www.cyrencall.com>. Viewed January 9, 2007.

⁴⁸ FCC, *Order*, RM No. 11348 released November 3, 2006.

⁴⁹ One description of the proposal is provided in joint comments filed with the FCC at http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6518359019. Viewed January 11, 2007.

safety, using the other 12 MHz for mixed use, with the cost of building the infrastructure recovered through leasing arrangements and fees.⁵⁰

In December 2006, the FCC issued a new Notice of Proposed Rulemaking (NPRM) that proposed to turn over management of the 24MHz of spectrum designated for public safety to a not-for-profit group. This group would, among other responsibilities, hold a national license that would support public safety with a broadband wireless backbone.⁵¹ In the NPRM, the FCC states that it is responding to “an opportunity to put in place a regulatory framework that would ensure the availability of effective spectrum in the 700 MHz band for interoperable, public safety use.”⁵² To help develop these regulations, the FCC is presenting for comment a “plan that we believe may best promote the rapid deployment of a nationwide, interoperable broadband public safety network . . . [with] a centralized and national approach to maximize public safety access. . . .”⁵³

The NPRM outlines seven points: (1) allocate 12 MHz from the 700 MHz band assigned to public safety for broadband use by state and local public safety members; (2) assign this 12 MHz of spectrum to a single licensee, nationwide; (3) permit this licensee to operate commercially on the remaining 12 MHz allotted to public safety with public safety having priority access when needed; (4) permit the licensee to provide public safety broadband access on a fee for service basis; (5) permit the licensee to provide unconditionally preemptible access to commercial operators; (6) facilitate the shared use of commercial mobile infrastructure; and (7) “establish performance requirements for interoperability, build out, preemptibility of commercial access, and system robustness.”⁵⁴

In the NPRM, the FCC states its case for how the proposal meets objectives for “public safety communications in the twenty-first century”⁵⁵ and provides some information about the selection of a national licensee and the license-holder’s obligations. The FCC proposes that the licensee should meet criteria such as not-for-profit status, experience with public safety frequency coordination, and the ability to directly represent all public safety interests. The licensee’s responsibilities would include the design and implementation, build-out, and maintenance of a national network, the coordination of eligibility for access for public safety, and the leasing of capacity to commercial users.⁵⁶ The licensee would be able to charge fees for the use of its services, such as access to the network, to both public safety and commercial users.⁵⁷

In the NPRM, the FCC requests comments be filed no later than 45 days after publication in the Federal Register⁵⁸ with reply comments due within 60 days after. Topics on which comment is requested regarding the National Public Safety Network are:⁵⁹

⁵⁰ “Verizon Wireless Pitches Plan to Build Public-safety Network using 700 MHz Band,” by Heather Forsgren Weaver, RCR Wireless News, September 6, 2006.

⁵¹ FCC, *Ninth Notice of Proposed Rulemaking*, Docket No. WT 96-86, released December 20, 2006; see paragraph 4 for summary.

⁵² *Ibid.*, paragraph 2.

⁵³ *Ibid.*, paragraph 3.

⁵⁴ *Ibid.*, paragraph 4.

⁵⁵ *Ibid.*, paragraph 11.

⁵⁶ *Ibid.*, paragraph 27.

⁵⁷ *Ibid.*, paragraphs 28 - 30.

⁵⁸ Posted January 10, 2007; comments due February 26, 2007.

- **Broadband Communications.** How to “best implement a broadband network.”
- **System Architecture.** “Should the national public safety licensee have the discretion to choose the best system architecture, or should the Commission establish system architecture requirements . . . ?”
- **Nationwide Interoperability.** The proposal requires that the licensee be required to construct a network that would provide interoperability for all devices operating on a national broadband public safety network. The FCC seeks comment on whether it should require IP-based standards for network access or whether it should require interoperable solutions that accommodate legacy systems. It seeks comment on other solutions and on the cost-benefit trade-offs of various interoperability requirements.
- **Federal Access.** Comment is sought on opening the network to federal users, including the Department of Defense.
- **Network Build-Out.** The FCC seeks comment on “appropriate” timing and scope and on several of its suggestions on how to move the build-out quickly and efficiently.
- **Network Resiliency and Disaster Restoration.** Comment is sought on what requirements the FCC might impose on the network for resiliency and disaster restoration and whether “robustness requirements be imposed on all public safety systems, not just the national public safety system.”
- **Local Needs.** The FCC seeks comment on whether the national public safety licensee should permit local entities operational discretion—and how much—within the norms of the network.
- **Definition of Public Safety.** The FCC proposes to use the definition of public safety services provided in the Communications Act [47 U.S.C. § 337 (f)(1)] which states that providers are state or local government entities or authorized non-governmental organizations that do not make their services commercially available. This statutory requirement could influence the manner in which the FCC structures and awards the proposed national license.

The NPRM also seeks comments on secondary operations by commercial users on the remaining 12 MHz of spectrum assigned by Congress for public safety use. Currently the FCC permits public safety licensees to lease spectrum assigned to them only for use by other public safety entities. The FCC uses the NPRM to propose exempting the new, national public safety licensee from limitations it imposes on existing public safety entities.⁶⁰

(...continued)

⁵⁹ *Ibid.*, paragraphs 31 - 37.

⁶⁰ *Ibid.*, paragraph 45.

The FCC plan is expected to be modified in response to public comment.⁶¹ Whatever the merits of the final plan, its approval by the majority of Commissioners would shift responsibility and jurisdiction away from federal departments to a not-for-profit entity regulated by the FCC.

Are Policy Changes Needed?

Under law, spectrum is considered a natural resource, owned by the federal government,⁶² and is assigned for use by others, but not sold. The building of a network on spectrum assigned to public safety is a significant policy decision affecting not only the daily safety of the public but also the security of the nation.

Some of the administrative, regulatory, and legislative considerations that have been brought to the forefront by the FCC proposal are:

- **Composition of and network operations control by the proposed not-for-profit entity.** If the cost of building a network is offset by allowing commercial use, will the network operator show a preference for solutions that mesh with commercial interests or will it give priority to developing interfaces that support other federal and state programs for emergency communications? Non-commercial interoperable communications needs might, for example, extend to 911 call centers, emergency alert systems, border security, and to other emergency workers, often referred to as the “second tier.”
- **Joint management by agencies.** The FCC and NTIA have a history of working together to develop and implement spectrum policy.⁶³ What role, if any, would the NTIA, the Presidential Spectrum Initiative, and the Spectrum Advisory Council play in advising, directing or regulating the development and operation of any network? How would management of the 700 MHz network interface with FEMA, the Department of Homeland Security, the National Response Plan and other federal authorities with responsibilities for establishing and maintaining emergency communications?
- **Regulatory and legislative actions.** The FCC is using its regulatory authority over spectrum use to take action in an area (improvement to public safety communications) where Congress has assigned responsibility to DHS. Should Congress seek means to coordinate the FCC plan with planning efforts at DHS? Or take some other action to assign responsibility for planning and implementation?

⁶¹ See the statements made by FCC Commissioners at the time of voting to proceed with the *Ninth Notice of Proposed Rulemaking*.

⁶² The Code of Federal Regulations defines natural resources as “land, fish, wildlife, biota, air, water, ground water, drinking water supplies and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States...” (15 CFR 990, Section 990.30).

⁶³ A recent example is collaboration on the development of a spectrum test-bed. FCC, “Federal Communications Commission Seeks Public Comment on Creation of a Spectrum Sharing Innovation Test-Bed,” ET Docket 06-89, released June 8, 2006.

- **Spectrum management.** What are the best policies to encourage efficient use of spectrum by public safety? Market-driven pricing has been proposed by the FCC, among others. If this is applied only to usage at 700 MHz, would it be effective policy to have a two-speed regulatory framework for public safety spectrum licenses, with one set of rules for 700 MHz and different rules for other spectrum holdings?
- **Congressional jurisdiction.** In the law that created the Office of Emergency Communications, Congress specified that, in reviewing interoperable emergency communications plans, the emergency communications director would exclude the review of spectrum allocation and management.⁶⁴ Congress has yet to make decisions about jurisdiction for programs planned and funded by DHS that operate on spectrum managed by the FCC and the NTIA.
- **Funding.** Funding of \$1 billion expressly for interoperable communications is mandated for 2007.⁶⁵ This would be in the form of a distribution from the Digital Television Transition and Public Safety Fund created by the Deficit Reduction Act. According to language directing distributions from the fund, grants are to be spent for “the acquisition of, deployment of or training for the use of interoperable communications systems that utilize, or enable interoperability with communications systems that can utilize”⁶⁶ spectrum at 700 MHz.⁶⁷ New federal funding for interoperable communications is under consideration.⁶⁸ Many propose that the cost of a new network built on public safety spectrum be funded with access fees from users. How will existing and planned federal funding programs be applied to include a private operator for the key interoperable network?

In the light of these and other questions, Congress may decide to revisit emergency communications policy and management at the federal level through hearings and oversight, as well as to clarify Congressional priorities and goals regarding interoperability.

Possible Outcomes

This report has described three separate policy initiatives from different sectors of the federal government that appear to be moving in different directions. This situation can be attributed, in part to the division of jurisdictional and institutional responsibilities in both the Executive and legislative branches of government, and in part to the absence of any recent crisis that would raise the profile of emergency communications needs.

Without guidance from Congress or the Administration, it is possible that these three initiatives will continue to develop along dissimilar paths with little or no apparent coordination. If so, what would be the likely impact on emergency communications policy?

⁶⁴ P.L. 109-295, Sec. 671, “Sec. 1801 “(c) “(12).

⁶⁵ P.L. 109-459, Sec. 4.

⁶⁶ P.L. 109-171, Sec. 3006 (a) (1).

⁶⁷ P.L. 109-171, Sec. 3006 (d) (3).

⁶⁸ H.R. 1, Title II.

Of the three initiatives, the proposal by the FCC—which is sponsored by the Public Safety and Homeland Security Bureau it created in 2006⁶⁹—seems to be the most far reaching. Although it is possible that the FCC will extend the time for public comments and also deliberate extensively, it could move to allocate the spectrum to a quasi-commercial entity⁷⁰ in 2007 for development by 2010-2011. This could possibly preempt any decisions or recommendations from the NTIA and DHS, which are operating within unspecified but apparently longer time frames.⁷¹

In a different scenario, the FCC might provide a bridge connecting the Regional Emergency Communications Coordination (RECC) Working Group that DHS is to create to Regional Planning Committees like those the FCC originally formed to develop the 700 MHz band plan and agreements on interoperability. The FCC could then bring to the RECC table the benefits of regional representation, technical expertise, and a broad sample of public opinion from its rulemaking efforts. A network not unlike the one now proposed by the FCC might be the result, but with potentially wider participation and acceptance. Such a network might be administered by the Office of Emergency Communications, not through FCC regulations.

Another possibility is that DHS might cede responsibilities and requirements stated in P.L. 109-295 for developing public safety networks to the FCC. This could diminish the scope of the new Office of Emergency Communications. In that scenario, DHS might focus on continuing its policy of assisting cities and other areas in setting up gateways, adding access to the 700MHz systems. The advantage of spectrum efficiency through sharing frequencies at 700 MHz would likely be lost to public safety users (but not to commercial users).

In the absence of clear authority and direction, many routes are possible. It remains to be seen whether these routes will be coordinated or whether they will collide at the crossroads.

Author Contact Information

(name redacted)
Analyst in Telecommunications Policy
[redacted]@crs.loc.gov, 7-....

⁶⁹ See <http://www.fcc.gov/pshs/>.

⁷⁰ The level of public safety participation in managing the proposed network is not specified but half the network is to be available for commercial use.

⁷¹ The reorganization plan that DHS must submit to Congress that includes the Office of Emergency Communications is due on March 31, 2007 (P.L. 109-295, Sec.614). There is no required date when the office must begin operations.

EveryCRSReport.com

The Congressional Research Service (CRS) is a federal legislative branch agency, housed inside the Library of Congress, charged with providing the United States Congress non-partisan advice on issues that may come before Congress.

EveryCRSReport.com republishes CRS reports that are available to all Congressional staff. The reports are not classified, and Members of Congress routinely make individual reports available to the public.

Prior to our republication, we redacted names, phone numbers and email addresses of analysts who produced the reports. We also added this page to the report. We have not intentionally made any other changes to any report published on EveryCRSReport.com.

CRS reports, as a work of the United States government, are not subject to copyright protection in the United States. Any CRS report may be reproduced and distributed in its entirety without permission from CRS. However, as a CRS report may include copyrighted images or material from a third party, you may need to obtain permission of the copyright holder if you wish to copy or otherwise use copyrighted material.

Information in a CRS report should not be relied upon for purposes other than public understanding of information that has been provided by CRS to members of Congress in connection with CRS' institutional role.

EveryCRSReport.com is not a government website and is not affiliated with CRS. We do not claim copyright on any CRS report we have republished.