Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C.

In the Matter of	)	
	)	
The Development of Operational,	)	
Technical and Spectrum Requirements	)	
For Meeting Federal, State and Local	)	WT Docket No. 96-86
Public Safety Agency Communication	)	
Requirements Through the Year 2010	)	
	)	
Establishment of Rules and Requirements	)	
For Priority Access Service	)	

SECOND NOTICE OF PROPOSED RULEMAKING

Adopted: October 9, 1997; Released: October 24, 1997

Comment Date: **December 22, 1997**
Reply Comment Date: **January 12, 1998**

By the Commission:

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I. INTRODUCTION

1. In this Second Notice of Proposed Rulemaking (Notice) we make a range of proposals relating to public safety communications in the 746-806 MHz spectrum band and in general. First, we discuss goals for establishing a plan to ensure the efficient and effective use of spectrum to meet critical public safety communications needs. We then propose and seek comment on service rules for the 24 megahertz of spectrum that we have proposed to allocate for public safety needs, and that Congress, in the Balanced Budget Act of 1997, has committed to public safety services.[1] Second, in response to a Petition for Rulemaking filed by the National Communications System, we seek comment relating to the establishment of wireless priority access services on commercial systems for use in meeting communications needs in emergency and disaster situations. Finally, we propose technical requirements to protect broadcast licensees operating in the 746-806 MHz band from interference.

2. Congress, in the Balanced Budget Act of 1997, committed 24 megahertz of the radio spectrum between 746 MHz and 806 MHz to public safety services, and the remaining 36 megahertz to commercial use.[2] The Commission, in its *Allocation Notice*, proposed to reallocate this spectrum in this manner.[3] The proposals contained in the Notice we adopt

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[1] Reallocation of Television Channels 60-69, the 746-806 MHz Band, ET Docket No. 97-157, Notice of Proposed Rulemaking, FCC 97-245, released July 10, 1997 (*Allocation Notice*), at para. 12; Balanced Budget Act of 1997, Pub. L. No. 105-33, 111 Stat. 251 (1997).

[2] *See* Section 337(a) of the Communications Act, 47 U.S.C. § 337(a), as added by the Balanced Budget Act of 1997, § 3004.

[3] TV Channels 60-69, comprising the 746-806 MHz band are currently allocated to the Broadcasting Service. We recently adopted a Table of Allotments for digital television (DTV). Advanced Television Systems and Their Impact upon the Existing Television Broadcast Service, MM Docket No. 87-268 (*DTV Proceeding*), Sixth Report and Order, FCC No. 97-115, released Apr. 21, 1997, 62 Fed. Reg. 26684 (*DTV Sixth Report and Order*), *recon. pending*. This Table provides all eligible broadcasters with a second 6 megahertz channel to be used for DTV service during the transition from analog to digital television service, and also facilitates the early recovery of channels 60-69. In providing for early recovery of spectrum, the Commission observed that an urgent need exists for additional spectrum to meet important public safety needs, including voice and data communications, and to provide for improved interoperability between public safety agencies. *Id.* at para. 79.

In the *Allocation Notice* we proposed to allocate 24 megahertz at 764-776 MHz and 794-806 MHz to the fixed and mobile services, for public safety use, and stated our belief that this allocation would help to meet the additional spectrum needs of public safety. We also proposed to allocate the remaining 36 megahertz at 746-764 MHz and 776-794 MHz to the fixed, mobile, and broadcasting services, stating that this allocation would allow for the maximum diversity in service offerings and the broadest licensee discretion, consistent with international allocations. We reiterated our policy that existing analog and DTV full-service broadcast operations will be fully protected during the DTV transition period, including any additional DTV allotments made in Channels 60-69 as

7. As we work with the public safety community in developing a framework for the use of the 24 megahertz of new public safety spectrum, we need to ensure that this spectrum is used effectively and that the necessary incentives exist to provide nationwide public safety interoperability. As we discuss in the following paragraphs, we recognize that the success of the framework we seek to build with the public safety community will also depend on how the public safety equipment market develops — we need to foster competition in order to spur innovation and bring down costs faced by public safety agencies. The success of the framework will also depend on the availability of adequate public safety funding to purchase upgraded equipment. In order to work cooperatively with the public safety community to build a framework for public safety communications, we define our goals in this Notice. In the comments on our specific proposals and the responses to specific questions raised in this Notice, the public safety community and other interested parties are asked to relate their suggestions and arguments to the broad goals we seek to define here.

2. Public Safety Communications Goals

8. In the Budget Act of 1993, Congress required the Commission to develop a framework to ensure that public safety communications needs are met through the year 2010.[6] We subsequently issued a report and also found a need for additional information on the needs of public safety agencies.[7] Together with the National Telecommunications and Information Administration (NTIA), we sponsored PSWAC, to provide advice and recommendations regarding the specific needs of public safety agencies.

9. We continued our efforts to examine and address these spectrum and communications needs of public safety agencies by adopting the *Public Safety Notice*.[8] In seeking to evaluate public safety needs through 2010, we sought comment on a wide variety of public safety communications needs and options. PSWAC completed its Final Report in September

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Interoperability Subcommittee Final Report, page 12, is also numbered "285." Throughout this Notice, we cite to the numbers begun in Volume One and carried through to the end — page 285 in the example above.

[6] *See* Section 309(j)(10)(B)(iv) of the Communications Act, 47 U.S.C. § 309(j)(10)(B)(iv), as added by the Omnibus Budget Reconciliation Act of 1993 (Budget Act of 1993), Pub. L. No. 103-66, Title VI, § 6002, 107 Stat. 312 (1993).

[7] Report and Plan for Meeting State and Local Government Public Safety Agency Spectrum Needs Through the Year 2010, Report and Plan, 10 FCC Rcd 5207 (1995) (*1995 FCC Public Safety Report*).

[8] The Development of Operational, Technical, and Spectrum Requirements for Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year 2010, WT Docket No. 96-86, Notice of Proposed Rulemaking, 11 FCC Rcd 12460 (1996) (*Public Safety Notice*). For a list of comments and reply comments in this proceeding, with corresponding short title references, see Appendix B.

1996,[9] and that report was submitted to the Commission as comments in response to the *Public Safety Notice*. We applaud the members of the public safety community for the countless hours of effort and commitment they put forth in the development of the *PSWAC Final Report*, and for the important role they played in helping us begin to explore public safety communications needs in the *DTV Sixth Report and Order*.

10. Before turning to our discussion of goals that we seek to forge with the public safety community and other interested parties, we note that this Notice does not intend to address all the issues raised in the *Public Safety Notice* or the *PSWAC Final Report*. As we have indicated,[10] this Notice takes the first step toward developing and implementing a framework for public safety communications. To the extent that important issues remain, they will be addressed in future proceedings.

a. Defining Public Safety Communications Needs

11. Our first goal is to arrive at a consensus with the public safety community and other interested parties regarding the nature of problems faced by public safety agencies in their efforts to use spectrum for public safety communications. What do public safety agencies need in order to achieve efficient and reliable communications, both in emergencies and in connection with day-to-day operations? Defining these needs is the starting point for the development of a communications framework for public safety. We believe there are three principal public safety communications needs:

- Immediate spectrum shortages must be addressed.
- A system for interoperable communications must be established.
- Technologies that will enhance public safety communications capabilities must be made available in the public safety communications market.

12. The *PSWAC Final Report* sounded an alarm regarding the extent to which spectrum shortages are hampering the mission of safety and rescue personnel. The *Final Report* stressed that public safety agencies are in critical need of more channels for voice communications. The new spectrum made available by Congress in the 746-806 MHz band provides the opportunity to ease this problem. Thus, a major component of the communications framework must be to clear the path for the provision and use of this spectrum as expeditiously as possible.

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[9] *See* note 5, *supra*.

[10] *See* para. 7, *supra*.

13. Public safety agencies commonly operate their own wireless systems, using frequencies, modes, and equipment incompatible with those used by other public safety agencies, with the result that public safety agencies often are unable to communicate with one another by radio. This inability to communicate across agency and jurisdictional lines can hamper efforts to provide mutual aid in emergencies, to conduct pre-planned task force or emergency-preparedness operations, and to maintain the normal day-to-day inter-agency communications that form an important part of the public safety community's mission to protect life and property.

14. In order to promote the safety of life and property in every part of the Nation, we need to join with the public safety community in working to achieve seamless nationwide communications interoperability among Federal, State, and local public safety agencies. This interoperability must be available for use in national or other emergencies, in pre-planned task force and emergency preparedness operations, and in routine, day-to-day communications. Moreover, interoperability must be available for transmission of voice, data, and video communications. We agree with PSWAC that "present [communications] limitations can be eased by establishing bands of frequencies for interoperability purposes, encouraging the development and use of shared systems, and building gateways between technically incompatible systems."[11] The framework developed in this rulemaking must determine the amount of spectrum necessary to meet these interoperability needs, and must take the steps necessary to ensure that public safety personnel can depend upon reliable, affordable, and efficient interoperable communications. One of the possible steps that we intend to examine in this proceeding is the use of commercial services as a source of spectrum to meet public safety communications needs.[12]

15. We note that PSWAC and others have suggested we make available 2.5 megahertz of spectrum for interoperability purposes. We have serious concern about whether this is sufficient to ensure efficient communications between officials in various agencies and jurisdictions. We are concerned that designating only about 10 percent of the spectrum that has been made available for public safety purposes will tend to perpetuate the current balkanization between agencies and jurisdictions that exists today in public safety communications. Thus, we intend to work closely with the public safety community and other interested parties to examine the issue of the amount of spectrum that may be necessary to ensure effective and efficient interoperability.

16. Finally, we must look to the future as we work with the public safety community in devising an overall framework for public safety communications. Public safety agencies

[11] *PSWAC Final Report* at 3.

[12] *See* Section III, *infra*, paras. 172-227.

have a critical, ongoing need to incorporate technological advances into their communications networks so that they are better equipped to accomplish their missions. Success in providing help in emergencies, saving lives, and protecting the Nation's citizens is often measured in minutes and seconds — the use of enhanced wireless communications technologies can reduce the number of ticks of the clock before safety and rescue personnel can minister to those most critically in need of help. Our framework must ensure that public safety agencies are not frozen in antiquated or inefficient communications technology.

b. Ensuring Efficient Spectrum Use

17. We believe that public safety agencies currently are hampered by inefficient use of most of the spectrum allocated for public safety communications, in part, because of a lack of the proper incentives for its efficient use and the *ad hoc* manner in which that spectrum originally became available. An effective public safety framework will require planning, cooperation, and efficient administration of the public safety spectrum. With regard to interoperable communications, the goal of this proceeding must be to develop operational standards, common baseline technical standards, and eligibility ground rules that make seamless nationwide interoperability work. For example, certain technical standards may be needed to ensure effective interoperable communications. We also believe that current inadequacies in interoperable communications may be a product of the inability to reach agreement on the protocols that must be in place to enable agencies to talk across jurisdictional lines. Thus, a key goal for this proceeding is to solve this problem.

18. Another key to efficient spectrum use is accommodating local, State, and regional needs in connection with the use of spectrum for general service public safety communications. The effectiveness of public safety agencies is tied to their ability to communicate. Due to their special obligations, public safety agencies often have unique communication needs. In addition to voice communications, public safety officials also have a need to transmit video and data. PSWAC has found that radio frequencies allocated for public safety use are highly congested in many areas and, therefore, public safety agencies are not able to meet current requirements or to plan for future advanced communication needs.[13] PSWAC has also maintained that, unless immediate measures are taken to alleviate spectrum shortfalls, public safety agencies will not be able adequately to discharge their obligation to protect life and property in a safe, efficient, and cost effective manner.[14]

19. We believe that we can work with the public safety community to promote efficient, effective, and innovative use of spectrum by providing the maximum flexibility

[13] *PSWAC Final Report* at 2.

[14] *Id.*

possible, consistent with the overall objectives and goals of this proceeding. This technical, service, and equipment flexibility will enable the emergence and implementation of local, State, and regional solutions to communications problems. We tentatively conclude that one component of the framework for efficient spectrum use should be reliance on regional planning committees for the development of plans to utilize available frequencies in ways that best meet the needs of public safety agencies in the respective regions.

20. With respect to the general use public safety spectrum, we believe that the communications framework established in this proceeding should call for the regional planning committees to design plans to assist the Commission in assigning licenses to meet regional needs. The regional planning committees also may assist in deciding certain technical issues relating to operations on public safety spectrum. Regarding the interoperability channels, however, we must attempt to balance the advantages of regional planning with the goal of promoting interoperability nationwide. We recognize that, in order to achieve nationwide interoperability, it will be necessary to have uniform technical standards. We may also choose to consider, as part of the framework for public safety communications, the appointment, on an ongoing basis, of spectrum band coordinators or managers to coordinate use of public safety spectrum beyond the initial planning and authorization stages.

21. Achieving the goal of efficient and effective spectrum use also will depend upon a determination of the proper mix of spectrum for interoperable and general service communications. For example, the primary goal of this proceeding in providing interoperability spectrum is to ensure that public safety personnel are able to communicate with one another, as necessary, on a day-to-day basis or in times of emergency. To accomplish this, we will have to dedicate a sufficient amount of spectrum to enable the use of a variety of different types of desired communications (*e.g.*, voice, data, video).[15] On the other hand, in providing the general service spectrum, we must make sufficient spectrum available to enable public safety agencies to employ whatever technologies and types of communications are necessary to meet their current and future internal communications requirements. It will be necessary to balance these needs as we attempt appropriately to apportion the available public safety spectrum.

22. Finally, efficient use of public safety spectrum, in our view, can be fostered through the operation of competitive forces in markets supplying public safety communications equipment and services. As we have noted,[16] we believe that the competitive provision of public safety equipment and services will spur technological innovation, leading to enhanced capabilities for efficient spectrum use.

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[15] See the discussion in para. 15, *supra*.

[16] *See* para. 7, *supra*.

c. Promoting Affordability of Communications Capabilities

23. We recognize that a continuing problem faced by public safety agencies is the lack of adequate funding to carry out their functions. Although this obviously is a problem that reaches beyond the jurisdiction and authority of this agency, we believe that it is an issue that cannot be ignored as we seek to join with the public safety community in developing a framework for the use of public safety spectrum.[17] Thus, we believe that one of the principal goals of this proceeding should be the establishment of policies and incentives that will promote the ability of public safety agencies to afford to take advantage of the latest communications capabilities.

24. Affordability depends in part on a competitive public safety communications market. As we noted earlier in this proceeding:[18]

> [A] contributing factor to the deficiencies in today's public safety communications is the lack of a vigorous competitive market for the purchase of communications equipment and services employed by public safety agencies. Subsequent to initial procurement, competition is virtually non-existent; therefore, maintenance, upgrades, and expansion are often limited to one provider. Consequently, not only must agencies pay higher prices, but also technological innovation and expanded product choice are inhibited.

25. Thus, we believe that a key approach to achieving the goal of affordable public safety communications equipment and services must be the development of a framework to ensure competitive incentives and to ensure that our public safety communications policies are neutral with respect to technologies and manufacturers. In establishing this goal, we reiterate the view we expressed in the *Public Safety Notice* that we must create a regulatory environment that fosters competition — we believe this goal can be achieved by developing a framework that enables a wide range of services and equipment to be provided using a variety of technologies, that ensures that initial equipment acquisitions do not limit choices regarding upgrades and expansion, and that encourages "manufacturers and service providers [to] accept

[17] We note that earlier this year Senator McCain introduced legislation that earmarked a portion of auction revenues for use by public safety agencies to purchase upgraded equipment. See Law Enforcement and Public Safety Telecommunications Empowerment Act. S. 255, 105th Cong., 1st Sess. (1997).

[18] *Public Safety Notice*, 11 FCC Rcd at 12494 (para. 95).

the competitive environment."[19] We request comment on this approach, and on specific mechanisms we could employ to ensure a competitive equipment market.

B. Interoperability Service Rules

26. We begin by considering service rules for the public safety spectrum in the 746-806 MHz band for interoperability. We will discuss the following issues that arise in the context of interoperability: location and amount of interoperability; types of communication; transmission technology; channel spacing; channel requirements; equipment standards; eligibility, use, and licensing; and trunking and technical standards. We then will discuss similar issues for the spectrum that is not reserved for interoperability.

27. Public safety agencies usually operate their own wireless communications systems, using frequencies, modes, and equipment that are often incompatible with the frequencies, modes, and equipment used by other agencies.[20] State and local agencies operate systems in six different radio services on frequencies scattered throughout the VHF and UHF[21] bands using various and often incompatible technologies.[22] Federal agencies, authorized by NTIA, similarly operate on non-contiguous frequencies throughout the VHF and UHF bands.[23] Consequently, local, regional, and national public safety agencies have little or no ability to communicate with each other by radio. We found that this present inability of public safety agencies to communicate with each other is one of the most critical deficiencies in today's public safety communications.[24]

28. In the *Public Safety Notice*, we observed that agencies must be able to exchange information pertaining to their daily operations, as well as during on-scene mutual aid or joint operations, and that their needs extend beyond basic voice transmission to include the transmission of video and high-speed data.[25] We also affirmed our belief that developing the capa-

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[19] *Id.* at 12494-95 (para. 97).

[20] *Id.* at 12468 (para. 21).

[21] Public Safety spectrum is designated in the VHF band between 30 and 50 MHz and between 150 and 170 MHz. In the UHF band public safety uses various frequencies between 450 and 512 MHz, and in bands at 800 MHz.

[22] *Public Safety Notice*, 11 FCC Rcd at 12469 (para. 22).

[23] *Id.*

[24] *Id.*

[25] *Id.* at 12468-69 (para. 21).

bility of public safety units to exchange information while using the radio systems of two or more different agencies is essential to our efforts to improve public safety communications.[26] We recognized that the ability of public safety agencies to operate on contiguous frequencies and use similar, or at least compatible, technologies, enhances their ability to communicate.[27]

29. As an initial matter, the *Public Safety Notice* proposed a formal definition of interoperability and related definitions as follows:[28]

- *Interoperability*: An essential communications link within public safety and public service wireless communications systems which permits units from two or more different agencies to interact with one another and to exchange information according to a prescribed method in order to achieve predictable results.

- The communications link may be classified as either of the following two types:

  Infrastructure-independent: The communications link occurs between subscriber units over a direct RF [radio frequency] path. An example is portable-to-portable tactical communications at the scene of an incident.

  Infrastructure-dependent: The communications link requires use of some item(s) of equipment, other than a subscriber unit, for the establishment of the link and for complete subscriber operation. Some examples include a communications link for which a repeater station is required; a communications link which provides full system coverage for a visiting subscriber unit within a host trunked radio system; and a communications link which provides interconnectivity between two or more otherwise incompatible radio systems by cross-connecting the audio signals and/or appropriate signaling functions at some central point.

- The communications link, whether infrastructure dependent or independent, must satisfy one or both of the following requirements:

  Multi-jurisdictional: Wireless communications involving two or more similar agencies having different areas of responsibility. Some examples include a fire agency from one city communicating with a fire agency from another city and the Federal Bureau of Investigation communicating with a County Sheriff.

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[26] *Id.*

[27] *Id.*

[28] *Id.* at 12471-72 (para. 26). The text is quoted directly from the *Public Safety Notice*.

Multi-disciplinary: Wireless communications involving two or more different agencies. One example is a police agency communicating with an emergency medical services agency.[29]

- The communications link may involve any combination of subscriber units and fixed equipment (*e.g.*, repeaters, dispatch positions, data resources). The points of communication are dependent upon the specific needs of the situation and any operational procedures and policies which might exist between the involved agencies.

30. PSWAC adopts these definitions.[30] In addition, the PSWAC Interoperability Subcommittee (PSWAC ISC) proposes a definition for "mission critical" communications. The PSWAC ISC states that a mission critical communication is that which must be immediate, ubiquitous, reliable and, in most cases, secure.[31]

31. Most parties commenting on the *Public Safety Notice's* proposed definitions of interoperability, including the mission critical definition, endorse them, many without further comment.[32] MnDOT states the definitions "capture the essence of the interoperability issue."[33] Ohio-DAS also agrees with the definitions, and plans to incorporate them in Ohio.[34]

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[29] The *PSWAC Final Report* used examples such as a police agency communicating with a fire agency and a parks agency communicating with a medical services agency. *PSWAC Final Report* at 46.

[30] *Id.* at 46-47. *See also* Minutes of the Third Meeting of Interoperability Subcommittee of PSWAC, Dec. 14, 1995.

[31] *PSWAC Final Report* at 47. PSWAC explains the elements of "mission critical" as follows:

> An "immediate" communication must be capable of being transmitted and received instantaneously, without waiting for a system to be set up, a clear channel, or a dial tone. A "ubiquitous" communication is that which can be transmitted and received throughout the area that the mission requires. A "reliable" communication system must be designed, constructed, and maintained such that short-term disruptions are minimal. Finally, security, while not currently available in many situations, is increasingly a requirement for law enforcement and other sensitive communications. In this case, "security" is provided with voice privacy encryption.

Id.

[32] *See, e.g.*, APCO Comments at 7; Cal. Telecomm. Comments at 6; Mesa Comments at 5; Ericsson Comments at 8; FLEWUG Comments at 8; Fort Worth Comments at 3; Hennepin Comments at 3; ITSA Comments at 6; MnDOT Comments at 6; NYTC Comments at 5; Orange County Comments at 1; Owensboro Comments at 1; Powell Comments at 8; PW County Comments at 2; Transcrypt Comments at 2.

[33] MnDOT Comments at 6.

PW County and Texas-DPS support the definitions generally, and single out the "mission critical" definition for favorable comment.[35] NASTD, however, expresses reluctance to support the definitions without knowing how they will be applied.[36] Ericsson states that the PSWAC ISC report usefully distinguishes between infrastructure-independent solutions (links directly between radios using a direct radio path) and infrastructure-dependent solutions (requiring equipment other than the end users' radios).[37]

32. Based on this general support among the commenters for these definitions we tentatively conclude that the above definitions, including the definition of mission critical, should be adopted. We seek further comment on these definitions and on any proposals for different definitions.

33. The *Public Safety Notice* discussed the need for interoperability in public safety communications in three general contexts.[38] One context is mutual aid incidents. At disaster sites, public safety agencies from different jurisdictions and disciplines must communicate among themselves and with other entities, such as public utilities or transportation authorities.[39] The *PSWAC Final Report* notes that mutual aid interoperability must often be established during emergencies and under conditions that allow little opportunity for prior planning; that communications must often be established among numerous smaller groups, each with its own talk group; and that, once responders are on the scene, mutual aid interoperability usually involves the use of portable radios.[40] We note that mutual aid in emergencies is of such vital importance to public safety that the terms "mutual aid channels" and "interoperability channels" have sometimes been used as though they were

[34] Ohio-DAS Comments at 4 (unpaginated).

[35] PW County Comments at 2; Texas-DPS Comments at 3. Texas-DPS expresses the view that virtually all interoperability communications are mission critical.

[36] NASTD Comments at 5.

[37] Ericsson Comments at 12.

[38] *Public Safety Notice*, 11 FCC Rcd at 12472 (para. 28).

[39] *Id.* at 12472 (para. 29).

[40] *PSWAC Final Report* at 48.

synonymous.[41] It was particularly common for these terms to be used interchangeably prior to PSWAC identifying mutual aid as one category or context of interoperability.[42]

34. Another context is emergency preparedness and task force operations. Emergency preparedness, which involves planning for disaster relief, may include many public safety agencies from various jurisdictions.[43] Task forces also typically involve agencies from many disciplines and jurisdictions, and thus require interoperable communications systems. Task forces frequently deploy emergency operations centers, establish on-scene command posts, and dispatch units throughout a wide area.[44] The PSWAC ISC notes that, in contrast to mutual aid, such missions allow for prior planning, and that the covert nature of some task force missions can make long range transmission undesirable.[45]

35. A third context is day-to-day operations. Day-to-day operations are those requiring routine communications capabilities, as when personnel in adjoining jurisdictions, or within different disciplines in the same jurisdiction, need to exchange information. Typically, these requirements are local or regional, as when agencies with concurrent jurisdiction need to monitor each other's routine traffic.[46] Day-to-day interoperability also minimizes the need for interaction among dispatchers in exchanging information in the field.[47] Some commenters maintain that, of the three contexts, day-to-day interoperability touches the greatest number of lives.[48] In addition to the PSWAC ISC[49] and the PSWAC Steering Committee,[50] many other

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[41] *See, e.g.*, Development and Implementation of a Public Safety National Plan and Amendment of Part 90 to Establish Service Rules and Technical Standards for Use of the 821-824/866-869 MHz Bands by the Public Safety Services, GEN Docket No. 87-112, Report and Order, 3 FCC Rcd 905, 908-09 (paras. 26-34) (1987) (*NPSPAC Report and Order*); Technical Compatibility Protocol Standards for Equipment Operating in the 800 MHz Public Safety Bands, Memorandum Opinion and Order, GEN Docket No. 88-441, 4 FCC Rcd 3874, 3875 (para. 7) (1989) (*Public Safety Protocol Order*).

[42] We discuss the distinction between the terms "mutual aid channels" and "interoperability channels" in greater detail at para. 37, *infra.*

[43] *Public Safety Notice*, 11 FCC Rcd at 12472 (para. 30).

[44] *Id.*

[45] *PSWAC Final Report* at 48.

[46] *Public Safety Notice*, 11 FCC Rcd at 12472 (para. 28); *PSWAC Final Report* at 47.

[47] *PSWAC Final Report* at 47-48.

[48] APCO Comments at 7; Powell Comments at 8.

[49] *PSWAC Final Report* at 47-48.

commenters discuss interoperability needs in terms of these mutual aid, task force, and day-to-day interoperability contexts outlined in the *Public Safety Notice*.[51]

36. Based on the comments we received in response to the *Public Safety Notice*, which stress the critical need for interoperability, we believe that it is appropriate to propose policies and rules that will enable interoperability to be successfully implemented among all local and regional jurisdictions, as well as by Federal entities, throughout the Nation. In that context, we seek input from public safety users, manufacturers, and others regarding the following issues to assist us in developing appropriate policies and rules for achieving interoperability among public safety entities operating in the 746-806 MHz band.

1. Interoperability Spectrum

a. Location and Amount of Interoperability Spectrum

37. The *Public Safety Notice* discussed several approaches for attaining increased interoperability among public safety agencies, including use of shared, trunked systems; relocating all public safety communications to a new band; designating universal mutual aid channels; installing cross-band repeaters or gateways;[52] and using commercial services.[53] In the *Public Safety Notice*, we also discussed the approach of designating certain channels for interoperability, which we referred to as "mutual aid channels." We used the term "mutual aid channels" for this approach, because that was the name given to the channels that were set aside for interoperability in the 1987 National Public Safety Planning Advisory Committee (NPSPAC) National Plan.[54] The *PSWAC Final Report* uses the term "interoperability channels" for the same concept,[55] and commenters appear to use the two terms interchangeably. To avoid confusion, we too will use the term "interoperability channels" for this approach because, in the years since the adoption of the NPSPAC National Plan, the

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[50] *Id.* at 19.

[51] Commenters address these three contexts in considerable detail, but generally are in agreement with these categories. *See, e.g.*, APCO Comments at 7-8; Ericsson Comments at 9; Powell Comments at 8.

[52] *Public Safety Notice*, 11 FCC Rcd at 12475 (para. 37). A "gateway" is a conceptual or logical network station that interconnects two otherwise incompatible networks, network nodes, subnetworks, or devices. It performs protocol conversion operations across a wide range of communications functions or layers.

[53] *Id.* at 12492 (paras. 89-90).

[54] *See, e.g., NPSPAC Report and Order*, 3 FCC Rcd at 908-09 (paras. 26-34); *Public Safety Protocol Order*, 4 FCC Rcd at 3875 (para. 7).

[55] *See, e.g., PSWAC Final Report* at 3, 52.

term "mutual aid" has come to stand for a specific context or category within the broader concept of interoperability.[56]

38. While we recognized that there were advantages and disadvantages to each of these approaches, we tentatively concluded that establishing new interoperability channels would be an effective first step in providing inter-agency communications, and we sought comment on that tentative conclusion.[57] The *Public Safety Notice* suggested that designating new interoperability channels had the significant advantage of allowing agencies to continue operating their existing communications equipment while they acquire equipment, such as multi-band or separate dedicated radios, that will permit access to the new interoperability channels.[58] As an example, we proposed that a number of frequencies be selected in one of the band segments between 30 MHz and 800 MHz and designated for public safety communications, and that new public safety radio equipment be required, through our type acceptance process,[59] to operate on these designated frequencies.[60] We also hoped that inexpensive software programming could be used to modify much of the mobile and portable equipment currently employed by public safety agencies, thus retro-fitting them for operation on the mutual aid channels.[61] We stated our belief that this approach would require a common interoperability standard for all equipment operating on the interoperability channels.[62]

[56] Thus, the term "mutual aid channels" in this Notice may refer either to: (1) that aspect of interoperability which has to do with communication among those responding to an emergency, as opposed to task force or day-to-day interoperability; or (2) the five channels that were designated for interoperability under the NPSPAC National Plan and which were named "mutual aid channels." In all other cases, we adopt PSWAC's phrase "interoperability channels."

[57] *Public Safety Notice*, 11 FCC Rcd at 12475 (para. 39).

[58] *Id.* at 12474-75 (para. 36).

[59] Type acceptance is a process by which the Commission authorizes equipment for conformance with the technical standards found in the rules governing a particular service. *See* Sections 2.901 and 2.905 of the Commission's Rules, 47 C.F.R. §§ 2.901, 2.905.

[60] *Public Safety Notice*, 11 FCC Rcd at 12474-75 (para. 36).

[61] *Id.*

[62] *Id.*

39. The PSWAC Steering Committee recommends the immediate identification of 2.5 megahertz of spectrum for interoperability from new or existing allocations.[63] The PSWAC ISC also supports the creation of a single common public safety interoperability service in one central band.[64] The proposal in the *Public Safety Notice* to designate interoperability channels has received widespread support, with many commenters expressly supporting the PSWAC proposal that 2.5 megahertz of spectrum be set aside for interoperability.[65] For example, Richardson supports the development of common interoperability channels, and cites its favorable experience with the use of the NPSPAC mutual aid channels in support of this option.[66] FLEWUG supports the PSWAC concept of establishing channels dedicated to interoperability, and Powell states that the Commission has correctly identified the advantages of such a system and the need for a common standard for its implementation.[67]

40. Some commenters who believe designating interoperability channels is a viable option, nonetheless perceive some potential problems, asserting, for example, that effective interoperability can only be achieved on a shared system;[68] that obtaining new equipment

[63] *PSWAC Final Report* at 3.

[64] *Id.* at 329-30.

[65] The following commenters see merit in designating interoperability channels, without specifically mentioning the PSWAC proposal relating to the set aside of 2.5 megahertz: API Comments at 17; DOT Comments at 9-10; AAA/AICC Comments at 3; Hennepin Comments at 5: Nor. Cal. APCO Comments at 5; Nippon Reply Comments at 7; Owensboro Comments at 1; PG County Comments at 4; PW County Comments at 2; Richardson Comments at 2 (unpaginated); Transcrypt Comments at 2; Virginia State Police Comments at 1; Wisconsin State Patrol Comments at 2 (unpaginated).

The following commenters expressly support the PSWAC proposal: APCO Comments at 10-11; Cal Telecom. Div. Comments at 8; CPRA Comments at 3 (unpaginated); Ericsson Comments at 14; FCCA Reply Comments at 2; FLEWUG Comments at 11; LA County Comments at 2; Motorola Comments at iii; Powell Comments at 11; Baldwin Comments at 1; Garden City Comments at 1; NYC DoITT Comments at 1; La Grande Comments at 1; Illinois Tollway Comments at 1; N. Bellmore Comments at 1; Margate Reply Comments at 1; New Hyde Park Reply Comments at 1; SNGVPD Comments at 1; Nassau County Comments at 1; YSFD Reply Comments at 1; NYFD Comments at 1; Tri-Com Comments at 1; Orlando Comments at 1; FDMS Comments at 1; NYSTA Comments at 1; Yonkers Comments at 1; Elk Grove Comments at 1; Clackamas Comments at 1; Lakeview Reply Comments at 1; Lucas Reply Comments at 1; Marin Reply Comments at 1; Massapequa Reply Comments at 1; NYC Dept. of Corrections Reply Comments at 1; Plainview Reply Comments at 1; Sherman Reply Comments at 1; Westbury Reply Comments at 1; Uniondale Reply Comments at 1; Westchester Reply Comments at 1.

[66] Richardson Comments at 2 (unpaginated).

[67] FLEWUG Comments at 11; Powell Comments at 11-12.

[68] AASHTO Comments at 8.

involves additional expense;[69] and that difficulties exist in reconciling the differing needs, resources, and demographic and geographic characteristics of public safety users.[70] Commenters suggest, however, that some of the perceived deficiencies with regard to this option can be overcome by allocating additional spectrum for this specific purpose.[71] APCO and Powell are pessimistic about using "inexpensive software programming" to modify current mobile and portable equipment for operation on the interoperability channels.[72]

41. Other commenters raise questions about the application of the interoperability channels option. Kansas-EMC expresses concern that, during an actual emergency, if too many agencies have access to the same channel it could quickly be overloaded, thus compromising its utility.[73] Texas-DPS calls the interoperability channels approach unsatisfactory and cost-prohibitive, and maintains that it would require stockpiling radios for use in emergencies.[74]

42. The *Public Safety Notice* also raised the issue of the location of the interoperability channels.[75] One approach to providing spectrum for interoperability, favored by Ohio-DAS, is to identify specific channels in each of the public safety bands for interoperability.[76] The PSWAC ISC Report, however, suggests that the establishment of a "Public Safety Interoperability Service" dedicated exclusively to interoperability applications within a single band would be both possible and practical.[77] It notes that this approach would

[69] *See* IMSA/IAFC Comments at 12; Fort Worth Comments at 4; NASTD Comments at 6 (mutual aid channels are viable and achievable but could significantly increase costs).

[70] IMSA/IAFC Comments at 12. *See also* AASHTO Reply Comments at 7.

[71] IMSA/IAFC Comments at 12 (designating interoperability channels is "a viable solution provided that spectrum is available and it would not require users to vacate their frequencies"). *See also* ADI Comments at 3.

[72] APCO Comments at 9; Powell Comments at 10. *See Public Safety Notice,* 11 FCC Rcd at 12475 (para. 36).

[73] Kansas-EMC Comments at 3.

[74] Texas-DPS Comments at 4. Texas-DPS adds that, because disasters are unpredictable, no one could know where such a stockpile should be kept.

[75] *See Public Safety Notice,* 11 FCC Rcd at 12476 (para. 40).

[76] Ohio-DAS Comments at 5 (unpaginated).

[77] *PSWAC Final Report* at 329, 597.

provide "an absolute common technical solution to the common operating requirements of a mutual aid incident,"[78] and would not require users' "home systems" to be compatible.[79]

43. In order to provide for an appreciable amount of interoperability spectrum in the various existing public safety bands, it would be necessary to "free up" sufficient channels in those bands that would be available on a nationwide basis. Given the extensive use of such channels, this would be a difficult endeavor.[80] Moreover, clearing sufficient spectrum in these bands to provide for high data rate and video communications would be next to impossible. The 24 megahertz within the 746-806 MHz band provides, however, a large amount of relatively unencumbered spectrum that could be dedicated for nationwide interoperability.

44. We tentatively conclude that the establishment of nationwide interoperability channels will be in the public interest, and will significantly advance our goal of facilitating communication among public safety agencies. Some commenters have indicated that the 800 MHz band is not as desirable as the 150 MHz and 450 MHz bands from a propagation standpoint.[81] Others would prefer that the interoperability channels be located in these lower bands because of their proximity to current public safety operations.[82] Given the difficulty, however, of clearing sufficient spectrum in the lower bands, and in light of the proposal to make available 24 megahertz of spectrum in the 746-806 MHz band, we propose to dedicate a significant amount of spectrum in the 746-806 MHz band solely for interoperability communications.[83] The precise amount of spectrum we devote to interoperability will reflect

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[78] *Id.*

[79] *Id.* The PSWAC ISC further observes that the creation of an "interoperability service" would be a "fresh and new service which could be implemented without regard to any backward compatibility requirements." *Id.* at 331, 599.

[80] Within existing bands, we have asked the frequency coordinator to examine the possibility of reserving some channels for mutual aid. Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them and Examination of Exclusivity and Frequency Assignments Policies of the Private Land Mobile Services, PR Docket No. 92-235, Second Report and Order, FCC 97-61, at para. 23 (released Mar. 12, 1997) (*Refarming Second Report and Order*). This would have some benefit, but would not satisfy a nationwide need for interoperability.

[81] AASHTO Comments at 13.

[82] FLEWUG Comments at 12; Quantum Comments at 4; Powell Comments at 10-11.

[83] Powell notes that the PSWAC process concluded before the release of the *DTV Proceeding*, which indicated that spectrum used for UHF television Channels 60-69 might become available for public safety. Powell Comments at 4. Powell further notes that the Channel 60-69 spectrum is adjacent to the 800 MHz bands already used by some public safety agencies, and suggests that this proximity could facilitate the development of equipment that would be capable of interoperating with some existing public safety systems. *Id.*

the comments and suggestions we receive in regard to the spacing and number of channels required.

45. We seek comment on this proposal. If commenters believe that we should attempt to allocate spectrum for interoperability from other public safety bands or elsewhere, we request that their comments indicate which bands should be used to provide such spectrum and how channels within those bands might be cleared throughout the Nation in order to realize our goal of nationwide interoperable communications. If commenters believe that interoperability channels should be designated in more than one band, they should indicate how nationwide interoperability can be achieved using channels in different bands.

b. Types of Communication

46. It is difficult to categorize the types of communication that may be transmitted over interoperability channels, and the distinctions among the various types may not always be clear. We tentatively conclude, however, that it would be useful to categorize public safety communications into four separate types: voice, data, image/high speed data (image/HSD), and video. We seek comment on this tentative conclusion. All four of these categories could be employed by public safety entities to communicate with one another in any of the situations requiring interoperability that we have described.[84]

47. For example, voice communications ordinarily involve communications between the field personnel of a particular public safety agency and that agency's dispatch center. In a situation requiring interoperability, however, voice communication could involve:

- Communications between field personnel of one agency and the dispatcher of another agency.[85]
- Communications between the field personnel of different agencies and an emergency operations center (EOC).[86]

[84] *See* paras. 33-35, *supra.*

[85] We received comments from agencies in the process of implementing "auto-aid," a concept in dispatching in which the closest available unit to an incident, regardless of jurisdiction, is sent to the scene of an incident. *PSWAC Final Report* at 65. This concept of a preplanned response, not called for by an on-scene incident commander, is beginning to take hold in the law enforcement community. According to one commenter, auto-aid is of particular advantage to fire departments and emergency medical services (EMS), which are more reliant on mutual aid than are police operations. *See* Mesa Comments at 12.

[86] We are using the term "EOC" generically, recognizing that various agencies have different terminology for the center (physical place or personnel) responsible for coordinating communications.

- Communications between dispatchers of different agencies, or between dispatchers and an EOC.

- Communications among field personnel of different agencies.

In this latter scenario, voice communications may be either *direct* (mobile/portable-to-mobile/portable), using only mobile transmit frequencies; or through a repeater, which requires the use of both base and mobile transmit frequencies.[87]

48. Data communications, as referred to in this proceeding, involve communications to and from field personnel using mobile/portable data terminals. The PSWAC Operational Requirements Subcommittee (ORSC) anticipates enormous growth in the demand for data applications.[88] Situations involving the need for data communications include:

- The transmission of written instructions from the dispatcher of one agency to the field personnel of another.

- The transmission of written instructions between an EOC and the field personnel of different agencies.

- The transmission and receipt of various forms of informational data between field personnel of different agencies and a dispatcher or EOC (*e.g.*, license plate and registration information, or fingerprint identification).

The PSWAC ISC emphasizes certain advantages of using data networks, such as field agents on travel being able to access data from their home agency as well as from national data sources; field personnel responding to a large-scale mutual aid event being able to be briefed and receive field instructions before arrival on the scene; and the possibility of "Internet-like" communications between individual users and groups of users.[89]

49. Image/HSD communications, as referred to in this proceeding, involve the transmission of non-moving, visual media and the transmission of large amounts of information at high data rates. This category includes transmissions of:

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[87] *PSWAC Final Report* at 30-31 (noting that, especially during emergency response situations, voice is the primary method of communication).

[88] *See generally id.* at 31.

[89] *Id.* at 417.

- Snapshots of an emergency scene from field personnel to a dispatcher.[90]
- Blueprints of burning buildings transmitted to fire-fighting personnel.
- Written documents (*i.e.*, facsimiles) to and from field personnel.[91]
- On-line manuals, statutes, and enforcement regulations.[92]
- Fingerprints, mugshots, and, potentially, retinal prints.
- Information from large data bases,[93] such as NCIC 2000.

Another potential use of image/HSD communications between agencies might involve the transmission of a still picture taken from a videotape of a bank robbery from one police department to neighboring police departments.[94]

50. Video communications may be described in two formats: *slow motion* video and *full motion* video. Full motion video employs the transmission of 24 or more frames/sec to reproduce a moving scene accurately; slow motion video employs the transmission of fewer frames/sec (as few as 1 frame/sec) to reproduce the moving scene with somewhat less accuracy. Full motion video might be used by public safety entities when transmitting video of a disaster, wildfire, or emergency taken from a helicopter, or for video surveillance of high crime areas or accident sites.[95] Slow motion video could be used to transmit images of patient

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[90] Several jurisdictions want to implement this capability in the future. *See* Ohio-DAS Comments at 7-8 (unpaginated); NYCT Comments at 8; Hennepin Comments at 6; PG County Comments at 6.

[91] Access to written documents is considered a desirable application by many commenters. *See* NASTD Comments at 8-10; APCO Comments at 12; Ohio-DAS Comments at 7-8 (unpaginated); NYCT Comments at 8; Hennepin Comments at 6; AMSC Comments at 4.

[92] MnDOT Comments at 9.

[93] NASTD Comments at 8-10.

[94] Many of the Working Groups of the PSWAC Operations Subcommittee noted mission-specific applications involving the transmission of mugshots and other still photographs. *PSWAC Final Report* at 90, 96, 99, 101, 103-04, 106, 112, 130, 133-34.

[95] One commenter anticipates many uses for full-motion video involving vehicles. These include: closed circuit, full scan video surveillance of vehicles in motion; closed circuit video scanning of vehicle tags while a vehicle is in motion for checking records before the vehicle is stopped; real time full scan video surveillance of vehicle stops in high crime areas; ability to transmit real time crime scene video for future analysis and use in

injuries directly to a trauma specialist.[96] In a possible scenario that would combine the use of video and data interoperability communications, video taken by police, fire, or EMS personnel at the scene of an emergency could be transmitted on a "slow motion video interoperability channel" to a nearby hospital; and then instructions regarding how to treat victims could be transmitted to personnel at the scene using a "data interoperability channel." In addition, video communications may also be required by highway departments for mutual aid purposes — *e.g.*, to share unit location and weather conditions among transportation agencies of different jurisdictions, and to connect with the Emergency Management Command Centers during major incidents (*e.g.*, hurricanes, tornadoes, blizzards, and earthquakes).[97]

51. An important concern in this proceeding is whether and how each of these types of potential interoperability communications could or should be accommodated in our designation of interoperability spectrum. We propose to make spectrum available for the four general types of communication. We seek comment on this proposal and inquire whether we should designate interoperability spectrum for:

- Voice channels only (with data capability on such channels).
- Voice and data channels only.
- Voice, data, image/HSD, slow motion video, and full motion video channels.
- Channels that would accommodate some other combination of uses.

52. Commenters should indicate how each type of interoperability would actually be used. In particular, commenters advocating a channel allocation for full motion video should indicate their reasoning for reserving a relatively large amount of spectrum for such use, as opposed to providing for full motion video through alternative means.[98] We seek comment

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criminal trials, as appropriate; and ability to transmit real time video of accident scenes for use in safety investigations, litigation, and road design. NASTD Comments at 8-10.

[96] *PSWAC Final Report* at 31.

[97] *Id.* at 394.

[98] For example, the New York City Transit Authority states that commercial service might provide innovative services such as full motion video, which would be too expensive for a single agency, but which commercial entities might provide to a wider market. NYCT Comments at 12-13. Also, PG County states that a commercial entity or a consortium of local governments may be desirable for providing full motion video. PG County Comments at 6.

below on the specific channel spacings and number of channels that should be designated for each type of communication.[99]

c. Transmission Technology

53. In order to ensure interoperability among all public safety agencies, an important factor to consider is whether to specify the modulation technology for interoperability channels. Because our goal is to provide for nationwide interoperability, we tentatively conclude that at a minimum we must specify whether analog FM or digital modulation technologies should be used. We consider these issues in the context of the various types of interoperability communications we are considering. Issues relating to the development of standards are more fully discussed in Section II.B.4., *infra*.[100]

(1) Voice

54. By way of background, most public safety equipment in use today for voice transmission employs analog FM technology.[101] In the future, however, digital systems will be implemented in the public safety services.[102] Digital technology offers certain advantages over analog for voice communications. For example, voice encryption, an important requirement for public safety communications, is more easily accomplished using digital technology,[103] and systems employing digital technology can be designed to operate effectively in the mobile environment.[104] On the other hand, the quality and clarity of digital voice systems for public safety communications, especially on 12.5 kHz channels, has not

[99] *See* paras. 61-70, *infra*.

[100] *See* paras. 104-107, *infra*.

[101] *PSWAC Final Report* at 208. The Interoperability Subcommittee notes that analog FM technology is "well understood, and a common set of non-proprietary operating parameters has allowed users to communicate directly over the air using radios produced by different manufacturers." *Id.* at 335. *See also id.* at 297.

[102] We use the term "digital technology" to refer to voice and data systems that employ direct digital modulation of a carrier. "Analog technology," which is used for the transmission of voice, is also used for the transmission of data through digital modulation of a sub-carrier tone (in the same way computer modems transmit data on telephone lines). *See id.* at 219.

[103] Some commenters, including the PSWAC TESC, indicate, however, that analog scrambling techniques have advanced in recent years. Encryption, therefore, may not be a significant factor in deciding whether to employ digital or analog technology for voice interoperability channels. *Id.* at 208.

[104] *See id.* at 209.

been subjected to the variety of real world applications faced by the public safety community.[105]

55. Perhaps the most significant drawback of digital technology in the context of interoperable voice communications is that, while public safety equipment in use today employs the existing analog FM standard, in order for public safety users operating in the 746-806 MHz band to communicate on digital equipment, that equipment would have to be built to a not-yet-developed digital standard (*i.e.*, a standard that would require the use of a common voice coder, digital modulation scheme, *etc.*). Developing and implementing digital standards may be a difficult task, and an important consideration in allocating spectrum for voice interoperability is whether the advantages of digital technology warrant our mandating digital standards. The PSWAC ISC recommends that the minimum baseline technology for voice interoperability should be analog FM,[106] but that digital standards for interoperability should be developed within two years through "open standards developed/adopted in an open and fair process"[107] to allow for the eventual migration to digital technology. The PSWAC ISC believes that use of analog FM for voice interoperability will "suffice" perhaps until 2010, but that most users by then will be employing digital technology on their authorized channels and will want to operate in the digital mode on interoperability channels.[108]

56. We seek comment regarding whether the achievement of interoperability on analog or digital modulation for voice interoperability channels should be specified. In addition, we seek comment regarding whether standards on these channels, whether analog or digital, should be adopted. We ask commenters how long it would take to develop digital standards and whether the time associated with the development process offsets the advantages

[105] APCO Project 25 has developed voluntary digital standards that provide for digital voice transmissions on a 12.5 kHz channel. Little or no equipment, however, using these standards is currently being employed in the field by public safety licensees. Similarly, the TETRA standard has been adopted for public safety communications in Europe, but no system has been fully implemented. *See* Cellular and Mobile International, D. Preiser, "Open Standards for Digital Trunked Mobile Radio," May 1, 1997.

[106] In particular, the PSWAC ISC recommends an emission of 16K0F3E for voice interoperability channels. *PSWAC Final Report* at 52. The PSWAC ISC also states that "[w]e must make sure that any radios arriving on an incident have at least a baseline technology capability to talk directly to any other unit on the same frequency band on the scene." *Id.* at 328.

[107] *Id.* at 424. The PSWAC ISC evaluated the option that an accredited standards setting organization be involved in the development of digital baseline standards and concludes that this requirement would be overly restrictive. In comparing the development of communications technology to that of the computer industry, they note that the "standard" platforms are proprietary. The premise is that a competitive environment will spur the development of the most technologically superior products for which the developer is entitled to recover the research and development costs by means of licensing "at fair and reasonable terms." *Id.*

[108] *Id.* at 318.

of digital technology. We also seek comment regarding whether adopting a digital standard would result in all interoperability equipment being tied to *today's* digital technology for many years, even if that technology experiences great advances in the next century.[109]

(2) Data, Image/HSD, and Video

57. As with voice, the transmission of data using digital technology has certain advantages over the transmission of data using analog FM technology. In particular, a greater data throughput can be achieved using digital technology.[110] For example, data speeds for current mobile data equipment using analog FM channels are on the order of 2400 to 4800 bits/sec on a 25 kilohertz channel, while the data rate for equipment using digital technology is as high as 19.2 kb/sec. Also, unlike voice communications, where the use of standard analog FM technology would not require the adoption of additional technical standards (only the adoption of a standard channel spacing), achievement of interoperability on analog data channels *would* require the establishment of a set of standards similar to those necessary for digital data channels.[111] Thus, given that technical standards will have to be developed regardless of whether analog or digital technology is used for data channels, we propose to adopt the use of digital modulation on such channels, in order to benefit from the throughput advantages of digital technology.

58. Image/HSD and video communications[112] also involve the transmission of digital information. Both of these types of communications differ from data communications only in the sense that image/HSD and video transmissions would occur at much higher bit rates. For example, in its Report, the PSWAC TESC discusses various types of image/HSD communications (*e.g.*, facsimiles, snapshots, and NCIC 2000) that would require the transmission of large numbers of data bits.[113] The TESC Report also indicates that slow

[109] For example, through the years there have been many advancements in voice coder design and we can only assume that such advancements will continue in the future. *See id.* at 228-29.

[110] Greater throughput in data communications enables information to be transferred faster.

[111] *See PSWAC Final Report* at 44.

[112] As discussed above, video communications, in the context of this proceeding, include slow motion and full motion video communications. *See* para. 50, *supra*. The full motion video systems referred to by commenters are digital systems, which occupy less spectrum than existing analog television systems. Slow motion digital systems occupy still less spectrum.

[113] *PSWAC Final Report* at 230-31.

motion video systems could operate at 384 kb/sec, while full motion video systems would require a data rate of approximately 1.5 Mb/sec.[114]

59. Thus, the same considerations discussed above with regard to data communications would apply to image/HSD and video communications. Image/HSD or video systems based on the transmission of data using digital technology would be more spectrally efficient than systems using analog technology. Digital systems would enable faster transmission of information on a given amount of spectrum for image/HSD communications, and would enable the transmission of video communications on less spectrum. Additionally, both analog-based and digital-based image/HSD and video systems would require a certain degree of standardization.[115] To take advantage of the benefits of digital technology, we propose to mandate digital modulation for image/HSD and video interoperability channels.

60. We seek comment regarding our proposal to mandate the use of digital modulation for data, image/HSD, and video interoperability channels. As a related issue, we seek comment regarding whether technical standards should be mandated for data, image/HSD, or video equipment used for interoperability. If so, what technical standards would be necessary on data, image/HSD, and video channels to achieve interoperability if digital systems, or analog-based systems, are employed? In addition, commenters should indicate the data rates they believe are desirable or necessary for each type of digital communication (*i.e.*, data, image/HSD, and video).

d. Channel Spacing

61. An important consideration in deciding how spectrum should be designated for different types of interoperable communications is the spacing of the channels needed to support such communications. We therefore explore this issue with respect to each of the four categories of interoperable communications discussed above, and request comment on any other categories that may be appropriate.

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[114] *Id.* at 232.

[115] Analog video transmissions, like analog FM voice, employ commonly accepted technical parameters and would therefore not require the development of new standards. For digital video transmission, however, there are two standards under development. The International Standards Organization (ISO) supports the MPEG (Motion Picture Expert Group) standard designed as a single direction protocol at 1.5 Mb/sec. The International Telecommunications Union (ITU) has the H-Series designed for two-way video conferencing at 384 kb/sec for one frame per second and allowing for a variable frame rate. *PSWAC Final Report* at 231-32. Also, APCO Project 34 is currently involved in developing standards for the transmission of high speed data and images, such as mugshots, fingerprints, and NCIC 2000 information.

62. Prior to the adoption of the *Refarming Report and Order*, public safety spectrum in the 150 MHz, 450 MHz, and 800 MHz bands was channelized based on a maximum authorized bandwidth of 20 kilohertz. This bandwidth limitation applied to channels spaced 15 kilohertz apart in the 150 MHz band, 25 kilohertz apart in the 450 MHz band and 800 MHz band, and 12.5 kilohertz apart in the 821-824/866-869 MHz band. Thus, most public safety equipment in use today employs technology based on a bandwidth limitation of 20 kilohertz. The *Refarming Report and Order* required that land mobile equipment authorized for use in the future on land mobile frequencies below the 512 MHz band employ channels that are no more than 12.5 kilohertz apart with a maximum authorized bandwidth of 11.25 kilohertz.[116]

63. There are various factors that we may consider in attempting to determine the most appropriate spacings for voice interoperability channels. The PSWAC ORSC, in particular, discusses the need for public safety communications to achieve a minimum voice quality standard.[117] Although the PSWAC ORSC does not discuss this standard in the context of channel spacing, channel spacing may be a factor in attaining the level of voice quality described by the PSWAC ORSC. Another consideration is that the PSWAC ISC recommends an emission of 16K0F3E for voice interoperability channels.[118] The PSWAC ISC, however, does not propose a particular channel spacing to accommodate that emission. In addition, we may want to consider that the 746-806 MHz band is adjacent to the 806-821 MHz band, which has channels spaced 25 kilohertz apart. Providing voice interoperability channels in the 746-806 MHz band with this channel spacing may enable licensees operating in the 806-821 MHz band to more easily incorporate the 746-806 MHz interoperability channels into their equipment.[119]

64. In determining the most appropriate spacing for data interoperability channels, an important consideration is that wider channels generally enable greater amounts of information to be transmitted in a given amount of time. Thus, we seek comment regarding these related issues:

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[116] Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them and Examination of Exclusivity and Frequency Assignment Policies of the Private Land Mobile Radio Services, PR Docket No. 92-235, Report and Order and Further Notice of Proposed Rulemaking, 10 FCC Rcd 10076, 10080-82 (para. 7) (1996) (*Refarming Report and Order*).

[117] This is the DAQ - 3.4 voice quality standard, as developed by Telecommunications Industry Association (TIA) and the Institute of Electrical and Electronics Engineers (IEEE). *PSWAC Final Report* at 150-55.

[118] *PSWAC Final Report* at 52.

[119] *See* para. 72, *infra*.

- What channel spacing is needed to ensure appropriate voice quality and clarity for voice interoperability channels?

- Should the interoperability channels be spaced 25 kilohertz apart to more easily enable these channels to be incorporated into equipment operating in the 806-821 MHz band? Or should we consider a transition to 12.5 kHz channels for the 806-821 MHz band?

- What channel spacing is needed to ensure appropriate data capacity for data interoperability channels?

- To what extent might voice channels also be used by public safety personnel to carry data?

65. APCO and Powell discuss the use of 125 kilohertz channels for wideband data[120] and video transmissions. They indicate that, assuming a rate of 3 bits/sec/Hz, 125 kilohertz channels could provide for such transmissions at 384 kb/sec.[121] The PSWAC TESC indicates that a digital full motion video signal would require the transmission of approximately 1.5 Mb/sec. If such a signal could be transmitted at a rate of 3 bits/sec/Hz, then it could be delivered on a 500 kilohertz channel.[122]

66. We seek comment on what channel spacings should be adopted for voice, data, image/HSD, and video interoperability channels. We request that commenters consider the issues raised in Section II.B.1.c., *supra*[123] — *e.g.*, the use of analog or digital technology, the appropriate data rates for different types of communications — and discuss their rationale in suggesting appropriate channel spacings for voice, data, image/HSD, slow motion video, and full motion video channels. We also ask commenters to indicate whether the channel spacings they suggest are based on current or future state-of-the-art technology in digital efficiency, as measured in bits/sec/Hz.

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[120] The term "wideband data" is defined by PSWAC to include the transmission of complex images, slow scan video, and fingerprint and identification information (*e.g.*, mugshots). *PSWAC Final Report* at 56.

[121] *See* Powell Comments at 13; APCO Comments at 10. The Final Report of the PSWAC TESC indicates the following nominal transmission requirements: facsimile (1.87 Mb); mugshot (20 kb); fingerprint (24 kb); color snapshot (19.66 Mb); and slow-motion video (384 kb/sec) (using the ITU H.261 standard). *PSWAC Final Report* at 230-32.

[122] *PSWAC Final Report* at 232 (noting that the current state of the art for digital full motion video is set by the MPEG-2 standard at 1.5 Mb/sec.).

[123] Paras. 53-60, *supra*.

e. Channel Requirements

67. We seek input from commenters regarding the number of interoperability channels that should be designated for each type of communication described above, and with regard to additional factors related to channelization, such as the number of paired or unpaired channels needed for the various types of communications. The PSWAC ISC suggests that 31 paired voice, 70 simplex voice, two independent high speed data, and two independent full motion video links should be provided for interoperability purposes from new public safety spectrum.[124] But, given that there is not an unlimited amount of spectrum available for interoperability, we seek comment on whether the Commission should decide how many channels are necessary to satisfy the needs of the public safety community for each type of interoperability communications. In connection with examining whether the number of channels necessary for each type of interoperability communications should be specified, we seek input from commenters on the configuration and number of channels that should be dedicated for interoperability.

68. With regard to voice channels, we seek input as to whether we should provide for a combination of one-way (mobile transmit-only) and two-way (base transmit and mobile transmit) voice channel pairs, as the PSWAC ISC suggests, or whether we should propose the allocation of strictly two-way channel pairs. In making this decision, we will consider the likely interoperability needs of public safety users. As indicated above,[125] there are a variety of voice interoperability communications — *e.g.*, dispatcher-to-dispatcher, dispatcher-to-field personnel, field personnel-to-field personnel (through a repeater, or directly). The latter, direct communication between personnel in the field, would simply involve the use of mobile transmit channels. Therefore, in providing for voice interoperability channels, we must consider whether we should designate some number of mobile transmit-only channels, or whether establishing the maximum number of two-way channel pairs is advisable to enable maximum support of mobile-repeater-mobile operation (when a repeater is available).

69. With regard to data, image/HSD, and video channels for interoperability, we believe it is also important to consider the anticipated nature of such communications — *i.e.*, will these types of communications originate from a base station[126] or from the field.[127]

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[124] *PSWAC Final Report* at 52.

[125] *See* para. 47, *supra.*

[126] *See* NASTD Comments at 8-10; *PSWAC Final Report* at 219 (noting the useful applications of still image transmission to the field in "allow[ing] the dispatcher to send pictures of missing children or of suspects to patrolling police officers or to send high-resolution diagrams of buildings and charts showing storage of hazardous materials to fire trucks . . .").

Ultimately, we must decide how many one-way and two-way data, image/HSD, and video interoperability channels are desirable,[128] based upon the likely needs for interoperable communications.

70. We seek comment on the number of channels that commenters believe should be dedicated for interoperability uses for: voice transmissions (mobile-only, or base and mobile channel pairs); data transmissions (base-only, or base and mobile channel pairs); image/HSD transmissions (base-only, or base and mobile channel pairs); slow motion video transmissions (mobile-only, or base and mobile channel pairs); and full motion video transmissions (mobile-only, or base and mobile channel pairs). In commenting on the number of interoperability channels that should be designated, we ask that commenters also indicate the channel spacing they assume for each type of channel.

f. Equipment Standards

71. The *Public Safety Notice* raised the issue of whether the Commission should adopt "receiver standards" to ensure the quality of public safety radio receivers.[129] In the past we have generally relied on the market to address receiver standards. Nevertheless, we recognize that poor quality receivers could impede communications on the interoperability channels. Accordingly, we invite comment as to whether the Commission should establish receiver standards for the interoperability channels. Commenters should address the reasons for and against adopting such standards. Those commenters recommending mandatory standards should indicate the technical parameters to be standardized. We observe that the Commission's authority to regulate receiver performance may be limited. We note, for example, that Section 302 of the Communications Act grants the Commission specific authority to regulate the susceptibility to interference of home electronic equipment such as TV receivers.[130] We request parties who favor mandatory receiver standards to address the Commission's legal authority to adopt such standards.

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[127] *PSWAC Final Report* at 219 (noting useful applications of still image transmission from the field in "allow[ing] police officers to transmit photographs and fingerprints of suspects back to the office for processing, inspection by other officers, and comparison with materials in data bases."). *See also id.* at 214 (noting applications of full motion video from the field to monitor wildland fire scenes from the air, for Federal law enforcement surveillance and for State and local transportation agencies' detection of roadway hazards or collisions.).

[128] PSWAC, for example, appears to have recommended the allocation of one base/mobile pair of high speed data channels, and one base/mobile pair of full motion video channels. *Id.* at 52.

[129] *Public Safety Notice*, 11 FCC Rcd at 12484 (para. 68).

[130] 47 U.S.C. § 302(a).

72. In the *NPSPAC Order*, we decided that all mobile and portable radios operating on channels in the 821-824/866-869 MHz band must be capable of operating on the five mutual aid channels.[131] We seek comment regarding whether we should require that all public safety mobile and portable radios operating in the 746-806 MHz band be capable of operating on all voice and data interoperability channels in that band. In addition, we could also require that all public safety mobile and portable radios operating in the adjacent 806-824/851-869 MHz band be equipped for operation on these channels.[132] We invite comment regarding whether it is technically feasible to incorporate the 746-806 MHz interoperability channels into mobile and portable radios operating in the 806-824/851-869 MHz band, and whether doing so is dependent on whether we employ television Channels 68 and 69 (*i.e.*, frequencies in the 794-806 MHz band) for mobile-to-base transmissions (as proposed in Section II.F., *infra*)[133] or whether we decide instead to use television Channels 63 and 64 (*i.e.*, frequencies in the 764-776 MHz band) for some or all mobile-to-base transmissions. If incorporating 746-806 MHz interoperability channels into 806-824/851-869 MHz mobile and portable radios is technically feasible, commenters are asked to address whether we should require that all public safety mobile and portable radios operating in 806-824/851-869 MHz band manufactured or imported beginning one year after the effective date of the Report and Order adopted in this proceeding, be capable of operating on the interoperability channels in the 746-806 MHz band.

73. On the other hand, the best and easiest way to provide for mobile and portable radio equipment on these channels might be for equipment manufacturers to build "interoperability radios" (*i.e.*, radios that transmit and receive only on voice and data interoperability channels). Because all such radios would operate on the identical channels and have the same features, it might be better, from a technical or economic standpoint, for manufacturers to invest their resources in the production of these types of radios. If such radios could be manufactured at relatively low cost, then they could be made available to large numbers of local, State, and Federal public safety personnel throughout the Nation for use in both emergency and day-to-day interoperability.[134] We seek comment on this option,

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[131] *NPSPAC Report and Order*, 3 FCC Rcd at 908 (para. 28).

[132] *See* Section II.C.3.e., *infra*, paras. 156-158, regarding equipment standards for non-interoperability spectrum.

[133] Paras. 170-171, *infra*.

[134] The PSWAC ISC notes that a possible advantage of having separate radios that transmit and receive only on the interoperability channels is that they could be "small and low cost due to optimization to specific interoperability requirements." *PSWAC Final Report* at 321. It also indicates that separate radios are currently used by many agencies to achieve interoperability when users are operating on different frequency bands, and that the use by all agencies of a "separate emergency radio" operating on an interoperability band might

and on the trade-offs between this and the previous option (of requiring all radios to operate on the interoperability channels).

2. Eligibility, Use, and Licensing

a. Definitions

74. In the *Public Safety Notice*, we tentatively concluded that we should adopt formal definitions relating to public safety.[135] In its *Final Report*, PSWAC also adopted these definitions.[136] We do not intend to take further action on the definitions we proposed, however, since in directing the Commission to assign 24 megahertz of spectrum in the 746-806 MHz band for public safety services, Congress defined "public safety services" to mean services:

> "(A) the sole or principal purpose of which is to protect the safety of life, health, or property;
>
> "(B) that are provided—
>
> "(i) by State or local government entities; or
>
> "(ii) by nongovernmental organizations that are authorized by a governmental entity whose primary mission is the provision of such services; and
>
> "(C) that are not made commercially available to the public by the provider."[137]

75. We tentatively conclude that a definition of a "public safety services provider" can be based upon the statutory definition of public safety services, and that such a definition would be helpful in developing service rules for the 746-806 MHz band. We propose to define the term as follows:

> Public Safety Service Provider: (1) A State or local government entity that provides public safety services; or (2) a non-

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therefore "actually reduce the number of radios required by some agencies . . . ." *Id.* at 332.

[135] *Public Safety Notice*, 11 FCC Rcd at 12470 (para. 25).

[136] *PSWAC Final Report* at 45.

[137] Section 337(f)(1) of the Communications Act, 47 U.S.C. § 337(f)(1), as added by the Balanced Budget Act of 1997, § 3004.

governmental organization that is authorized to provide public safety services by a governmental entity pursuant to Section 337(f)(1)(B)(ii) of the Communications Act.[138]

76. We note that two broad groups fall within this definition — governmental public safety services providers, and authorized non-governmental public safety services providers. We also note that many entities with public safety interests, and with which public safety service providers may from time to time need to communicate by radio, do not fall within the statutory definition. We believe that among these would be Federal agencies; those State and local entities, the sole or principal purpose of which is *not* to protect the safety of life, health, or property; and providers of commercially available public safety services. The public safety services definition has obvious bearing upon which groups may be eligible to use the interoperability channels, and which groups may be eligible to apply for channels from the public safety spectrum that is not reserved for interoperability. We discuss these issues in later sections of the Notice.[139]

b. National and Regional Planning

77. We here address how interoperability spectrum may best be managed for effective interoperable communications. Commenters have stated that, in emergencies, disciplined use of the interoperability channels will be of vital importance, and some even maintain that adequate planning for inter-communication may be as important as providing sufficient spectrum for the channels.[140] Whether portions of the interoperability spectrum should be set aside for certain kinds of use, such as mutual aid or task force, or for certain services, such as firefighting or law enforcement, and whether some providers' use of these channels should be limited to certain circumstances, are examples of the questions we will ask commenters to consider in the paragraphs below.

78. As a threshold question, however, we ask commenters to discuss which policies we should set at the national level, and which should be set by those in closer proximity to State and local public safety users. In the *NPSPAC Proceeding*, we established 55 regions within the United States and its territories, and directed each to develop plans for use of both

[138] 47 U.S.C. § 337(f)(1)(B)(ii), as added by the Balanced Budget Act of 1997, § 3004.

[139] *See* Section II.B.2.d., *infra*, paras. 85-95, and Section II.C.2., *infra*, paras. 120-123.

[140] *See, e.g.*, Kansas EMC Comments at 3; Dallas Comments at 4-5.

the interoperability and the non-interoperability channels.[141] Among their other responsibilities, the regions were to establish procedures for interoperability that would employ the channels in a way that best suited their individual communications requirements.[142] We could adopt a similar process for the interoperable channels in the 746-806 MHz band. A disadvantage of this approach may be that in the event of a large-scale emergency, such as a flood or a hurricane, it may be difficult rapidly to integrate public safety personnel from multiple Federal, State, and local agencies into a localized interoperability plan. We tentatively conclude that our primary goal with respect to interoperability should be seamless interoperability on a nationwide basis.[143]

79. We therefore request comment regarding four alternative approaches to managing the interoperability channels in the 746-806 MHz band. First, we ask commenters to consider whether the individual NPSPAC regional planning committees should be given oversight and responsibility for developing and adopting plans for various aspects of the operation and use of the interoperability channels in the 746-806 MHz band, such as the specific amounts of spectrum for particular categories of interoperability or for making the decisions governing access to the interoperability channels.

80. Second, as a variation on this approach, we ask commenters to consider whether the Commission should create parallel regional organizations devoted entirely to developing plans and procedures for use of the interoperability channels. For example, the PSWAC ISC Report suggests that the Commission and NTIA formally certify State or regional interoperability communications planning (ICP) organizations to develop operational procedures for interoperability channels.[144] We note that while these two options would give maximum flexibility to the individual regions, neither provides for management or oversight of the interoperability channels at the national level. We therefore ask commenters favoring either of these two options to discuss how management of the interoperability channels could be entrusted to the individual regions without compromising our goal of seamless nationwide interoperability.

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[141] Development and Implementation of a Public Safety National Plan and Amendment of Part 90 to Establish Service Rules and Technical Standards for Use of the 821-824/866-869 MHz Bands by the Public Safety Services (*NPSPAC Proceeding*), Memorandum Opinion and Order, GEN Docket No. 87-112, 3 FCC Rcd 2113 (1988) (*NPSPAC First Reconsideration Order*). Regional planning committees are discussed in Section II.C.1., *infra*, paras. 109-119, at greater length.

[142] *See NPSPAC Report and Order*, 3 FCC Rcd at 911 (para. 52).

[143] *See* para. 14, *supra*.

[144] *PSWAC Final Report* at 429.

81. The PSWAC ISC suggests a third alternative, the establishment of a national planning process to develop "a nationwide mutual aid plan, define operational policies and procedures, provide guidance and procedures for regional planning processes, and define incident command system requirements . . . ."[145] The PSWAC ISC envisions that all levels of government would participate in this effort, which would define guidelines which the regions could then use in addressing interoperability concerns and issues in their individual regional plans.[146] In this way, regions would still develop their own interoperability procedures, but would do so using a common framework that would promote interoperability among both resident and non-resident public safety users. We seek comment as to whether the Commission should adopt this third approach, and initiate a national planning process to develop specific nationwide plans and procedures for the interoperability channels, as proposed by the PSWAC ISC.

82. Finally, we ask commenters to discuss a fourth option in which specific nationwide guidelines and procedures concerning the use of the interoperability channels would be developed. These approaches may not be mutually exclusive, and the best solution to managing the interoperability spectrum may combine elements from the four approaches we have suggested. For example, the 55 regions may fit within a nationwide structure with four to six subdivisions, such as, northeast, southeast, central, west, and non-continental United States. We request commenters to consider these options, or a combination of these options, as well as any other alternatives, regarding the management of the interoperability channels in the context of the following issues: (1) the categories of interoperability uses; and (2) eligibility for use of interoperability channels.

c. Categories of Interoperability Uses

83. In the *Public Safety Notice*, we discussed public safety interoperability in three general contexts: day-to-day, mutual aid, and emergency preparedness or task force operations.[147] The PSWAC ISC and the PSWAC Steering Committee also discuss interoperability needs in terms of these three contexts.[148] Thus, we consider whether it is necessary or advisable to provide specific amounts of spectrum for each of these categories of uses, or whether we should instead provide spectrum for general interoperability use. We invite comment regarding this issue. If commenters believe that interoperability channels

[145] *Id.* at 52.

[146] *Id.* at 52, 428-29.

[147] *Public Safety Notice*, 11 FCC Rcd at 12472 (paras. 28-30).

[148] *PSWAC Final Report* at 19, 47.

should be designated for specific uses — *i.e.*, day-to-day, task force, and mutual aid — we ask them to suggest the appropriate number of channels for each. We ask commenters to include in their suggestions how many of each type of channel — *i.e.*, voice, data, image/HSD, or video — should be designated for each category.

84. We also ask commenters to consider whether, in the event of an emergency, all voice, data, image/HSD, and video interoperability channels should become mutual aid channels, so that all public safety users at the scene of an emergency would have at their disposal the full complement of interoperability channels. We also invite comment regarding the alternative approaches of allowing the regions, either individually or as participants in a national planning committee, to decide how many channels, and what kind of channels, should be used for each category of interoperability. If we permit the regions to decide these questions, we ask commenters to discuss whether the Commission should designate a minimum number of the interoperability channels for mutual aid and set their location. Our tentative view is that such an approach would ensure that immediately identifiable channels would be available for mutual aid in all regions of the Nation, and thus support our goal of achieving seamless nationwide interoperability.

d. Eligibility and Use of Interoperability Channels

85. We seek comment regarding which entities should be eligible to use each of the three proposed categories of interoperability channels. When the Commission designated spectrum in the 821-824/866-869 MHz band for public safety, it decided that licensees eligible in the Public Safety Radio Service and Special Emergency Radio Services would be eligible to use the mutual aid channels.[149] Here, however, Congress has directed the Commission to assign 24 megahertz of spectrum in the 746-806 MHz band for public safety services, as defined by the statute.[150] We are considering devoting a substantial amount of that spectrum for the sole purpose of promoting interoperability. Our goal in dedicating this much spectrum for interoperability is to permit a broad range of public safety-related entities to communicate with each other.

86. The PSWAC ISC states that interoperability among Federal, State, and local public safety agencies is essential for the protection of life and property, and reports broad

[149] *NPSPAC Report and Order*, 3 FCC Rcd at 906-07 (para. 13).

[150] Section 337(f)(1) of the Communications Act, 47 U.S.C. § 337(f)(1), as added by the Balanced Budget Act of 1997, § 3004. *See* discussion at paras. 74-76, *supra*.

categories of agencies and other entities with interoperability needs.[151] Also, in certain emergencies, such as accidents involving railroads or the transportation of petroleum products, public safety service personnel may need to communicate with workers in industries that are not primarily engaged in public safety operations. In all, the PSWAC ISC identifies nine comprehensive categories — Federal Government, general government, criminal justice, fire and EMS, forestry-conservation, highway, Intelligent Transportation Systems (ITS), mass transportation, and public services — that require interoperable communications.[152]

87. DOT states that it agrees with PSWAC that interoperability among public safety agencies is an absolute requirement for both day-to-day and coordinated disaster-response operations, and observes that the need for interoperability includes both State and Federal entities, especially in emergencies.[153] Kansas-EMC stresses that it is necessary for different levels of government, such as the FBI and the county sheriff, to have interoperable wireless communications.[154] NYCT argues that the intensity of need may vary according to location or the type of activity, but at a minimum, the fire, police, and emergency medical "first responders" need constant access to direct communications.[155] Texas-DPS calls interoperability "the key issue" regarding protection of life and property, and states that interoperability "remains a concern for all agencies within public safety."[156] Finally, we note that many commenters agree that commercial infrastructure providers such as utilities and railroads may need access to the interoperability channels during an emergency in which their facilities are directly involved.[157]

88. We tentatively conclude that all public safety service providers[158] should be eligible to use all of the interoperability channels. We also tentatively conclude, however, that eligibility alone will not guarantee an entity unlimited access to these channels, but rather

[151] *PSWAC Final Report* at 45. Within the PSWAC ISC, Work Group 4 "discussed the idea of creating a 'laundry list' of entities, but felt that this might become restrictive and exclude vitally important entities in different regions of the country." *Id.* at 293. *See also id.* at 32-33.

[152] *See id.* at 382-411.

[153] DOT Comments at 5-6.

[154] Kansas-EMC Comments at 2, 4.

[155] NYCT Comments at 5-6.

[156] Texas-DPS Comments at 1.

[157] DOT Reply Comments at 2-3.

[158] For our proposed definition of "public safety service provider," see paras. 75-76, *supra.*

that use of interoperability channels will only be permitted in accordance with the plan for interoperability. We also believe that it would be consistent with the new Section 337 of the Communications Act and the intent of Congress to consider broadening the eligibility for interoperability channels in order to promote public safety. In the course of their duties, public safety service providers may need to interact with other public safety related entities, which provide services that do not fall within the definition of public safety services established by Congress in Section 337.

89. For example, public safety agencies may need to communicate with non-governmental workers during an industrial disaster, and during the aftermath of an incident such as the Oklahoma City Federal building bombing, State and local officials may need to maintain contact with Federal officials. We therefore invite commenters to consider whether entities which are not public safety service providers should also be eligible to use the interoperability channels. If we decide that these other entities should be eligible to use the interoperability channels, we ask commenters to consider the circumstances under which they should be permitted to use them.

90. As noted by the PSWAC ISC, there are no formal mechanisms currently in place to enable Federal users to operate on non-Federal Government spectrum. The PSWAC ISC therefore calls for regulations "to provide for equal access by both Federal and non-Federal agencies for purposes of interoperability."[159] As we discuss above, we tentatively agree that public safety service providers will need to communicate with their Federal counterparts, and we therefore seek comment regarding not only how the interoperability channels should be made available to Federal users, but also how the Table of Allocations may need to be revised to permit Federal use. Again, we also seek comment regarding whether rules permitting such use by Federal agencies would be consistent with congressional objectives in amending Section 337 of the Communications Act.

91. Unlike Federal agencies, and unlike those governmental agencies not solely or principally devoted to the protection of public safety, non-governmental organizations, under the terms of Section 337 of the Communications Act, may be considered to provide public safety services if they are so authorized by a government agency whose primary mission is the provision of such services.[160] We propose, therefore, that authorized non-governmental providers should not be treated as *guest* entities on the interoperability channels, but should instead be treated as being among the public safety service providers for whom the interoperability channels are specifically intended.

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[159] *PSWAC Final Report* at 313.

[160] *See* Section 337(f)(1)(B)(ii) of the Communications Act, 47 U.S.C. § 337(f)(1)(B)(ii), as added by the Balanced Budget Act of 1997, § 3004.

92. Nevertheless, we tentatively conclude that orderly and effective use of these channels would require that *all* users — State, local and Federal; governmental and non-governmental; those entities that are eligible by definition and those entities that may be eligible as guests — should be entitled to use the interoperability channels *only* in accordance with the interoperability plan. We further tentatively conclude that, in formulating such plans, the planners should have the latitude to restrict the use by any entity of any or all of the interoperability channels as much or as little as they judge necessary to ensure that these channels are put to effective use. We seek comment on these tentative conclusions.

93. We further ask commenters to address the question of whether the plans governing access to the interoperability channels should be designed by the individual regions, either through the regional planning committees or through regional committees established specifically to address interoperability, or whether at least some of these rules should be prescribed at the national level, either by the Commission or through a national interoperability planning committee. We ask commenters to consider the possibility that the rules determining access to some of the interoperability channels, such as the mutual aid channels or the task force channels, might be formulated by the Commission, while regional committees or other regional groups might formulate the rules governing access to the channels designated for day-to-day use. We also ask commenters to consider whether access by Federal agencies (if we conclude that such access is consistent with the terms of Section 337) should be regulated at the national level, with the rules governing access by other entities to be set at the regional level. Finally, we invite comment regarding whether standards and procedures should be adopted to ensure that the interoperability plans are reasonable, effective, and fair.

94. We also solicit comment regarding whether we should dedicate channels to specific services. Some of the voice interoperability channels could be made available solely for fire department and EMS licensees, for example, or reserved for State agencies, or placed at the disposal of a federation or other association of user groups. We ask commenters to discuss whether at least some channels should be designated for particular services on a nationwide basis, or whether all eligible entities should have access to all the channels within a given category. We ask commenters to include in their discussion whether the decisions regarding the provision of certain channels for particular services should be made by the regions individually, either through the regional planning committees or through regional committees established specifically to address interoperability; by a national interoperability planning committee; or by the Commission. We also remind commenters to consider the option of the Commission deciding these issues for some, but not all, of the interoperability channels.

95. We also invite comment regarding how the voice, data, image/HSD, and video interoperability channels should be assigned to licensees. In the *NPSPAC Report and Order*,

we decided that licensees would have to obtain authorizations for base and control transmitters operating on the five mutual aid channels,[161] but that public safety entities could operate mobile units and portables on the mutual aid channels without separate authorization as long as they were operating in accordance with an approved regional plan for the mutual aid channels.[162] We request comment regarding whether we should adopt this same approach for the licensing of all interoperability channels, or whether we should adopt an alternative approach, such as giving the regions more authority for the interoperability channels and allowing each region to authorize individual agencies to operate base stations without the need for separate station authorizations.[163]

3. Trunking on Interoperability Spectrum

96. In the preceding paragraphs we have discussed interoperability issues that could involve both national and regional planning. We now turn to interoperability issues of national scope that we believe are appropriately resolved by the Commission. We first discuss the issue of trunking on interoperability spectrum. We then consider technical standards for interoperability spectrum. We tentatively conclude that any trunking and technical standards for this spectrum should be set by the Commission at the national level. If each region were permitted to adopt its own trunking or other technical standards, the resulting incompatibility could defeat the very purpose of setting aside this spectrum solely for interoperability, which is to make possible seamless wireless communication among all public safety users, anywhere in the Nation.[164] We seek comment on this tentative conclusion.

97. As stated above, we propose to designate a substantial amount of the available 24 MHz of public safety spectrum in the 746-806 MHz band for interoperability.[165] This would be far more spectrum than we have ever before furnished for this purpose.[166] Even if we require all equipment operating on this spectrum to use identical analog or digital standards,

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[161] Base station operations on the mutual aid channels were to be in accordance with the mutual aid provisions of the licensee's regional plan. *NPSPAC Report and Order*, 3 FCC Rcd at 909 (para. 34).

[162] *NPSPAC Report and Order*, 3 FCC Rcd at 909 (para. 34).

[163] The PSWAC ISC recommends that the Commission and NTIA "freely license [interoperability] frequencies to all eligible public safety/service providers . . . ." *PSWAC Final Report* at 289.

[164] *See* para. 14, *supra*.

[165] *See* para. 44, *supra*.

[166] *PSWAC Final Report* at 3. In the *NPSPAC Proceeding*, for example, we allocated only five 12.5 kilohertz channel pairs (*i.e.*, 125 kilohertz, total) for mutual aid in the 821-824/866-869 MHz bands. 47 C.F.R. § 90.617(a)(1).

however, we may not realize our goal of enabling users from different public safety agencies or from different parts of the Nation to communicate with one another in emergencies if we do not provide a means for effectively coordinating the use of the interoperability channels. For example, if we provide for 70 mobile channels and 31 base/mobile channel pairs for interoperability, as PSWAC ISC suggests, and a number of public safety personnel from different agencies converge at the scene of a burning building — each equipped with a radio capable of operating on these channels — a firefighter inside the building must know which channel to use to communicate with a police officer standing outside the building.[167] Similarly, emergency responders from different regions must be able to select effectively from among the many possible interoperability frequencies, or our goal of viable nationwide interoperability will not be achieved.[168]

98. The matter of facilitating interoperable communications was addressed in the NPSPAC Plan, where we stipulated that the 5 channel pairs dedicated to mutual aid would operate in the conventional (non-trunked) mode.[169] In a subsequent reconsideration proceeding, certain parties expressed the concern that mutual aid systems operating in the conventional mode would be operationally inferior to more sophisticated trunked systems. They asserted that "computer-controlled trunked systems are capable of dynamic regrouping of callers, positive identification of caller, and other capabilities not available to the dispatcher in a conventional system."[170] We agree that these features enhance interoperable communications among local public safety agencies sharing a common infrastructure. For example, a shared, trunked system employed by public safety agencies in a particular area could register the radios used by all of their field personnel, by ID number, in a database, and the system could control and manage communications among such users. In the event that non-

[167] The PSWAC ISC Report observes that "there have been several recent incidents in which users operating field units have complained about the inability to communicate with other 'on-scene' agencies, only to later discover that they unknowingly had a common channel available in their radios." *PSWAC Final Report* at 297.

[168] The PSWAC ORSC provides several examples indicating the complexity of interoperability needs. "[I]n large scale incidents such as a forest fire, up to 150 separate voice paths may be needed to effectively direct and manage the fire-fighting effort. Coordination of these groups is critical as they may involve police, fire, ambulance, hospitals, utilities, and federal/state/local government responsibilities." *Id.* at 31. "Especially in large disaster situations, the effective coordination of multiple agencies . . . and jurisdictions is largely dependent on interoperable communications systems . . . . The 1993 fire in Malibu, California, required 458 agencies from 12 states to bring it under control." *Id.* at 32-33.

[169] *NPSPAC Report and Order*, 3 FCC Rcd at 908 (paras. 28-30).

[170] *Public Safety Protocol Order*, 4 FCC Rcd at 3875 (para. 9).

resident personnel entered the area during an emergency, their radio units could be added to the database.[171]

99. In the NPSPAC reconsideration proceedings, the Commission decided not to require a trunking standard for equipment operating in the 821-824/866-869 MHz band.[172] The Commission affirmed the NPSPAC decision that the five mutual aid channels could operate in the conventional mode, and that there would be no barrier to identification by the regional planning committees of additional mutual aid channels in their regions and provision of operational guidelines for their use.[173] The Commission believed that effective regional interoperability could be achieved through the use of the five conventional-mode mutual aid channels, and that adopting trunking standards for the entire 6 megahertz would entail an unacceptable delay in making the spectrum available for public safety use.[174]

100. In this proceeding, as we consider an amount of spectrum for interoperability that may greatly exceed the five NPSPAC mutual aid channels, it is appropriate to again weigh the desirability of mandating a trunking standard for equipment operating on this spectrum. In the NPSPAC proceeding, we considered the adoption of trunking standards on *all* of the channels in the 821-824/866-869 MHz band — *i.e.*, both the interoperability and non-interoperability channels.[175] In this proceeding, however, we are considering a designation of a substantial amount of spectrum solely for interoperable communications, and our paramount concern regarding rules for this spectrum must be the effective use of the spectrum for that purpose. We therefore consider, and seek comment on, the specific question of adopting a trunking standard for the channels devoted to interoperability.

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[171] *PSWAC Final Report* at 332.

[172] *Public Safety Protocol Order*, 4 FCC Rcd at 3879-80 (paras. 37-38).

[173] *NPSPAC Report and Order*, 3 FCC Rcd at 908 (paras. 28-30).

[174] *Public Safety Protocol Order*, 4 FCC Rcd at 3879 (para. 31).

[175] *See generally id.* at 3874 (paras. 1-3); Advanced Technologies for the Public Radio Services, GEN Docket No. 88-441, Further Notice of Proposed Rulemaking, 4 FCC Rcd 8519 (1989); Technical Compatibility Protocol Standards for Equipment Operating in the 800 MHz Public Safety Bands, GEN Docket No. 87-112, Notice of Inquiry, 3 FCC Rcd 5399 (1988); Development and Implementation of a Public Safety National Plan and Amendment of Part 90 to Establish Rules and Technical Standards for Use of the 821-824/866-869 Bands by the Public Safety Services, GEN Docket No. 87-112, Memorandum Opinion and Order on Reconsideration, 3 FCC Rcd 5391 (1988).

101. In a large-scale emergency, wireless communication among many personnel from different agencies and regions must be rapidly coordinated.[176] We tentatively conclude that a trunked system is the best, and possibly the only practicable, method by which this goal can be achieved. A trunking standard would allow all radios to communicate with one another in the trunked mode, and would permit the quick and flexible establishment of talk groups that could include the radios of different local public safety agencies or of extra-regional agencies.[177] Such capability appears essential to managing emergency communications among users from many public safety agencies and jurisdictions.. Further, trunking can offer additional capabilities and features, such as automatic identification of the caller, that could be of great benefit to public safety users, especially in emergency response situations, where the need to act quickly and with minimum confusion may be of the essence.[178] Also, while the amount of spectrum we propose for interoperability is substantial, it is not inexhaustible. Thus, because trunking technology makes for efficient use of the spectrum, requiring trunking would maximize the capacity available for interoperability.[179]

102. We have not heretofore required use of specific trunking standards for public safety communications services, and we note that we have not specified such standards for private or commercial mobile radio services either. However, interoperability among public safety users could be thwarted absent a trunking standard. It also is vitally important that the public safety spectrum be used in the most efficient way feasible.[180] For these reasons, as well as the operational benefits that trunking technology can provide, we ask whether we should adopt a trunking standard for communications on the interoperability channels. Because our goal is to promote the ability of public safety users to communicate across regional as well as across agency lines, we ask whether we should mandate a single nationwide trunking standard, rather than leave to the individual regions the decision of whether to employ conventional or trunked operations, or of selecting regional trunking standards.

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[176] Interagency planning and coordination are crucial for the successful use of the interoperability channels. *See, e.g.,* Kansas-EMC Comments at 35; Dallas Comments at 3; Texas-DSP Comments at 20.

[177] As the PSWAC ISC has noted, if the equipment of non-resident agencies is not fully compatible with a local system infrastructure, then, in an emergency, non-resident and local personnel would not be able to communicate with one another effectively. The PSWAC ISC further indicates that land mobile radio equipment produced for the public safety market in the 800 MHz band by the three major U.S.-based equipment manufacturers "is not compatible in the analog trunked mode." *PSWAC Final Report* at 356.

[178] *Public Safety Protocol Order*, 4 FCC Rcd at 3875 (para. 9).

[179] *See, e.g., Refarming Second Report and Order,* at paras. 56-57.

[180] *See* para. 17, *supra.*

103. We seek comment on the various advantages and disadvantages of requiring use of trunking technology on the interoperability channels and our adoption of a standard. Commenters who believe it would be sufficient to require only use of conventional analog technology on the interoperable channels, as we require for the five mutual aid channels in the 821-824/866-869 MHz band, should suggest viable alternatives by which the large number of designated interoperability channels anticipated for this spectrum could be managed in emergencies. In addition, we invite such commenters to address the impact that lack of a trunking standard may have on the amount of spectrum that could be dedicated to interoperability.

4. Technical Standards for Interoperability Spectrum

104. We recognize that adoption of technical standards poses formidable challenges. With regard to trunking standards, multiple standards are currently in use. Thus, selecting a trunking standard may exacerbate the problem of "backward compatibility" with existing systems. Further, the various manufacturers use proprietary trunking technology.[181] As a result, prior efforts to achieve industry and user consensus on a trunking standard have been largely unsuccessful. Further, such efforts to establish standards have led to strong disagreements over complex matters such as intellectual property rights and technical barriers to trade. With regard to digital standards, APCO Project 25 has been involved in a lengthy process to develop such standards for public safety equipment in the 800 MHz band — a process that has not been without controversy.

105. Accordingly, we request comment regarding how technical standards should be developed for interoperability channels. Our preference would be to rely on equipment manufacturers to develop standards through an appropriate standards association such as the Mobile and Personal Communications Division of the Telecommunications Industry Association (TIA). TIA, which is accredited by the American National Standards Institute (ANSI), would, through a fair and open process, produce standards which could then be adopted by the Commission.[182] Alternatively, the Commission could adopt standards

[181] The PSWAC ISC observes that "[a]s manufacturers introduced new features and functions within the radio system, many of which were proprietary and are not available to other manufacturers, the interoperability problem was amplified." The PSWAC ISC points out that trunking systems, in particular, "utilized proprietary technology" and therefore "equipment was not compatible among different manufacturers." *PSWAC Final Report* at 298.

[182] TIA Comments at 2-3, 6-8; *see also* AMERICAN NATIONAL STANDARDS INSTITUTE, PROCEDURES FOR THE DEVELOPMENT AND COORDINATION OF AMERICAN NATIONAL STANDARDS (Mar. 1997).

developed by a public safety organization such as APCO Project 25.[183] If standards to be adopted by the Commission were developed
by a group not accredited by ANSI, we would propose to require that group to use open and fair processes similar to those identified in Section 273(d)(4) of the Communications Act[184] in the development of such standards.[185] Another option would be for the Commission to adopt existing standards, such as the European TETRA standard, with any necessary modifications for the 746-806 MHz band.[186] Another approach would be for the Commission to create an industry advisory committee, and require that it develop standards within a certain period of time.[187]

106. We invite comment regarding the advantages and disadvantages of these various approaches to development of digital or trunking standards for interoperability channels. We are particularly interested in views concerning the option that would have the most likelihood of successfully meeting the needs of the public safety community. Further, we seek to underscore that it is our intent to initiate licensing of the public safety spectrum as soon as practicable. Therefore, we request comments as to the approach to development of standards for interoperability spectrum that is likely to be the most expeditious.

107. We appreciate that in addition to a basic trunking standard for interoperability channels, related technical standards — *e.g.*, standards that would enable priority access to be established on all radios, and allow radios to be configured into talk groups — may be

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[183] The Project 25 Steering Committee includes representatives of APCO; the National Association of State Telecommunications Directors (NASTD); NTIA; and the National Security Agency (NSA); and State and local officials. Project 25 Steering Committee Comments at 1.

[184] 47 U.S.C. § 273(d)(4).

[185] *See* Public Notice, FCC 96-403, WT Docket No. 96-86, released Oct. 9, 1996. In that Public Notice we stated our belief that Section 273(d)(4) applies specifically to wireline telecommunications equipment, but sought comment regarding whether the principles of that section might nonetheless be useful in the future development of public safety equipment standards. Comments were divided over whether the Commission should, or may, impose such procedural requirements on the development of *voluntary* technical standards for public safety equipment by non-ANSI accredited standard-setting organizations. Even commenters who dispute the Commission's authority to impose procedural requirements on the development of voluntary standards, however, do not dispute the Commission's authority to impose procedural requirements on the development of *mandatory* standards that the Commission intends to adopt. *See, e.g.*, APCO Comments at 30; Cal. Telecom. Comments at 23; Motorola Comments at 12-13.

[186] The advantages ascribed to the TETRA standard are set forth in the Strategic Policy Research Reply Comments, Attach. A.

[187] The PSWAC ISC states that any digital standards for interoperability should be developed and adopted in an open and fair process. *PSWAC Final Report* at 53.

required to enable effective interoperability.[188] In addition, common encryption standards may be desirable for public safety communications on all types of interoperability channels. We therefore invite comments as to the scope of any such additional standards that may be needed to ensure effective interoperability and how such standards should be developed. We also invite comment regarding what elements these standards should encompass.

C. General Service Rules

108. We turn now from the service rules for the portion of the public safety spectrum designed to promote interoperability to similar issues related to service rules for the remainder of the public safety spectrum in the 746-806 MHz band. For these general service rules, our primary concerns are to alleviate the shortage of channels available to public safety agencies for their internal use and to provide spectrum for new types of communications, such as image and video. We begin by reviewing the approach the Commission took when it adopted the *NPSPAC Report and Order* and allocated six megahertz of spectrum for public safety in the 821-824/866-869 MHz bands. We then discuss and seek comment regarding the role of the regional planning committees, and finally turn to issues dealing with the provision and use of the public safety spectrum in the 746-806 MHz band.

1. Regional Planning Committees

109. In 1986, the Commission allocated six megahertz of spectrum in the 821-824/866-869 MHz bands nationwide for public safety use.[189] In the *NPSPAC Report and Order*, the Commission indicated that this spectrum was to be utilized in the context of a National Plan and that the spectrum would not be made available for assignment until the National Plan was developed.[190] Active public safety involvement in the design of such a plan was deemed essential, and to that end the Commission, in December 1986, established NPSPAC to coordinate the involvement of public safety agencies in these planning efforts.[191]

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[188] APCO Project 16 developed such performance standards, which are used today in trunked public safety equipment operating in the 800 MHz band. *See generally Public Safety Protocol Order.*

[189] Amendments of Parts 2 and 22 of the Commission's Rules Relative to Cellular Communications Systems, Amendment of Parts 2, 15, and 90 of the Commission's Rules and Regulations to Allocate Frequencies in the 900 Reserve Band for Private Land Mobile Use, Amendments of Parts 2, 22 and 25 of the Commission's Rules to Allocate Spectrum for, and to Establish Other Rules and Policies Pertaining to the Use of Radio Frequencies in a Land Mobile Satellite Service for the Provision of Various Common Carrier Services, GEN Docket Nos. 84-1231, 84-1233, and 84-1234, Report and Order, 2 FCC Rcd 1825, 1838 (para. 99) (1986).

[190] *NPSPAC Plan NPRM*, 2 FCC Rcd at 2869 (para. 2).

[191] *Id.* at 2869, 2873 (para. 3) (App. A).

In November 1987, when we adopted service rules and technical standards for the 821-824/866-869 MHz bands, the Commission employed, with modifications, recommendations made by NPSPAC in a plan (National Plan) that comprised both national and regional elements.[192] The Commission explained that, while certain technical concerns had to be addressed at the national level, the great diversity of needs in different areas of the Nation required the development of regional plans closer to the State and local levels.[193]

110. Within the framework of the National Plan, the United States was divided into regions that would have as much autonomy as possible to develop plans that met their different communications needs.[194] The Commission, according to the National Plan, would address certain common national requirements, such as those pertaining to channeling, trunking, and technical standards to control interference.[195] Once the national requirements were adopted, committees made up of members of the public safety community were to develop regional plans that would focus on the spectrum requirements of all eligible entities, and determine how the available spectrum could best be used to satisfy these requirements.[196] The Commission's role in relation to the regional planning committees was limited to: (1) defining the regional boundaries; (2) requiring fair and open procedures; (3) specifying the elements that all regional plans were to include; (4) reviewing and accepting the plans, or rejecting them with an explanation; and (5) reviewing and accepting requests for modification of the plans, or rejecting them with an explanation.[197] Thus, the Commission established nationwide rules where appropriate, while still providing sufficient flexibility to allow regional planners to tailor solutions to local public safety problems.[198]

111. We tentatively conclude that this dichotomy between national and regional elements has achieved its stated purpose of balancing our primary regulatory objectives of maximizing spectrum efficiency, and ensuring that the system has sufficient flexibility to accommodate the wide variety of communications requirements in different areas of the

[192] *NPSPAC Report and Order*, 3 FCC Rcd at 905 (paras. 1, 4).

[193] *Id.* at 905 (para. 4).

[194] *Id.* at 906 (para. 10). *See also NPSPAC Plan NPRM*, 2 FCC Rcd at 2870 (para. 7).

[195] *NPSPAC Report and Order*, 3 FCC Rcd at 906 (para. 10).

[196] *Id.*

[197] *Id.* at 910-11 (paras. 41-57).

[198] *Id.* at 905, 907 (paras. 4, 14).

Nation.[199] We propose, therefore, to use the regional planning approach again to provide for the most appropriate use of that portion of the public safety spectrum that is not devoted to interoperability. We seek comment regarding this proposal, as well as any other alternatives for the administration of the spectrum.

112. Although we believe this regional planning approach has been satisfactory with regard to the 821-824/866-869 MHz bands,[200] we take this opportunity to encourage commenters to suggest refinements and improvements to the organization and operation of the regions and the regional planning committees. For example, should we designate one or more frequency coordinators to have a formal role in the regional planning process? And if so, what should that role be, and which frequency coordinators should be so designated? In formulating their comments, we ask parties to consider our regulatory goals of ensuring equitable distribution of frequencies, promoting efficient use of spectrum, and minimizing the burden on both the public safety service providers and the regional planning committees. We also note that there may be areas of the Nation that may have an acute need for spectrum for public safety communications. We ask for comment as to whether, in such areas of the Nation, we should reserve a small amount of spectrum from the 746-806 MHz band and assign that spectrum prior to the completion of the area's regional plan. We also seek comment regarding what specific rules would be necessary for the Commission to assign licenses apart from a regional planning process.

113. NPSPAC recommended fifty-four regions in it Final Plan,[201] and the Commission adopted the regions largely as proposed.[202] There are currently fifty-five regions,[203] the boundaries of which are generally contiguous with the boundaries of a State.[204] In drawing

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[199] *See id.* at 906 (para. 11).

[200] Plans have been accepted for all the regions; the latest was accepted in August 1993. *1995 FCC Public Safety Report*, 10 FCC Rcd at 5227.

[201] Final Report of the National Public Safety Planning Advisory Committee to the Federal Communications Commission, GEN Docket No. 87-112, Sept. 9, 1987.

[202] *NPSPAC Report and Order*, 3 FCC Rcd at 910 (paras. 41-43), 916 (App. B). In Texas, for which NPSPAC proposed six regions, the Commission created a single region, and the Commission declined to create a multi-state region around Chicago. These deviations from the NPSPAC recommendations, however, were reversed on reconsideration. *See NPSPAC First Reconsideration Order.*

[203] *NPSPAC First Reconsideration Order*, 3 FCC Rcd at 2114-15 (App. A).

[204] *Id.* Exceptions include California (divided into two regions), Texas (divided into six regions), the metropolitan regions surrounding New York, Washington, D.C., Chicago, and Buffalo, and the multi-state New England region. Where regional lines are not drawn at State borders, they are drawn at county borders, *e.g.*,

- An explanation of how the requirements of all eligible entities within the region were considered and, to the degree possible, met.
- An explanation as to how needs were assigned priorities in areas where not all eligible entities could receive licenses.
- An explanation of how the plan had been coordinated with adjacent regions.
- A detailed description of how the plan put the spectrum to the best possible use by requiring system design with minimum coverage areas, by assigning frequencies so that maximum frequency reuse and offset channel use may be made, by using trunking, and by requiring small entities with minimal requirements to join together in using a single system where possible.
- The signature of the regional planning chairperson.[211]

We propose to continue to require the inclusion of these elements in any regional plan, to the extent that the elements are consistent with the rules adopted in this proceeding.[212] We also invite comment regarding whether these listed elements should be amended to include any additional provisions, or whether the current elements require clarification or reformulation.

118. Under the National Plan, after the Commission received a plan from a regional planning committee, we solicited public comment on the plan for 30 days, with 15 days to reply to any comments filed, and then either approved the plan as submitted, or returned the plan to the regional planning committee with reasons for its rejection.[213] During the review process, the Commission considered the plans and the comments and replies, giving due deference to the need to allow the regional plans to accommodate regional differences.[214] The Commission examined the plans to ensure that public safety needs were fully addressed and met to the greatest degree possible, that the spectrum had been used efficiently, that coordination with adjacent regions had occurred, and that all requirements of the National Plan were met.[215] The Commission either accepted the regional plan by issuing an order to

[211] *Id.* at 911 (para. 51).

[212] For example, if we do not adopt the use of offset channels, we would not require regions to maximize the assignment of such frequencies.

[213] *NPSPAC Report and Order*, 3 FCC Rcd at 911 (paras. 53-54).

[214] *Id.* at 911 (para. 55).

[215] *Id.*

that effect, or returned the plan to the regional planning chairperson with reasons for its rejection.[216] We tentatively conclude that this procedure appropriately balanced the requirements of fairness and efficiency in review of the regional plans, and we propose that the new plans incorporating the 746-806 MHz bands continue to be thus reviewed, and set forth for public comment, before being adopted or returned with an explanation to the regional planning committee. We seek comment regarding this proposal.

119. The regional plans typically require modification from time to time.[217] At present APCO, acting in its frequency coordination role, or the regional planning chairperson may recommend, in writing, changes to a regional plan.[218] The Commission gives public notice soliciting comment on any such proposals, and issues appropriate orders upon review.[219] We tentatively conclude that this process has been satisfactory, and propose to adopt it again as the mechanism by which future regional plans incorporating the 746-806 MHz bands may be modified. We seek comment regarding this proposal. We recognize, however, that, as with other aspects of the regional planning process, this proceeding presents an opportunity to make appropriate revisions to the process, and we invite comment regarding ways that the modification procedures could be improved. Specifically, we invite commenters to address the requirement that regions wishing to modify their plans must obtain the express concurrence of adjacent regional planning committees to the proposed modifications prior to submitting them for our approval.

2. Eligibility and Licensing of General Use Channels

120. Regarding the channels in the public safety spectrum that are not reserved for interoperability, we tentatively conclude that the Commission should limit eligibility to entities that provide public safety services, as defined for this spectrum in the Communications Act.[220] We have proposed a definition of public safety service provider to facilitate this

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[216] *Id.*

[217] *See, e.g.*, Public Notice, The Philadelphia Area (Region 28) Public Safety Regional Update Committee Announces the Opening of an Application Filing Window for the 821-824/866-869 MHz Band, Report No. WT 97-21, May 1, 1997; Public Notice, The Chicago Regional Planning Committee for Public Safety Announces the Opening of an Application Filing Window for the 821-824/866-869 MHz Band, 11 FCC Rcd 8782 (1996); Houston, Texas, Public Safety Plan (Region 51), Order, 11 FCC Rcd 11828 (1996).

[218] *NPSPAC Report and Order*, 3 FCC Rcd at 911 (para. 57).

[219] *Id.*

[220] Section 337(f)(1) of the Communications Act, 47 U.S.C. § 337(f)(1), as added by the Balanced Budget Act of 1997, § 3004. Regarding the issue of eligibility to use the channels in the 746-806 MHz bands that are reserved for interoperability, we refer commenters to the discussion in Section II.B.2.d., *supra*, paras. 85-95.

determination.[221] We further tentatively conclude that the regional planning committees should, as an element of their regional plans, specify precisely which groups within the broad categories of the statutory definition they suggest should receive frequencies within their regions. Allowing the regions to adopt plans for assigning frequencies for the non-interoperability channels would advance our goal of extending to the individual regions the flexibility to design plans tailored to their local needs.[222]

121. As with the present regional planning process, in some regions it may be impossible to grant the requests for assignments of everyone who is eligible to use the new public safety spectrum. We continue to believe, however, that the regional planning committees are in the best position to determine which services and entities are of the greatest importance to public safety in their regions. We tentatively conclude that our review of the regional plans, and the opportunity for public comment during the review process, will sufficiently ensure the adoption of fair and reasonable assignments. We invite comment regarding these tentative conclusions.

122. We also seek comment regarding whether the Commission should prescribe rules or guidelines for determining if a service meets the statutory definition of a public safety service, *i.e.*, that its sole or principal purpose is to protect the safety of life, health, or property.[223] We seek comment as well regarding whether the Commission should prescribe substantive or procedural rules for the authorization of non-governmental organizations by governmental public safety service providers, as provided in Section 337(f)(1)(B)(ii) of the Communications Act.[224]

123. In the preceding paragraphs we have discussed how regional planning committees could develop plans that would enable the Commission to assign licenses to applicants in a way that would best meet regional needs. Such planning for the orderly and optimal assignment of licenses would continue the role that the regional planning committees have played in developing plans for the assignment of licenses in the 821-824/866-869 MHz band. In the sections that follow, by contrast, when we speak of the regional planning committees, we ask commenters to consider whether the role of these committees should be enlarged to include some of the more technical matters that up to now have been decided by the Commission.

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[221] *See* paras. 75-76, *supra.*

[222] *See NPSPAC Report and Order*, 3 FCC Rcd at 905 (para. 4).

[223] *See* Section 337(f)(1) of the Communications Act, 47 U.S.C. § 337(f)(1), as added by the Balanced Budget Act of 1997, § 3004.

[224] 47 U.S.C. § 337(f)(1)(B)(ii), as added by the Balanced Budget Act of 1997, § 3004.

3. Provision and Use of Public Safety Channels

124. The following is a discussion of various issues relating to the provision and use of the general public safety spectrum. Earlier in this Notice we discussed these same issues in the context of the interoperability spectrum. With respect to interoperability, our goal is to develop rules that will enable spectrum to be used to facilitate effective interoperability communications. To achieve interoperability, it is necessary for users to operate under the same parameters. For example, we propose to provide for common transmission technologies and common channel spacing among users of the interoperability spectrum. With the assignment of the general use spectrum, however, our goal is to provide a regulatory framework that will enable a variety of types of communications, and to facilitate utilization of an array of innovative technologies for the public safety community. In this Section we therefore seek comment on various matters that will assist us in developing such a framework.

125. One important matter that we invite commenters to explore will be the nature of the Commission's role in developing a band plan for the assignment of the 746-806 MHz public safety spectrum. When we developed service rules for the 821-824/866-869 MHz spectrum in 1987, the Commission decided matters such as: (1) the spacing for the channels (*i.e.*, we chose 12.5 kHz spacing); (2) the total number of channels to be assigned (*i.e.*, we provided 230 channels for general assignment and 5 channels for mutual aid); and (3) how the channels would be used (*i.e.*, we permitted voice and data communications). We left it to the individual regions to decide which applicants would obtain authorizations, where their base stations would be located, and under what technical parameters their stations would operate (*e.g.*, power and antenna height).[225]

126. We now consider whether the Commission, in providing for the use of the 746-806 MHz spectrum, should follow the approach we took in 1987 regarding the development of service rules, or whether we should alter this approach in some respects. Specifically, we must determine, in the context of the 746-806 MHz spectrum, what technical and operational issues will be decided at the national level (*i.e.*, by the Commission) and what issues can and should be decided at the local level (*e.g.*, by the regions). We examine this broad question in the context of the following discussion dealing with the provision and use of the general public safety channels.

a. Types of Communication

127. In this Section, we address the issue of which types of communications should be made available to public safety users operating in the 746-806 MHz band. While we recognize that different regions of the Nation will have particular needs for different types of

[225] The Commission established the maximum permissible values for these technical parameters.

public safety communications,[226] we believe that it is appropriate for the Commission to decide, at the national level, what types of communications — *e.g.*, voice, data, image/HSD, or video — should be made *available* for assignment by the regions to public safety entities. Whether and how that spectrum is ultimately assigned by the regions is an issue that we will more fully explore in the context of discussions below regarding Channel Spacings and Channel Requirements.

128. When we allocated spectrum for public safety in 1987, we acknowledged a need for both voice and data communications.[227] The comments in response to the *Public Safety Notice*, however, suggest a vital need on the part of the public safety community for more advanced forms of public safety communications, and also maintain that this need extends beyond the context of interoperability. For example, the *PSWAC Final Report* describes numerous examples of new applications based on newly-developed technologies to serve the public safety community. The PSWAC Steering Committee uses as examples broadband data systems to provide access to databases for the police officer on patrol, the use of video systems for surveillance purposes, and robotics control of toxic or hazardous environments.[228]

129. Even if these new applications had been identified in 1987, there may not have been sufficient spectrum to accommodate them within the 6 megahertz of spectrum allocated at that time (the 821-824 MHz band, paired with the 866-869 MHz band). In the 746-806 MHz band, we anticipate having a much larger amount of spectrum available for public safety. Therefore, we believe that we should consider whether this spectrum should be used simply for basic voice and data communication, or whether there is a need to dedicate particular amounts of spectrum for image/HSD, slow motion video, and full motion video communications.

130. Therefore, we seek comment regarding what types of public safety communications should be reserved for the new band:

- Voice channels only (with data capability on such channels).
- Voice channels and data channels only.

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[226] For example, a region that contains forests may have a particular need for spectrum for the video transmission of wildfires, while a region that contains large metropolitan areas may have a need for image/HSD channels, for example, for the transmission of building blueprints to firefighting personnel.

[227] *NPSPAC Report and Order*, 3 FCC Rcd at 907 (para. 15).

[228] *PSWAC Final Report* at 2.

- Voice, data, image/HSD, slow motion video, and full motion video channels.
- Channels that would accommodate some other combination of uses.

131. Commenters advocating a channel allocation for full motion video, in particular, should indicate their reasoning for providing a separate spectrum allocation for such use, and whether an option exists of providing for full motion video through alternative means (*e.g.*, commercial video services; spectrum made available through a Federal, State, and local network).

b. Channel Spacing

132. As indicated above, when we developed rules for the assignment of the 821-824/866-869 MHz channels, we decided that the channels would be spaced 12.5 kHz apart. This decision was made based on the recommendation of NPSPAC and the comments received in the *NPSPAC Proceeding*. A matter to be addressed in this proceeding is whether the Commission should decide on appropriate spacings for the channels designated in the 746-806 MHz band, or whether we should employ a different approach to channelizing the band. One such approach might be to allow the regions to have a role in determining the spacings for channel assignments.

133. Since we adopted our procedures for the licensing of the 821-824/866-869 MHz bands in 1987, manufacturers have developed equipment using transmission technologies that were not readily available at that time, such as Time Division Multiple Access (TDMA) and Code Division Multiple Access (CDMA). In recent years, the Commission has chosen, in adopting rules for other wireless services, to assign large blocks of spectrum, and allow individual licensees to decide how to channelize their spectrum in order to best accommodate these technologies.[229] While we are not proposing the assignment of large blocks of spectrum to individual public safety licensees, our tentative conclusion to use the regional planning process anticipates making available to each region a rather sizable amount of spectrum for assignment to users in the respective regions.

134. One approach to the matter of determining channel spacing for the spectrum (herein Option 1) might be to give each region complete latitude to decide the size of channels to be licensed in the region so as to accommodate the different types of

[229] *See, e.g.*, Amendment of the Commission's Rules To Establish Part 27, the Wireless Communications Service, GN Docket No. 96-228, Notice of Proposed Rulemaking, 11 FCC Rcd 21713 (1996) (*WCS Notice*), Report and Order, FCC 97-50, at paras. 55-56 (released Feb. 19, 1997). Amendment of Parts 2 and 22 of the Commission's Rules Relative to Cellular Communications Systems, GN Docket Nos. 84-1231, 84-1233, and 84-1234, Report and Order, 2 FCC Rcd 1825, 1841 (para. 118) (1986), *recon. denied*, 2 FCC Rcd 6830 (1987).

communications and different types of technologies desired by licensees in the region. For example, a particular region could decide that the voice channels it assigns to its licensees should operate on 12.5 kHz channels or 25 kHz channels, to take advantage of a particular technology that requires the use of one of these channel spacings. A possible disadvantage to channelizing the spectrum in this way could be that individual licensees who wish to employ equipment that operates on a particular channel size may not be able to do so if the licensee's region decides that channels of that particular size will not be assigned in the region.

135. An approach to determining channel spacing that addresses this concern (herein Option 2) would be for the Commission to specify an assortment of channels of different sizes to accommodate various types of communications and technologies, and to require that the regions make these various channel sizes available for assignment. For example, we could designate both 125 kHz channels and 250 kHz channels for image/HSD communications in an effort to accommodate different existing and future image or high speed data technologies.[230] In this way, individual licensees would have at their disposal the particular channel size needed to accommodate their desired system.

136. We note that under both Option 1 and Option 2, it is likely that the same channel spacings would not be used by all regions and all licensees throughout the Nation. As a result, manufacturers developing equipment using a particular channel spacing would not have the assurance of a nationwide market for that equipment. We therefore seek comment as to the possible impact of these options on the development and production of equipment, and whether any such impact would have negative consequences for licensees. A third approach to determining channel spacing — and one that addresses this possible concern (herein Option 3) — would be for the Commission to decide, as it did in 1987, on a single, specific channel spacing for each type of communication and require that all regions assign licenses using such channels. We therefore seek comment on the best approach for determining spacings for the channels in the 746-806 MHz band.

137. If we decide that the Commission will have a role in determining the spacing of channels in the band, we seek input from commenters regarding what those channel spacings should be. At the outset, we believe that the considerations identified in Section II.B.1.d., *supra,*[231] with regard to channel spacings for interoperability channels apply to the channel spacings for the regularly assigned public safety channels in the 746-806 MHz band. We seek comment regarding whether different factors should be considered when determining channel

[230] We would ensure that regions make all designated channel spacings available to licensees through provisions of the regional planning process. *See* Section II.C.3.c., *infra*, paras. 140-152.

[231] Paras. 61-66, *supra.*

spacings for non-interoperability channels and the potential impact of specifying different channel spacings for these channels. Factors we have already identified include:

- That ensuring voice quality and clarity is an important consideration in public safety communications.

- That wider data channels will enable greater data throughput for mobile/portable data and image/HSD transmissions than will narrower channels.

- That slow motion and full motion video transmissions will ostensibly require 384 kb/sec and 1.5 Mb/sec data rates, respectively.

138. We seek specific comments on what channel spacings should be used for voice, data, image/HSD, slow motion video, and full motion video channels. We request that commenters discuss their rationale in suggesting an appropriate channel spacing for each use.

139. We also note that public safety spectrum is not subject to the market forces which promote spectral efficiency in the commercial sector. We therefore seek comment regarding Commission policies and regulations that would result in the most efficient use of spectrum for public safety communications, and would optimize the use of new, increasingly efficient technologies.[232]

c. Channel Requirements

140. In Section II.C.3.a., *supra*,[233] we seek comment on which types of general service communications should be provided for public safety users, and in Section II.C.3.b., *supra*,[234] we propose various methods for deciding on the appropriate channel spacings for channels associated with these types of communications. We now explore the issue of *how*

[232] New technologies are being developed using a variety of access techniques and related channel bandwidths. *See generally* QRC Comments at 11-12 (advocating Advanced Multimode Digital Communications for 2010 and beyond); Securicor Comments at 2 (recommending 5 kilohertz channels in a mixed-modulation environment); NTT Comments at 7-8 (proposing use of very narrowband, 5 kilohertz, equipment); Ericsson Comments at 30-31 (encouraging adoption of 6.25 kilohertz equivalent channel spacings by 1999). The TETRA standards (a TDMA scheme using four voice paths on a 25 kilohertz channel) are another example of this development. *See* Cellular and Mobile International, D. Preiser, "Open Standards for Digital Trunked Mobile Radio," May 1, 1997.

[233] Paras. 127-131, *supra*.

[234] Paras. 132-139, *supra*.

many of each type of channel — *e.g.*, voice, data, image/HSD, or video — should be designated for assignment.

141. One approach to this issue (herein Approach 1) would be to give the regions the flexibility to decide how many of each type of channel should be made available for assignment in the respective regions. If we decide that the regions will determine the channel spacings for the channels to be assigned in each region,[235] then the regions, under Approach 1, would essentially be given complete authority to develop their own "band plans" for the assignment of the 746-806 MHz general use public safety spectrum. The only requirement that we would propose to place on regions in developing their band plans would be that they provide what we would consider to be a reasonable amount of spectrum for each of the types of communication that we decide should be made available for public safety use.[236] This will ensure that no type of communication will be precluded in any region and individual licensees in each region will have a reasonable opportunity to obtain licenses to provide such communications.

142. For example, if we decide, based on the comments received in this proceeding,[237] that we should provide for some quantity of image/HSD spectrum for public safety users, then we would expect each region to provide a reasonable amount of such spectrum for its licensees from among the available spectrum. The advantage to affording regions this extensive flexibility in assigning the spectrum is that they could develop a band plan that is best suited to the needs of their communities. In this way, a region that might have a particular need for voice communications could minimize the assignment of video channels and use that spectrum for voice channels; while a region that has less of a requirement for voice communications but needs spectrum for video transmissions could create several full motion video or slow motion video channels from the available spectrum.

143. If we decide in Section II.C.3.b., *supra*,[238] that *we* (and not the regions) should determine the appropriate channel spacings for all of the types of communications (either under Option 3, where we would designate the specific channel spacing for each type of communication, or Option 2, where we would designate an assortment of channel spacings for each type of communication), we propose to require each region to designate some reasonable number of channels for each type of communication using all designated channel spacings.

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[235] See the discussion of Option 1 in para. 134, *supra*.

[236] We would determine the reasonableness of the amount of spectrum provided by the regions for each type of communication through the regional plan approval process.

[237] Comments regarding types of communication would be pertinent to this determination.

[238] Paras. 132-139, *supra*.

This would, once again, ensure that even if the majority of licensees in a particular region wish to operate a particular type of communication or employ a particular technology, there would be sufficient spectrum available for those individual licensees in the region who wish to operate a different type of communication or employ a different technology.

144. Under Approach 1, the regions would make the determination as to how many of each type of communications channel should be designated for assignment in the respective regions. In developing their band plans, regions would have the flexibility to locate particular channels anywhere within the available spectrum (except that, if adopted, regions would be constrained by our proposals[239] to require all channels for base-to-mobile communications to be placed in television Channels 63 and 64 and all channels for mobile-to-base communications to be placed in television Channels 68 and 69, and to require that when providing for paired base/mobile communications, base frequencies in Channel 63 must be paired with mobile frequencies in Channel 68 and base frequencies in Channel 64 must be paired with mobile frequencies in Channel 69).[240]

145. We tentatively conclude that such flexibility will not be problematic from a technical standpoint. That is, it is our tentative view that manufacturers will be able to produce equipment that will be capable of operating anywhere within the required spectrum bands, and that it will not be necessary for all regions to locate particular channels in the same location in the spectrum.[241] We also believe that if we adopt our proposal to require base frequencies in Channels 63 and 64 to be paired with mobile frequencies in Channels 68 and 69, respectively, then regions providing for such paired base/mobile communications will have adequate separation between base transmit and mobile transmit frequencies. However, to ensure that equipment manufactured in accordance with a region's band plan will be *available* to the region's licensees, we tentatively conclude that we should require regions developing their own band plans to include in their regional plans affidavits from any interested equipment manufacturers attesting to the fact that equipment can be designed and produced in accordance with the band plan. We seek comment on these tentative conclusions.

146. A second, more conventional approach (herein Approach 2) for determining how the general spectrum should be designated for assignment would be for the Commission to

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[239] *See* Section II.F., *infra*, paras. 170-171.

[240] If we do not adopt this proposal and instead decide, for example, that base-to-mobile channels are to be located in television Channels 68 and 69 and mobile-to-base channels are to be located in television Channels 63 and 64, then regions would have to comply with this requirement.

[241] For example, if all regions designate a 500 kilohertz mobile-to-base full motion video channel, we do not believe that it is necessary for every region to place that channel in the identical location within the 794-806 MHz band.

adopt a common band plan that would be used uniformly by all regions. This band plan would: (1) provide for all of the various types of communication that we decide are appropriate and necessary for public safety; (2) employ the channel spacings that we believe are best for the operation of each of these types of communication; and (3) provide the number of channels for each type of communication that we believe should be designated for licensing in each region. This approach would not give regions any flexibility in deciding how many of each type of channel will be available for assignment. We seek comment on this approach.

147. To retain the basic thrust of Approach 2, but still afford regions some degree of flexibility to adjust the Commission-designed band plan to meet their particular needs, we seek comment on a third approach (herein Approach 3), which would allow each of the regions to "aggregate" and "disaggregate" the various channels in the Commission band plan to formulate a band plan that contains the type and number of channels it requires. For example, if the Commission band plan contains a single 500 kilohertz video channel, regions would have the flexibility to divide that channel into 40 12.5 kilohertz voice channels; or if our band plan provides for five contiguous 25 kilohertz voice channels, regions would have the flexibility to combine those channels into a single 125 kilohertz image/HSD channel. In affording the regions this flexibility, however, we would continue to require that they designate a reasonable amount of spectrum for each of the required types of communication. We seek comment on these different approaches to determining how many channels will be made available for assignment to public safety licensees.

148. Whether it is decided that we or the regions determine the number and configuration of voice, data, image/HSD, and video channels to be assigned, we believe that certain factors must be taken into consideration. For instance, the actual spectrum we designate as the 24 megahertz of 746-806 MHz spectrum for public safety use will be an important factor in determining how the spectrum will be made available for the various different types of public safety communications.[242] Also, as discussed in a previous section,[243] there may be a particular need only for certain "one-way" forms of public safety communications. And if this is the case, then paired channels could result in various amounts of base-transmit or mobile-transmit spectrum that may be assigned, but not effectively utilized. For example, if there is a need for a mobile-to-base channel for full motion video communication, but no corresponding need for a base-to-mobile video channel, and we assign the 24 megahertz in pairs — with the lower pairs used for base-mobile communication and

[242] If, for example, television Channels 63, 64, 68, and 69 are dedicated for public safety use, we have proposed that all base-to-mobile communications be on Channels 63 and 64, and all mobile-to-base communications be on Channels 68 and 69.

[243] *See* paras. 68-70, *supra*.

the higher pairs for mobile-base communications — then the higher video channels would be actively used, but the corresponding portions of the lower spectrum would lie fallow.

149. On the other hand, if there is a need for a particular amount of spectrum for one-way, base-to-mobile communications of one type (*e.g.*, image/HSD communications), and there is a need for an approximately equal amount of spectrum for one-way, mobile-to-base communications of a different type (*e.g.*, full motion video), the public safety spectrum could be used efficiently by assigning blocks of base-transmit-only and mobile-transmit-only spectrum for such types of uses. Thus, the asymmetry of one use might be compensated for by the asymmetry of a different use.

150. If it is decided that regions will have the flexibility to identify and locate channels for assignment, they will have to take these factors into consideration in devising their band plans. If it is decided that we will devise the band plan to be used by all regions, we seek comment regarding the number of channels that should be designated for each of the following proposed uses:

- Voice transmissions (mobile-only, or base and mobile channel pairs).
- Data transmissions (base-only, or base and mobile channel pairs).
- Image/HSD transmissions (base-only, or base and mobile channel pairs).
- Slow motion video transmissions (mobile-only, or base and mobile channel pairs).
- Full motion video transmissions (mobile-only, or base and mobile channel pairs).

Recommendations made by commenters should: (1) take into account their recommendations for the amount of spectrum to be dedicated for interoperability communications (*i.e.*, if commenters suggest 4 megahertz of spectrum for interoperability, they should suggest no more than 20 megahertz for general public safety spectrum); and (2) reflect their view of our proposal[244] to dedicate no more than 12 megahertz for base-to-mobile communications and no more than 12 megahertz for mobile-to-base communications (*i.e.*, recommendations made by commenters for the number of channels to be dedicated for the various types of public safety transmissions should reflect the particular base-to-mobile/mobile-to-base channel distribution that they favor).

151. Another factor that we must consider in deciding on appropriate channelization plans for the four different types of public safety communications is whether there is

[244] *See* Section II.F., *infra*, paras. 170-171.

sufficient demand for each to warrant the exclusive assignment of channels for this purpose. Because of the unquestioned need for voice and data communication by public safety users, and given the rather large amount of public safety spectrum that will be available in the 746-806 MHz band, we will almost certainly want to dedicate sufficient voice and data channels to enable all such channels to be assigned on an exclusive basis. We also note that exclusivity readily permits use of trunking,[245] and encourages investment in spectrum-efficient technology and in efficient use generally.[246]

152. There may not be sufficient ongoing demand, however, for wider-band data channels for imaging or video to justify exclusive assignments of this amount of spectrum to a single user within a particular area. Spectrum for video transmissions, in particular, might be easily shared among multiple licensees in a given area, so long as there is some type of sharing mechanism in place for use of such channels. Another possible means of limiting the portion of the spectrum that may have to be designated for video communication would be for public safety licensees to obtain access to video spectrum from commercial providers. In this context, we invite comment as to whether voice, data, image/HSD, or video channels could or should be shared among public safety entities within a given area, or whether all assignments should be made on an exclusive basis.

d. Transmission Technology

153. In Section II.B.1.c., *supra*,[247] we discuss the issue of whether digital or analog FM modulation should be used on public safety interoperability spectrum in the 746-806 MHz band. We emphasize the important need for public safety users to communicate with one another on the interoperability channels, and discuss how such communication might be facilitated through the use of common standards on those channels.

154. A related issue is whether there is a need to mandate a particular transmission technology on the regularly assigned public safety channels. If we allocate some number of channels that would be used exclusively for interoperability communications, then licensees would presumably use their regularly assigned channels solely for internal communications. We believe it would be preferable to give public safety licensees the ability to choose among available analog or digital technologies on their own authorized channels. In this way, public safety licensees will be able to select the equipment and technology that provide the features

[245] *See generally Refarming Second Report and Order*, at paras. 56-59 & n.143.

[246] Exclusivity encourages efficiency because users benefit directly from any capacity saved or created. *See Refarming Report and Order*, 10 FCC Rcd at 10134-35 (para. 130).

[247] Paras. 53-60, *supra*.

they desire in the same way current commercial licensees select the type of technology that meets their needs.[248]

155. While we are not inclined to require any particular transmission technology, *e.g.*, analog or digital, to be mandated for voice, data, image/HSD, or video transmissions in the portion of the public safety spectrum in the 746-806 MHz band not used for interoperability, we seek comment on this approach. Also, we solicit views as to whether our proposal to require compliance with a trunking standard for the interoperable channels may impede the availability of alternative technologies for the remaining public safety spectrum. For example, we invite comment on the technical feasibility and cost impact of designing equipment that can operate using multiple transmission technologies.

e. Equipment Standards

156. In Section II.B.1.f., *supra*,[249] we indicate the need to provide for effective, high quality voice and data communications on the interoperability channels, and discuss the issue of whether standards should therefore be adopted for receivers operating on the interoperability channels. We tentatively conclude that there is no correlative need to mandate receiver standards on the non-interoperability public safety channels. Equipment operating on those channels will be used by licensees for their internal communications. The quality of the receivers will only affect the licensee and not interoperability with other public safety organizations.

157. It is our tentative view that licensees are in the best position to determine whether the receiver performance satisfies their needs. Further, receiver standards could unnecessarily increase costs to small public safety facilities that may not have the same requirements as facilities in other locations. In this regard, we invite comment as to whether standards governing the performance of receivers on the interoperability channels would become *de facto* standards for all the channels that the radio receives, and as to whether this factor should affect our decisions regarding receiver standards for interoperability channels and for general public safety channels. We would expect the same receiver to be used for communications on both the interoperable and non-interoperable channels. We seek comment on this issue. Those commenters recommending mandatory standards should indicate the technical parameters to be standardized.

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[248] For example, cellular and SMR licensees employ both digital and analog systems; and cellular licensees operate digital systems using both TDMA- and CDMA-based technologies. Also, as indicated in note 232, *supra*, new technologies are being developed using a variety of access techniques and related channel spacings.

[249] Paras. 71-73, *supra*.

158. We also have sought comment on various approaches for providing for the operation of interoperability channels in radio equipment.[250] One such option is to require all public safety mobile and portable radios operating in the 746-806 MHz band to be capable of operating on all voice and data interoperability channels in the band. We now seek comment on the related issue of whether, if technically feasible, we should require all public safety mobile and portable radios operating in the 746-806 MHz band to be capable of operating on all public safety and commercial channels in the band. The use of equipment capable of operating on the entire 746-806 MHz band could enable public safety users to employ commercial spectrum when and where such spectrum is available from commercial providers.

D. Technical Parameters for All Public Safety Channels and Operations in 746-806 MHz Band

159. In this Section, we discuss various technical parameters that are associated with the operation and use of both the interoperable and general public safety channels. These parameters must be quantified in order to ensure the effective, efficient, and interference-free operation of these channels.

1. Bandwidth

160. As discussed in Sections II.B.1.d., *supra*,[251] and II.C.3.b., *supra*,[252] there are various different channel spacings that could be authorized for the public safety channels designated for voice, data, image/HSD, and video communications. Our rules specify the maximum authorized bandwidths for channels with different channel spacings. For example, the maximum authorized bandwidth for the 25 kilohertz channels[253] in the 806-821 MHz band is 20 kilohertz, the maximum authorized bandwidth for the 12.5 kilohertz channels in the 821-824 MHz public safety band is also 20 kilohertz, and the maximum authorized bandwidth for the 12.5 kilohertz channels in the 896-901 MHz band is 13.6 kilohertz.[254]

161. We therefore seek comment as to the maximum authorized bandwidths which should be specified for different types of general and interoperability communications. For example, if voice or data channels are spaced 12.5 kilohertz apart, should the maximum

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[250] *See* paras. 72-73, *supra*.

[251] Paras. 61-66, *supra*.

[252] Paras. 132-139, *supra*.

[253] Here, "25 kilohertz channels" means channels that are spaced 25 kilohertz apart.

[254] *See* Section 90.209 of the Commission's Rules, 47 C.F.R. § 90.209..

authorized bandwidth be 13.6 kilohertz (as currently provided for 12.5 kilohertz channels in the 896-901 MHz band), or 11.25 kilohertz (as currently provided for 12.5 kilohertz channels in the 150-174 MHz and 421-512 MHz bands); and if voice or data channels are spaced 25 kilohertz apart, should the maximum authorized bandwidth be 20 kilohertz (as currently provided for 25 kilohertz channels in the 806-821 MHz band)? In addition we invite comment regarding the maximum authorized bandwidth that should be specified for data, image/HSD, or video channels of various channel spacings — *e.g.*, 50 kilohertz data channels, and 125 kilohertz image/HSD or video channels.

162. We note also that we are seeking comment on an approach for determining channel spacings that would allow individual regions to decide the spacings for the general use channels assigned in their region.[255] If we decide to permit regions to determine the spacings of their channels, we propose to require the regions to identify the maximum authorized bandwidths that would be associated with those channels. These bandwidths would be identified in the regional plan, and therefore subject to Commission approval. We also propose that the regions, in providing these bandwidths, include affidavits from any interested equipment manufacturers, attesting to the appropriateness of the bandwidths. We seek comment on these proposals.

2. Emission Mask; Frequency Stability; Power and Antenna Height

163. Part 90 of the Commission's Rules specifies the required frequency stability, emission mask, and authorized power and antenna height for channels used in the various private land mobile bands.[256] As with the authorization of maximum bandwidth, we seek comment regarding these parameters for the channels used for the four types of general and interoperability public safety communications.

164. We seek comment regarding the particular emission masks that should be specified for voice or data channels that may be spaced 12.5 kilohertz and 25 kilohertz apart — *e.g.*, for channels spaced 12.5 kilohertz apart, whether the masks used for the 150-174 MHz and 421-512 MHz band,[257] the 821-824 MHz band,[258] or the 896-901 MHz band[259]

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[255] *See* para. 134, *supra*.

[256] *See* Sections 90.210, 90.213, and 90.635 of the Commission's Rules, 47 C.F.R. §§ 90.210, 90.213, 90.635.

[257] Mask D in Section 90.210 of the Commission's Rules, 47 C.F.R. § 90.210.

[258] Masks B and H in Section 90.210 of the Commission's Rules, 47 C.F.R. § 90.210.

[259] Masks I and J in Section 90.210 of the Commission's Rules, 47 C.F.R. § 90.210.

should be specified; and for channels spaced 25 kilohertz apart, whether the emission mask used for the 150-174 MHz and 421-512 MHz band,[260] or the 806-821 MHz band should be specified.[261] We also seek comment regarding whether the frequency stability parameters specified for transmissions in the 806-821 MHz band[262] should be used for transmissions on the public safety channels in the 746-806 MHz band, or if not, whether some other frequency stability parameters should be specified.

165. In addition, we seek comment regarding whether the power and antenna height limitations currently specified for operation in the 800 MHz and 900 MHz bands[263] should be used for operations on the public safety channels in the 746-806 MHz band, or if not, whether some other power and antenna height limitations should be specified. Finally, as we have discussed,[264] we may permit regions to determine the spacings of their general use channels. If we do so, we propose to require the regions to identify the emission masks and frequency stabilities that would be associated with those channels. These parameters would be identified in the regional plan, and therefore subject to Commission approval. We also propose that the regions, in providing these parameters, include affidavits from any interested equipment manufacturers, attesting to the appropriateness of the parameters. We seek comment on these proposals.

3. Base Station Protection

166. Section 90.621(b) of the Commission's Rules specifies the co-channel protection to be provided to base stations operating in the 800 MHz and 900 MHz bands.[265] However, when we adopted the *NPSPAC Report and Order*, we decided that individual regional planning committees should determine base station assignments so as to achieve maximum frequency re-use. We therefore seek comment on whether the Commission should specify the protection criteria that would apply to all exclusively assigned base stations operating on the

[260] Masks B and C in Section 90.210 of the Commission's Rules, 47 C.F.R. § 90.210.

[261] Masks B and G in Section 90.210 of the Commission's Rules, 47 C.F.R. § 90.210.

[262] *See* Section 90.213 of the Commission's Rules, 47 C.F.R. § 90.213.

[263] *See* Section 90.635 of the Commission's Rules, 47 C.F.R. § 90.635.

[264] *See* para. 162, *supra.*

[265] Co-channel protection refers to the interference protection that a particular licensee provides to another licensee operating on the same channel in the same geographic area. The protection criteria are designed to minimize the likelihood of interference to base/mobile communications on the channels in the 800 MHz and 900 MHz bands, which are assigned to licensees on an exclusive basis.

public safety channels in the 746-806 MHz band, or whether we should allow base stations to be assigned in accordance with protection criteria established in the regional plans.[266] Commenters supporting the establishment of uniform protection criteria should indicate whether they believe that the existing protection criteria for the 800 MHz and 900 MHz bands are appropriate, or whether some other standards should be applied.

E. Construction Requirements

167. Under Part 90 of the Commission's Rules, licensees that are not providing Commercial Mobile Radio Service (CMRS) are generally required to construct their authorized stations and place them in operation within eight months of license grant.[267] There are, however, exceptions to this rule. For example, licensees who are authorized trunked systems in the 800 MHz and 900 MHz bands have 12 months to place their stations in operation;[268] all local government entities may, on a case-by-case basis, be granted longer than eight months to complete the construction of their systems;[269] and non-SMR licensees in the 800 MHz and 900 MHz bands may be permitted, under certain conditions, up to five years to place their systems in operation.[270]

168. We seek comment on the appropriate construction deadline for licensees operating on the public safety spectrum in the 746-806 MHz band, including comment on factors that we should consider in establishing construction deadlines that will best promote the timely deployment of public safety facilities. For example, comment is requested on whether licensees operating conventional or trunked systems should be required to construct their stations within eight months or 12 months, respectively, and whether all public safety licensees operating in the band should be afforded the extended implementation provisions currently provided licensees operating in the 800 MHz and 900 MHz bands.

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[266] *See NPSPAC Report and Order*, 3 FCC Rcd at 911 (para. 51); Section 90.621(g) of the Commission's Rules, 47 C.F.R. § 90.621(g). Under this approach, regional planning committees would determine the protection criteria that are appropriate for the stations operating in their particular geographic areas.

[267] *See* Section 90.155(a) of the Commission's Rules, 47 C.F.R. § 90.155(a).

[268] *See* Section 90.631(e) of the Commission's Rules, 47 C.F.R. § 90.631(e).

[269] *See* Section 90.155(b) of the Commission's Rules, 47 C.F.R. § 90.155(b).

[270] *See* Section 90.629 of the Commission's Rules, 47 C.F.R. § 90.629. To qualify for "extended implementation" under this rule, a licensee may demonstrate, for example, that it follows a multi-year cycle for the planning, approval, funding, and purchasing of its system; or that it requires additional time to construct its proposed system due to the size, purpose, or complexity of the system.

169. Alternatively, given that many public safety agencies will be able to qualify for extended implementation periods due to the fact that they follow a multi-year cycle for the planning, approval, funding, and purchasing of their systems, commenters should address whether we should uniformly provide for construction deadlines of two or three years for *all* public safety entities operating in the 746-806 MHz band, with up to five years authorized for licensees demonstrating a need for such additional time. Commenters should address not only the unique needs of public safety agencies, but also consider the appropriate construction period to ensure that licensees are actually using their authorized spectrum.

F. Use of Television Channels 63, 64, 68, and 69 for Public Safety

170. In the *Allocation Notice* we proposed the use of television Channels 63, 64, 68, and 69 for public safety. In that proceeding we indicated that public safety systems typically require some minimum separation between transmit and receive frequencies, and that this proposed allocation of television channels would provide adequate separation.[271] If we decide in that proceeding to dedicate these particular television channels to public safety, then, to facilitate two-way, base/mobile communications, we propose that: (1) the frequencies in Channels 63 and 64 (764-776 MHz) be used for all base-to-mobile transmissions; (2) the frequencies in Channels 68 and 69 (794-806 MHz) be used for all mobile-to-base transmissions;[272] and (3) when providing for paired base-to-mobile and mobile-to-base communications, any base frequencies in Channel 63 should be paired with mobile frequencies in Channel 68 and any base frequencies in Channel 64 should be paired with mobile frequencies in Channel 69.

171. We favor this approach for two reasons. First, it will provide for approximately 30 megahertz of separation between base and mobile frequencies.[273] Second, because Channels 68 and 69 are directly below the 806-824 MHz band, which contains the transmit frequencies for mobile and portable radios operating in the 806-824/851-869 MHz bands, we believe that, from a design standpoint, it may facilitate the rapid development of mobile and portable 746-806 MHz radios, at a reasonable cost, to be able to employ transmit frequencies from the adjacent 794-806 MHz band. In advancing this proposal we note that the first harmonic of transmissions on Channels 68 and 69 will fall in the frequency band currently

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[271] *Allocation Notice*, at para. 11.

[272] As discussed in Sections II.B.1.e., *supra*, paras. 67-70, and II.C.3.c., *supra*, paras. 140-152, we may provide spectrum for paired, two-way (base-to-mobile and mobile-to-base) communications, and one-way (mobile-to-base or base-to-mobile) communications.

[273] Because the exact location of channels for the various types of public safety transmissions within Channels 63, 64, 68, and 69 may vary from region to region, the separation between paired base-to-mobile and mobile-to-base frequencies may not be exactly 30 megahertz.

used by the Global Orbital Navigation Satellite System (GLONASS). Public safety mobile and portable radios that would operate on Channel 68 and Channel 69 frequencies could therefore cause interference to devices attempting to receive signals from the GLONASS satellites. We seek comment on our proposals and, in particular, we ask commenters who may utilize signals from the GLONASS satellites to discuss any concerns they may have about the possible use of Channels 68 and 69 for mobile-to-base public safety communications.

III. PRIORITY ACCESS SERVICE

A. Introduction

172. Under Section 1 of the Communications Act, the Commission has a statutory mandate "to make available a rapid, efficient Nation-wide . . . communications service for the purpose of the national defense, [and] for the purpose of promoting safety of life and property . . . ."[274] In view of the importance of this mandate, we believe that we need to determine the most efficient means of providing access to communications infrastructures in order to deal with emergency and disaster situations. We further believe that this course should encourage the telecommunications industry, in a continued, cooperative effort with other Federal Government agencies and public safety entities, and take advantage of rapidly developing technology in order to solve problems of access in such situations.

173. As we consider the need for such cooperative efforts, we note that certain Federal Government entities are stressing that there is a growing need to use commercial services rather than dedicated systems, due to the potential for lower costs of commercial services. These entities also note that 75 percent of these entities' needs can be met by commercial systems.[275] In light of these considerations and in order to explore all possible means of promoting efficient and effective public safety communications, we have decided to begin, with the adoption of this Notice, a formal examination of the concept of priority access service on commercial systems for personnel responding to emergency and disaster situations.

B. Background

174. The Department of Defense, as executive agent of the National Communications System (NCS), filed on October 19, 1995, a Petition for Rulemaking (Petition) on behalf of NCS, requesting the Commission to initiate a rulemaking proceeding to implement Cellular

[274] 47 U.S.C. § 151.

[275] *See* Proceedings of the Seventh Federal Wireless Users' Forum Workshop, May 20-22, 1997 (*FWUF. Workshop*), at 1-2.

Priority Access Service (CPAS).[276] According to NCS, the term "priority access" means that in emergencies, when cellular spectrum is congested, authorized priority users would gain access to the next available cellular channel before subscribers not engaged in national security and emergency preparedness (NSEP) functions.[277]

175. Following the Commission's issuance of the *Public Safety Notice*, the Wireless Telecommunications Bureau (Wireless Bureau) released a Public Notice seeking comment on the NCS Petition and asking interested parties to address the extent to which the issues raised in the NCS Petition are related to the public safety rulemaking proceeding.[278] The Commission received 20 comments and five reply comments in response to the *CPAS Public Notice*.[279] Subsequent to the receipt of those comments, the Defense Information Systems Agency (DISA) filed a letter on behalf of NCS, submitting additional information concerning the CPAS proposal.[280]

1. NCS Petition for Rulemaking

176. NCS contends that cellular usage by the general public in emergency situations leads to congestion in the cellular network, severely curtailing usage by those with NSEP responsibilities. NCS asserts that priority access to cellular spectrum is essential in conducting response and recovery efforts of NSEP personnel at Federal, State, and local levels.[281] The NCS petition, however, does not ask the Commission to make CPAS mandatory. Instead, NCS proposes that CPAS would be a voluntary offering of cellular carriers who would then be subject to mandatory CPAS rules should they elect to provide the

[276] NCS is an organization created by Executive Order to administer and manage the telecommunications assets of 23 Federal organizations in serving the national security and emergency preparedness (NSEP) needs of the Federal Government as well as State and local governments. *See* Executive Order 12,472, Assignment of National Security and Emergency Preparedness Telecommunications Functions, 49 Fed. Reg. 13,471 (1984). *See also* NCS Petition at 1-2 n.1.

[277] NCS Petition at 2.

[278] Public Notice, Petition for Rulemaking Filed, Commission Seeks Comment on Petition for Rulemaking filed by National Communications System, DA 96-604, WT Docket No. 96-86 (released Apr. 18, 1996) (*CPAS Public Notice*).

[279] A listing of pleadings and short title references to each party are contained in Appendix B of this Notice.

[280] *Ex Parte* Letter, filed Mar. 14, 1997 (DISA Letter). The filing was made part of the record in WT Docket No. 96-86.

[281] NCS Petition at 10, 13.

service.[282] Under the NCS proposal, cellular carriers would be permitted to charge for the service, determine the amount of spectrum available to CPAS, and discontinue the CPAS service offering at any time.[283]

177. NCS identifies NSEP personnel at Federal, State, and local levels as potential users of CPAS,[284] and also refers to the role of the Executive Office of the President (EOP) and other Federal agencies, along with representatives from State governments and industry, in developing and supporting the CPAS proposal.[285] The Federal interests, as addressed by NCS, stem from its mandate to assist the Office of Science and Technology Policy (OSTP) in its responsibility for directing the exercise of the war powers of the President.[286] NCS further asserts that, after establishment of a Federal Wireless Users Forum (FWUF), consisting of representatives from Government who seek to work with industry in addressing the requirements of Federal wireless users, and establishment of a Federal Wireless Policy Committee, the need for priority access to limited cellular spectrum in times of heavy demand was quickly identified as a critical requirement of NSEP telecommunications.[287]

178. NCS states that if the Director of OSTP (which is responsible for establishing priority access for Federal users) and the Commission were to establish incompatible priority systems, NSEP communications service users would have to change systems under conditions when compatibility is most important.[288] Further, in support of its CPAS proposal, NCS contends that it is important to have a priority access system that is compatible with the Telecommunications Service Priority (TSP) rules[289] with regard to provisioning and restoration priority of services and network elements by common carriers.[290]

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[282] NCS Petition at ii, 11.

[283] *Id.* at 11 n.8, 12 & App. B.

[284] *Id.* at ii.

[285] *Id.* at 2-3, 8-10.

[286] *Id.* at 7.

[287] NCS Petition at 8-9. FWUF is chaired by the Office of the Manager, National Communications System (OMNCS).

[288] NCS Petition at 7.

[289] *See* Part 64, Appendix A of the Commission's Rules. 47 C.F.R. Part 64, App. A. NCS is also the current administrator for the TSP System under these rules.

[290] NCS Petition at 3, 8, 11 n.8, 12-13.

179. NCS also submits that the proposed CPAS rules would be consistent with the priority access rules that EOP will adopt concurrently for situations in which the President invokes war emergency powers pursuant to Section 706 of the Communications Act.[291] For implementation of CPAS, NCS submits that Priority Access Channel Assignment (PACA) technology, a cellular features description,[292]should be used.[293] Under the PACA queuing scheme, as proposed by NCS, there would be five levels of priority.[294] CPAS calls would not preempt calls in progress.[295]

180. NCS proposes that State and local emergency providers would have the same priority level as Federal defense and law enforcement agencies, because State and local emergency response personnel will likely be first on the scene of emergencies.[296] With regard to State interests, NCS expresses concern over State initiatives to establish their own CPAS rules.[297] NCS urges a uniform, nationwide cellular priority access scheme for effective implementation of CPAS.[298] The rules advocated by NCS would (1) authorize cellular service providers to provide priority access; (2) ensure that such providers, when doing so, are not in violation of Communications Act provisions barring unreasonable discrimination or undue preference; and (3) override any existing contractual provisions inconsistent with the rules adopted.[299]

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[291] *Id.* at 2-3. *See* 47 U.S.C. § 606.

[292] Features Description IS-53. PACA allows a subscriber to have priority access to a channel on call origination. The PACA feature permits the subscriber to obtain priority access to voice or traffic channels by queuing the originating calls of subscribers when channels are not available. Under the NCS proposal, an authorized user with an assigned priority level activates the feature on a per call basis by dialing a feature code such as "*xx." When a channel becomes available, a subscriber in the queue is served on a first come, first served basis and a priority basis, according to the level of priority assigned. *See* CTIA Comments, Attach. A; NCS Petition at 5, 11, 13-14, App. B at 3.

[293] For a further discussion of PACA, see paras. 214-217, *infra*.

[294] NCS Petition at 13-14 & App. B.

[295] *Id.* at 11 & App. B.

[296] *Id.* at 10, 13 & App. B.

[297] *Id.* at 7-8.

[298] *Id.* at i, 7-8.

[299] *Id.* at 2.

2. PSWAC Final Report

181. The *PSWAC Final Report* also addresses the role of commercial services in supporting public safety communications.[300] Among its recommendations, PSWAC states that "[t]he use of commercial services and private contracts should be facilitated, provided the essential requirements for coverage, priority access and system restoration, security, and reliability are met."[301] The PSWAC Steering Committee further finds that, for commercial systems to be available as a reasonable alternative to spectrum dedicated for public safety communications, one of the requirements is priority access to wireless communications channels during peak periods of traffic congestion in emergency and disaster circumstances.[302] The PSWAC ISC also identifies the lack of priority access as a limitation of current commercial systems and as presenting an obstacle to interoperability.[303] PSWAC asserts that among the operational requirements of public safety users necessary for these users to meet their "mission critical" obligations, are "dedicated capacity and/or priority access available at all times (and in sufficient amounts) to handle unexpected emergencies . . . ."[304]

182. The PSWAC ISC states that, although commercial systems could be used to achieve interoperability, they currently do not meet the requirements addressed in the *PSWAC Final Report*.[305] Although the PSWAC ISC recommends that the Commission should adopt rules to make commercial systems more responsive to public safety needs, including a requirement to offer a priority access option, it contends that there are many shortcomings to the NCS CPAS proposal. For example, the PSWAC ISC finds that most users agree that the recommendations made by NCS regarding CPAS do not go far enough to satisfy public safety communications needs.[306] Moreover, in identifying lack of priority access as one of the current disadvantages of commercial services, the PSWAC ISC concludes that those shortcomings flow from market forces and are not readily susceptible to regulatory cures.[307]

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[300] *See PSWAC Final Report* at 4, 21, 25-26.

[301] *Id.* at 4.

[302] *Id.* at 25.

[303] *Id.* at 51. Other limitations of commercial systems identified by the PSWAC ISC are their reliability and command and control characteristics. *Id.*

[304] *Id.* at 14. *See* para. 30 & note 31, *supra.*

[305] *PSWAC Final Report* at 51.

[306] *Id.* at 317.

[307] *Id.*

183. Further, the PSWAC ISC asserts that commercial priority access compliance loses significance if the commercial network fails to meet reliability criteria. Lack of redundancy can produce weak links even if traffic is carried on a "first-in, first-out" basis.[308] Concerning other constraints of priority access, the PSWAC ISC finds that with cellular systems based on Advanced Mobile Phone Service (AMPS), cellular units can be programmed through the handset of the phone. As a result, subscribers not authorized for priority access can program their handsets to the higher priority values. A feature code approach to provide access to a system of priority levels (such as that in the CPAS arrangements proposed by NCS) would be similarly vulnerable to compromise, and thus there is limited assurance that only authorized agencies would obtain priority access.[309]

184. Finally, the PSWAC ISC recognizes that public safety organizations will need to establish procedures for the use of commercial systems that are being designed to provide several levels of priority access. This situation, the PSWAC ISC submits, emphasizes a need for a national focus on operational procedures, standards for systems, training, and interoperability.[310] With the foregoing shortcomings, the PSWAC ISC views CPAS as a possible vehicle to serve the communications needs of the public safety community, and priority access as one component to be considered in the overall network availability to deliver information.[311]

C. Discussion of NCS Proposed Rules and Related Issues

1. Priority Access and Public Safety Communications Generally

185. A number of parties generally support the CPAS proposal advanced by NCS,[312] and we believe, based upon the NCS Petition and the record, that this is an appropriate time to commence our more formal consideration of priority access issues. We are cognizant,

[308] *Id.* at 475.

[309] *See id.* at 478 (quoting materials filed by CTIA). *See also* note 292, *supra*, and para. 220, *infra*.

[310] *PSWAC Final Report* at 475.

[311] *Id.* at 317, 474.

[312] *See, e.g.*, AT&T Comments at 1-2; Bellcore Comments at 2-3; GTEM Comments at 1; NASTD Comments at 3-5; FDMS Comments at 1; LA County Sheriff Comments at 2-3; Oregon Comments at 1; TEMA Comments at 1; WSEM Comments at 1-4.

however, of the fact that NCS[313] and some commenters[314] have questioned whether our consideration of these issues should be undertaken in the context of this broader public safety communications rulemaking proceeding.

186. We conclude that it is advisable to consider the issues raised by the NCS Petition in the context of this proceeding and we therefore seek comment on those issues. In our view, based in part on the conclusions of the *PSWAC Final Report*, there may be a substantial nexus between considerations of priority access and the needs of the public safety community. For example, we may need to consider whether an increased allocation of spectrum for public safety communications and the choices made regarding utilization of this spectrum would have any impact on the need for, or the components of, a priority access system for commercial spectrum. Further, the extent to which interoperability arrangements, established pursuant to this rulemaking, are effective in accommodating public safety communications needs in emergency situations could also have a bearing on our evaluation of the need for priority access systems.

187. Moreover, although there was comment, in response to the *CPAS Public Notice*, that the various issues of the public safety rulemaking would delay consideration of the NCS CPAS proposal, we are in this Notice beginning an expeditious process to consider a range of issues regarding public safety communications. The need for expedition regarding disposition of these public safety issues[315] mitigates any concern that linking our consideration of these issues with our assessment of the NCS priority access proposal will delay resolution of the issues raised by the NCS Petition.

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[313] NCS points out that its CPAS proposal, focussing on emergency response, is much narrower in scope than the *Public Safety Notice*, and CPAS implementation does not depend on the analysis of issues presented in the public safety proceeding. NCS Comments at 2-3, 5. Moreover, NCS contends, although the issues posed by the *Public Safety Notice* are not going to be resolved by the Commission in the near future, action on CPAS is necessary to ensure a nationwide, uniform system prior to action by the States, some of which are seeking their own legislation. *Id.* at 5.

[314] APCO and others are concerned about continuing to include CPAS in the WT Docket 96-86 rulemaking. *See* APCO Comments at 4-5; NASTD Comments at 2; UTC Comments at 4 n.5; LA County Sheriff Comments at 3-5; Bellcore Comments at 2-3; GTEM Comments at 3. *But see* SBMS Comments at 2. APCO submits that, in contrast to the goal of the public safety proceeding to examine future public safety radio spectrum needs through the year 2010, the NCS Petition addresses specific procedures for occasional instances for disaster relief operations where Federal, State, and local government officials must gain priority access to cellular systems, and CPAS is unrelated to those public safety spectrum needs. APCO Comments at 5.

[315] Congress has recently imposed deadlines for the Commission to set aside and license additional spectrum for both public safety and commercial services. *See* Sections 337(a) and 337(b) of the Communications Act, 47 U.S.C. §§ 337(a), 337(b), as added by the Balanced Budget Act of 1997, § 3004.

188. Based on the NCS Petition and the record thus far established, we are seeking further comment regarding whether enabling carriers to offer priority access on a voluntary basis may play a productive role in enhancing the communications tools available to safety and rescue personnel in emergencies. We specifically ask commenters to address the NCS contention that, although the public safety rulemaking might ultimately mitigate the need for priority access, there could be no harm in having rules to address the current situation.[316] We will also examine a related issue[317] regarding whether, as a general proposition, voluntary CMRS offerings of priority access service in emergency or disaster situations should be presumed to comply with the requirements of Section 202 of the Communications Act.[318]

189. We also believe that the record developed thus far regarding the NCS Petition does not furnish us with an adequate basis at this time for making more comprehensive proposals on issues relating to priority access. In our view, more comment is required to consider various issues relating to priority access. These include the following, which are discussed in the following sections: the priority levels for priority access; the spectrum capacity of commercial carriers and its relationship to the need for priority access; costs that wireless carriers may face in developing and offering priority access services;[319] the existence of technical limitations on priority access, and related technical issues; and the question of the classes of carriers to which priority access should apply. Based on the comments we receive with respect to these and other related issues, we will determine how to proceed further in establishing priority access rules.

2. Priority Levels

190. We recognize the significant effort of Federal entities and other groups in the long-term planning for priority access. This effort becomes particularly noteworthy in the context of the findings of the *PSWAC Final Report*.[320] The record indicates that PACA, and related technology necessary to implement it, is not capable of being applied in the current

[316] NCS Reply Comments at 4.

[317] *See* paras. 196-207, *infra*.

[318] 47 U.S.C. § 202.

[319] *See* para. 211, *infra*.

[320] *See* paras. 181-184, *supra*.

marketplace.[321] Estimates for the resolution of problems concerning the implementation of priority access appear indefinite. Consequently, we find that it is premature to propose in this Notice specific levels for priority based on the NCS proposal. We seek more comment in this section on the issue of priority levels that should be included in priority access.

191. We believe that in the context of issues and problems raised in this Notice, there are significant questions regarding how a priority access structure can best be formulated and applied. In this respect, we seek comment on how we should examine and resolve this issue. Interested parties may comment, for example, on whether it is better to require a formal prioritization structure or whether a less formal, more flexible approach should evolve. The latter approach might consist of various offerings of priority access based on conforming to a general, and ubiquitously applied, set of governing principles that would allow greater flexibility as priority access develops. In terms of what is the most effective means to allow and encourage the marketplace to respond to the kinds of demand for this service offering, we seek comment regarding whether the Commission should prescribe rules for priority levels. rely on industry and governmental agency groups to establish uniformly applied priority levels, or leave to carriers the decision to offer individual or customized priority levels, consistent with a single set of principles and criteria, to the subscribers who demand priority access.

192. We also seek further comment on what priority access structure or structures would be most suitable to the commercial wireless environment as it continues to develop. Commenters should address what scheme of priority levels would provide the optimal service to meet the needs of NSEP users and associated public safety personnel while not interfering with the needs of citizens in emergencies. We also seek comment on what role should be played by commercial wireless providers, manufacturers of the equipment required, regional planning committees, Public Safety Answering Point (PSAP) personnel, trade associations, standard setting bodies such as the Telecommunications Industry Association (TIA), and other potential participants in going forward in the development of priority access.

3. Spectrum Capacity of Commercial Carrier Networks

193. A number of parties contend that one of the key considerations supporting the need for priority access arrangements is the current lack of sufficient capacity in the commercial wireless network.[322] With a shortage of capacity, the flooding of the network by

[321] *See* BellSouth Comments at 2-6; CTIA Comments at 5-6; GTEM Comments at 1, 4 n.4. *Compare* NCS Reply Comments at 2-3 *with* DISA Letter, Mar. 14, 1997 (concerning deployment of handsets required and adoption of necessary standards). See the discussion in paras. 212-219, *infra*.

[322] *See* NCS Petition at 4; Bellcore Comments at 2; GTEM Comments at 2; Oregon Comments at 1.

a high incidence of attempted calls in emergency or disaster situations could lead to increased blocking of a portion of those calls. Consequently, factors that affect capacity are also likely to affect the ability and incentive of commercial wireless service providers to furnish priority access services, as well as the need of the public safety community to obtain and utilize such services.

194. The amount of spectrum available for dedicated public safety communications uses is being substantially increased by the availability of 24 megahertz of spectrum in the 746-806 MHz band. One question in examining the NCS proposal is whether this increased spectrum for public safety communications lessens the need for priority access arrangements regardless of the status of capacity on commercial wireless networks. Commenters disagree over whether such additional spectrum will obviate the need for CPAS.[323] Thus, we seek comment regarding the relationship between the availability of this new public safety spectrum and the need for priority access arrangements.

195. Finally, we seek comment regarding whether other recent developments in the utilization of spectrum for public safety communications may diminish the need for priority access services. For example, public safety users continue to develop and upgrade their own wireless systems. State agencies are upgrading their own 800 MHz band systems to provide more capability and interoperability.[324] In addition, some public safety agencies are pursuing the development of "shared systems" utilizing wide-area SMR service.[325] Further, some commercial wireless providers are currently able to add mobile communications capacity by transporting trailers, carrying supplemental communications centers, to disaster sites to assist public safety personnel.[326]

4. Liability under Section 202 of Communications Act

a. Adequacy of Current Provisions

196. NCS asserts that in preliminary discussions with service providers regarding its proposed CPAS rules, several carriers raised the issue of potential liability arising from

[323] *See* BANM Comments at 2-3; BellSouth Comments at 8. *Cf.* NCS Reply Comments at 2, 4. *See generally* NASTD Comments at 5-6.

[324] *See* S. Galatowitsch, *My Oh My Ohio*, Wireless Week, SMR and Private Radio Product Supplement, Apr. 28, 1997; *FWUF Workshop* at 54-55 (concerning upgrade by the State of Michigan).

[325] *See FWUF Workshop* at 52-53 (concerning FEDSMR service); *PSWAC Final Report* at 3.

[326] *See* R. Risch, *Flood-Relief Efforts Continue*, Wireless Week, May 5, 1997.

providing priority access.[327] Section 202(a) of the Communications Act makes it unlawful for any common carrier to engage in any unreasonable discrimination or preference in connection with the provision of communications services.[328] NCS has expressed its view that the Commission has already adequately addressed, in connection with our adoption of TSP rules in a previous Order, the issue of liability in circumstances like those posed by priority access offerings.[329]

197. Several commenters disagree with NCS, arguing that the Commission should explicitly state that offering CPAS will not result in any liability under Section 202.[330] These commenters believe that uncertainty over potential liability would discourage carriers from voluntarily providing a CPAS service.[331] GTEM adds that the Commission should make an affirmative finding that compliance with any CPAS rules is an absolute defense to any liability question arising from provision of a CPAS offering.[332]

198. In adopting the TSP rules, we declined to include any explicit provisions limiting carrier liability. We found that "[t]he essential purpose of TSP is to provide standards that permit carriers responding to NSEP provisioning and restoration priority requests to act lawfully and avoid violation of the proscription of 47 U.S.C. § 202 . . . ."[333] The standards established in the TSP rules provided the basis for our determination that the TSP rules, "without a specific, additional provision," offer the liability protection that carriers sought because any claimant asserting unreasonable discrimination or preference has a heavy burden to show that the carrier had violated Section 202 of the Act.[334]

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[327] NCS Petition at 10.

[328] 47 U.S.C. § 202(a).

[329] NCS Petition at 10, citing National Security Emergency Preparedness Telecommunications Priority System, GN Docket No. 87-505, Report and Order, 3 FCC Rcd 6650, 6658 (para. 45) (1988) (*TSP Report and Order*) (NCS construes the Commission conclusion regarding limitation of liability as shielding a service provider from liability as long as that provider was acting in accordance with the Commission's Rules).

[330] BellSouth Comments at 9-10: SBMS Comments at 5; Vanguard Comments at 7.

[331] BellSouth Comments at 9-10; SBMS Comments at 5.

[332] GTEM Comments at 5-6.

[333] *TSP Report and Order*, 3 FCC Rcd at 6658 (para. 45). The Commission stated that presumably, in response to a claimant, a carrier would respond that it had acted under the authority of the TSP rules, and then, the burden of proof would shift to the claimant to show non-compliance. *Id.*

[334] *See id.*

199. BellSouth observes that "[t]he . . . TSP rules *require* priority treatment and, thus, the Commission found that a claimant asserting a violation of Section 202 must show that a carrier violated the TSP rules in order to prevail."[335] On the other hand, asserts BellSouth, the proposed CPAS rules are *voluntary*, and, therefore, to ensure insulation of carriers who provide CPAS from liability, the Commission should make clear that the carriers who elect to implement CPAS will not incur liability.[336]

b. Proposed Rules

200. We tentatively agree with BellSouth that, to the extent the provision of priority access service is a voluntary offering made by a carrier and to the extent we refrain from establishing detailed rules regarding various levels of priority access, it would be prudent for the Commission to provide specifically for limitations on liability under Section 202. Thus, we propose that it will be sufficient for a CMRS provider, in responding to any complaint alleging an unreasonable discrimination or undue preference under Section 202 of the Communications Act, to demonstrate that the service provided by the carrier is exclusively designed to enable authorized priority users, in emergency situations when spectrum used by the carrier is congested, to gain access to the next available channel on the service network of the carrier, before subscribers not engaged in public safety or NSEP functions. Such a demonstration would shift the burden of proof to the complainant. We seek comment on this proposal.

201. Further, we tentatively conclude that the types of priority access services that will qualify for limitation of liability under Section 202 should be limited to CMRS services providing priority access to NSEP personnel, including Federal Government entities, in addition to State and local governmental entities performing public safety functions. Thus, we also tentatively conclude that priority access services provided by commercial carriers to corporate or other business or private subscribers on a private contractual basis would not constitute the type of priority access service that would qualify for any limitation of liability under Section 202. We tentatively conclude that this approach is consistent with the objective to serve the national defense and to meet the needs of public safety entities to improve their ability to respond to emergencies and disasters. We seek comment on these tentative conclusions.

202. We also seek comment regarding types of actions and conduct by carriers, in providing priority access service to authorized priority users, that would qualify for limitation of liability under Section 202 of the Communications Act, as proposed in this Notice. For

[335] BellSouth Comments at 9 (emphasis in original).

[336] *Id.* at 9-10.

example, we seek comment regarding whether it should be permissible for carriers to allocate a fixed number of channels for priority access.[337] Another example involves whether carriers, in providing priority access service, should be permitted to include the capability to preempt non-NSEP calls in progress that are excessive in duration.[338]

c. Exercise of Forbearance Authority

203. In the previous section we have proposed to establish limitations of liability under Section 202 of the Communications Act by providing carriers with the opportunity to shift the burden of proof in the case of claims of unreasonable discrimination or undue preference. We also seek comment, however, on alternative measures that we could employ to ensure providers of priority access that they are excluded from potential liability under Section 202. Such measures might include, for example, the exercise of our forbearance authority under Section 10 of the Communications Act.

204. At the time NCS filed its Petition, Congress had not yet enacted the Telecommunications Act of 1996.[339] The 1996 Act, in adding Section 10 to the Communications Act, gives the Commission authority to forbear from applying any provision of the Communications Act, including Section 202 and notwithstanding Section 332(c)(1)(A),[340] to a telecommunications service or class of telecommunications services, provided that the Commission makes certain determinations established in the statute.[341]

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[337] NCS proposes that service providers ensure that at all times a reasonable amount of cellular spectrum is made available to the public. NCS Petition at 11 n.8, App. B at 9. *See* AT&T Reply Comments at 6-7.

[338] *See* APCO Comments at 4 n.1; VA State Police Comments at 1 (concerning excessive length of calls by news media tying up cellular channels during emergencies).

[339] Telecommunications Act of 1996 (1996 Act), Pub. L. No. 104-104, 110 Stat. 56.

[340] The Budget Act of 1993 amended the Communications Act to add Section 332(c)(1)(A). 47 U.S.C. § 332(c)(1)(A). That section, in addressing the regulatory treatment of mobile services, provides that in rendering the provisions of Title II of the Act inapplicable to a CMRS service or person providing it, the Commission may not specify any provision of Section 202. In adopting regulations for CMRS, we codified that statutory limit on our forbearance authority in Section 20.15 of the Commission's Rules. *See* Implementation of Sections 3(n) and 332 of the Communications Act, Regulatory Treatment of Mobile Services, GN Docket No. 93-252, Second Report and Order, 9 FCC Rcd 1411 (1994) (*CMRS Second Report and Order*), *recon. pending* (adopting Section 20.15(a)). Section 20.15(a) provides in pertinent part that CMRS providers, to the extent applicable, must comply with certain specified sections of Title II, including Section 202. *See* 47 C.F.R. § 20.15(a).

[341] *See* Section 10(a) of the Communications Act, 47 U.S.C. § 160(a), as added by the 1996 Act, § 401.

205. Section 10(a) of the Communications Act sets forth three prerequisite determinations for the Commission to make. The statute requires that, before forbearing from applying any section of Title II, we must find that each of the following conditions applies:[342]

(1) Enforcement of such regulation or provision is not necessary in order to ensure that the charges, practices, classifications, or regulations by, for, or in connection with that telecommunications carrier or telecommunications service are just and reasonable and are not unjustly or unreasonably discriminatory;

(2) Enforcement of such regulation or provision is not necessary for the protection of consumers; and

(3) Forbearance from applying such provision or regulation is consistent with the public interest.

206. We seek comment regarding whether it would be appropriate to forbear from applying Section 202(a) of the Communications Act to the extent a carrier offers priority access service to NSEP personnel or to State or local governmental entities performing public safety functions. We also ask for comment on the definition of consumers, what factors we should consider, what problems may arise in making those determinations, and examples of applying these tests in evaluating whether forbearance is appropriate. For example, with regard to Section 10(a)(2), do considerations concerning possible conflict between priority access service and consumers of 911 service raise the question of whether priority access service may harm consumers?[343]

207. Moreover, Section 10(b) of the Communications Act requires weighing competitive effects in determining whether forbearance is consistent with the public interest under Section 10(a)(3). With regard to the requirement of Section 10(b), we ask what the potential competitive effects of commercially provided priority access service would be among CMRS providers, what the relevance of those competitive effects is regarding forbearance, and what the impact of those competitive effects would be on whether priority access is

[342] *See* Sections 10(a)(1) through 10(a)(3) of the Communications Act, 47 U.S.C. § 160(a)(1)-(3), as added by the 1996 Act, § 401.

[343] *See, e.g.*, SBMS Comments at 5 (contending that carriers should be protected against claims by individuals who are not able to complete 911 or other emergency calls due to heavy usage by CPAS authorized users).

voluntary or mandatory.[344] With respect to this issue, we note that the *PSWAC Final Report* concluded that commercially provided services should be provided on a competitive basis.[345]

5. Voluntary or Mandatory Provision of Priority Access

208. The NCS Petition proposes that priority access rules would not be mandatory.[346] Service providers could voluntarily elect to provide priority access, but would then be required to do so pursuant to the provisions of those rules.[347] According to NCS, service providers electing to provide priority access would have to ensure that at all times a reasonable portion of cellular spectrum would be made available for public use.[348] Such providers, however, would have discretion in implementing priority access, including the amount of spectrum assigned and service charges for the offering.[349] The NCS proposal provides for the option to discontinue, but the carrier must provide notice that it is discontinuing the service.[350]

209. Several commenters strongly concur that the provision of priority access service should be voluntary.[351] NENA asserts, however, that the NCS Petition does not discuss why the adoption of emergency call precedence should be at the discretion of cellular carriers who hold radio licenses in the public interest.[352] NENA suggests that if carriers are concerned that implementation of PACA would be too costly to pay for itself commercially, the answer would be to limit the cellular carrier's ability to refuse the requests of customers — especially Federal, State, and local government agencies — who are ready, willing, and able

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[344] *See* Section III.C.5., *infra*, paras. 208-211.

[345] *See PSWAC Final Report* at 4.

[346] NCS Petition at 11.

[347] *Id.* at ii, 11.

[348] *Id.* at 11 n.8. This rule requirement, NCS maintains, is consistent with the Commission's TSP rules. *See also id.*, App. B at 9.

[349] *See* AT&T Reply Comments at 6-7 (referring to NCS Petition); *see* note 283, *supra*, and accompanying text.

[350] NCS Petition, App. B at 9.

[351] CTIA Comments at 3-5; Vanguard Comments at 2; AT&T Reply Comments at 5-6; SBMS Reply Comments at 4.

[352] NENA Comments at 4.

to pay for the PACA handset and network costs, either through service rates or by other funding mechanisms.[353]

210. We seek comment regarding whether CMRS providers should be permitted to provide priority access services on a voluntary basis. As a general matter, we believe it is sound public policy to pursue market solutions to communications needs because, in our view, reliance on market forces ensures that customer demands are met efficiently and quickly through the provision of cost-based services.[354] We ask commenters to address whether, in this case, it is reasonable to expect that competitive forces will prompt CMRS providers to respond to market demand by developing and offering priority access services that meet the needs of Federal, State, and local government agencies.

211. In addition, whether CPAS is voluntary or mandatory may dictate the necessity for cost recovery or funding mechanisms. Under the NCS proposal, the service user, as the "cost-causative user" is to be responsible for the charges of providing the priority access service.[355] Some commenters submit, however, that with mandatory rules a funding mechanism would have to established.[356] NENA observes that if priority access is mandatory, there may have to be considerations of prescribed cost recovery, whereas a voluntary scheme is amenable to each carrier's business judgment as to whether price will cover costs plus a return on investment.[357] In this regard we seek further comment concerning the means of funding that would result in the most effective implementation of priority access. We also

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[353] *Id.* at 4-5.

[354] *Cf., e.g.*, Rulemaking To Amend Parts 1, 2, 21, and 25 of the Commission's Rules To Redesignate the 27.5-29.5 GHz Frequency Band, To Reallocate the 29.5-30.0 GHz Frequency Band, To Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services, Petitions for Reconsideration of the Denial of Applications for Waiver of the Commission's Common Carrier Point-to-Point Microwave Radio Service Rules, CC Docket No. 92-297, Suite 12 Group Petition for Pioneer Preference, PP-22, Second Report and Order, Order on Reconsideration, and Fifth Notice of Proposed Rulemaking, FCC 97-82, released Mar. 13, 1997, *recon. pending, appeal pending sub nom.* Melcher v. FCC, Case Nos. 93-110, *et al.* (D.C. Cir., filed Feb. 8, 1993), at para. 157 ("[W]e are of the view that competitive markets are the most direct and reliable means for ensuring that consumers receive the benefits described in the Communications Act . . ."); Implementation of Sections 3(n) and 332 of the Communications Act — Regulatory Treatment of Mobile Services, GN Docket No. 93-252, Second Report and Order, 9 FCC Rcd 1411, 1420 (para. 19) (1994) ("Success in the marketplace . . . should be driven by technological innovation, service quality, competition-based pricing decisions, and responsiveness to consumer needs — and not by strategies in the regulatory arena."), *recon. pending.*

[355] NCS Petition at 12-13, App. B at 8.

[356] *See* AT&T Reply Comments at 6; NENA Reply Comments at 2. *See generally* GTEM Comments at 6.

[357] NENA Reply Comments at 3.

invite comment on whether a flexible, non-prescriptive approach to funding, as we concluded we should apply to the deployment of wireless E911 services, would be advisable in order to allow carriers and government officials the latitude to develop cost recovery solutions that address particular needs for priority access.[358]

6. Potential Limitations of Priority Access Service

212. NCS recognizes current technical constraints in the implementation of CPAS, because the standards for CPAS are still in the developmental stage.[359] Consequently, at the time NCS filed its Petition, no service provider was in a position to provide the priority access that NCS proposed.[360] The record also indicates that, although some progress regarding standards has been made, carriers may still not be in a position to offer an effective form of priority access based on the expressed needs of potential subscribers.

213. We seek comment regarding the potential technical limitations we summarize in this section. In particular, we ask commenters to address the extent of these potential limitations, efforts underway to reduce or overcome the limitations, and the implications of these potential problems for the viability and effectiveness of priority access systems.

a. Technical Standards; Operational Limitations

214. The NCS Petition suggests that priority access should be implemented using a PACA queuing scheme. The record indicates that the standard for the PACA feature, IS-53 A, is applicable only to cellular systems that use a TDMA air interface.[361] BellSouth submits that CPAS is premature due to this limitation and that the standard is not capable of being applied to analog systems.[362] The PACA cellular Features Description has been recently

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[358] *See* Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems, CC Docket No. 94-102, Report and Order and Further Notice of Proposed Rulemaking (*E911 Report and Order*), 11 FCC Rcd 18676, 18722 (paras. 89-90) (1996), *recon. pending*. Certain rules adopted by the Commission in the *E911 Report and Order* were subsequently stayed through November 30, 1997. Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems, CC Docket No. 94-102, Order, DA 97-2119 (Wireless Telecom. Bur.), released Sept. 30, 1997.

[359] NCS Petition at 4-5.

[360] *Id.*

[361] *See* BellSouth Comments at 2-3.

[362] *Id.*

finalized as an American National Standards Institute (ANSI) standard.[363] Even with this update, however, current analog phones still will not work with the CPAS scheme, because they have a five-second "timeout" feature.[364]

215. In addition, implementation of the PACA standard requires the use of a switch-to-switch protocol, for intersystem interoperability (roaming).[365] Our understanding is that this protocol, IS-41 Rev. C, is final for cellular service and available for broadband PCS, and is currently implemented throughout a substantial part of the wireless industry. The protocol can be used with TDMA-based systems and is available for CDMA systems, although the digital air interface for CDMA is not yet completed.[366] The IS-41 Rev. C protocol, however, is not compatible with all digital systems. Thus, we seek comment regarding the progress of the development of priority access standards for digital cellular systems, and for wireless systems in general.

216. A further potential problem is that, although current protocols may provide intersystem capability for newly initiated calls, there appears to be no capability to provide for roaming between different systems (*i.e.*, when roaming into another area) while there is a pending request in the queue. The pending or "queued" call would be dropped when moving to another system and would have to be re-initiated by the user.[367] We seek comment regarding the significance of this technical issue. In particular, we seek comment regarding whether public safety users intend to use priority access while moving from place to place, or whether they contemplate that priority access will more likely be used at relatively confined emergency scenes.

217. Finally, we note that CPAS, as proposed in the NCS Petition, does not have dispatch capability, and several public safety commenters contend that they cannot wait for a dial tone in emergency situations, and need push-to-talk capability for immediate communications access. We seek comment regarding this issue, and regarding whether priority access will meet the needs of public safety personnel.

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[363] ANSI/TIA/EIA-664. Final establishment occurred after an update to IS-53B. *See* DISA Letter, Mar. 14, 1997; CTIA Comments at 5 & Attach. A; NCS Reply Comments at 2.

[364] DISA Letter, Mar. 14, 1997. According to DISA the "timeout" means that if an analog handset does not get a channel in five seconds, it terminates the connection. *Id.*

[365] CTIA Comments at 5-6; DISA Letter, Mar. 14, 1997.

[366] DISA Letter, Mar. 14, 1997.

[367] *See* NCS Petition at 13; CTIA Comments at 5; *PSWAC Final Report* at 308.

b. Equipment and Hardware Limitations

218. The record indicates that the PACA feature can be installed only in new phones, and thus is not "backward compatible."[368] Therefore, existing digital cellular, PCS, and SMR phones would not allow deployment of a CPAS service. DISA adds that carriers are reluctant to discuss implementation of priority access for analog handsets, due to the industry trend toward digital service for competitive and capacity reasons.[369]

219. Moreover, as DISA submits, the CPAS feature is designed for implementation only by NSEP users who will have to acquire a commercial off-the-shelf or dual-mode handset built in accordance with the digital interface standards necessary to allow "queuing" operation.[370] DISA claims that for the CPAS proposal to work with analog handsets, cellular providers would have to implement the CPAS scheme differently than proposed, or implement two different CPAS schemes.[371] We seek comment regarding these priority access implementation issues.

c. Security Limitations

220. Consideration of the NCS CPAS proposal for NSEP users also entails recognition of the need for secure communications.[372] Lack of security regarding analog-based cellular systems has been considered to be a problem, and digital communications may not be as secure as once thought, even with encryption codes.[373] In light of the fact that most operating cellular systems are still analog, the existing record does not appear to focus adequately on the issue of secure communications in priority access offerings. There is comment that the proposed 3-digit code, "*xx," to acquire access into the queue could be easily tampered with by computer "hackers."[374] We seek comment regarding these security issues.

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[368] CTIA Comments at 5-6; AT&T Reply Comments at 3 & n.7; *see also* DISA Letter, Mar. 14, 1997.

[369] DISA Letter, Mar. 14, 1997.

[370] *Id.*

[371] *Id.*

[372] *PSWAC Final Report* at 478.

[373] *See* C. Carlson, *Beltway Offered Cellular Choice*, Wireless Week, Jan. 27, 1997; E. Warner, *Cellular Encryption Codes Cracked*, Wireless Week, Mar. 24, 1997; R. Lee, *Crackers and Hackers*, Wireless Week, Mar. 31, 1997.

[374] *See* Dixon Comments at 2.

7. Other Issues

a. Types of Commercial Wireless Carriers Offering Priority Access

221. In view of the proposal for additional dedicated spectrum for public safety and increased capacity of existing and new CMRS providers, we tentatively conclude that all CMRS carriers, including cellular carriers, should be considered as potential providers of priority access service. Although the NCS Petition focuses its proposal on priority access for cellular services,[375] NCS also indicates that all wireless services could be considered in its priority access proposal.[376]

222. In further support of broadening the applicability of priority access to CMRS carriers in addition to cellular providers, commenters to the *CPAS Public Notice* take two approaches. First, priority access rules should apply to all CMRS carriers, including broadband PCS and SMR.[377] Second, such rules should apply only to two-way CMRS carriers, including providers of new CMRS services, but excluding air-ground services.[378] GTEM asserts that although most two-way CMRS traffic today is cellular, broadband PCS and enhanced SMR are entering the wireless telecommunications marketplace.[379]

223. The commenters base their positions for the most part on the issue of regulatory parity — that all CMRS providers should be regulated consistently.[380] GTEM notes that Congress adopted a model of regulatory parity for all CMRS in the Omnibus Budget Reconciliation Act of 1993 to ensure that all CMRS providers are subject to the same rules, to the extent practicable.[381] Accordingly, SBMS submits that adopting specific requirements of priority access for cellular carriers would be contrary to the actions by the Commission in implementing the Congressional intent of this legislation, and there should be regulatory symmetry pertaining to priority access.[382] Otherwise, SBMS asserts, requiring cellular carriers

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[375] NCS Petition at 3-4.

[376] NCS Petition at 3 n.3. *See also* DISA Letter, Mar. 14, 1997.

[377] BANM Comments at 4 n.7; CTIA Comments at 4.

[378] GTEM Comments at 4.

[379] *Id.*.

[380] BANM Comments at 4 n.7; GTEM Comments at 4-5; SBMS Comments at 3-4.

[381] GTEM Comments at 4-5.

[382] SBMS Comments at 3-4.

that elect to offer priority access to abide by rules and requirements prescribed by the Commission, while allowing other wireless providers the freedom to craft customized solutions without regard to those rules and requirements, would place cellular carriers at a competitive disadvantage.[383]

224. We generally agree with the contentions of these commenters and thus we tentatively conclude that priority access rules should apply to all CMRS providers, including cellular carriers. We seek comment on this tentative conclusion. For example, although priority access could be provided by PCS and SMR carriers in the near term, it may not be technically feasible for carriers with GSM-based systems to offer priority access. Such matters depend on the progress of a standards process in developing a technical standard that would accommodate those systems under a priority access scheme.

225. We also seek comment on whether priority access should be applicable to Mobile Satellite Systems (MSS) that are treated as CMRS under Part 20 of the Commission's Rules.[384] DISA notes that many of the PCS providers and MSS providers have suggested several types of priority systems.[385] Generally in this regard, we also seek comment on whether the applicability of priority access rules to CMRS carriers should parallel the same CMRS services as are subject to E911 requirements. We request comment on whether there is a technical or operational basis to apply priority access to the same CMRS services as those covered by E911 requirements.[386]

226. In addition, NCS proposes in its Petition that priority access service providers would not include resellers and agents, because only licensees can control the software with the capability to offer CPAS.[387] We request that commenters address the role of resellers of CMRS in offering priority access, particularly focussing on the issue of non-discrimination in resale.[388] Finally, we seek comment on whether priority access should be applied in the case

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[383] *Id.* at 1-4.

[384] *See* Sections 20.7(c) and 20.9(a)(10) of the Commission's Rules, 47 C.F.R. §§ 20.7(c), 20.9(a)(10).

[385] *See* DISA Letter, Mar. 14, 1997.

[386] *See E911 Report and Order*, 11 FCC Rcd at 18716-18 (paras. 80-84).

[387] NCS Petition at 11-12.

[388] *See, e.g.*, Section 20.12(b) of the Commission's Rules, 47 C.F.R. § 20.12(b), providing that "[e]ach carrier subject to this section must permit unrestricted resale of its service." This requirement applies to the providers of PCS, cellular, and SMR service specified in Section 20.12(a) of the Commissions Rules. 47 C.F.R. § 20.12(a).

of any newly reallocated spectrum that is made available to CMRS providers who may desire to provide priority access as part of their new service offerings.

b. Administration of Priority Access

227. In view of the scope of our proposal concerning priority access, we do not believe it is necessary at this time to address issues concerning aspects of administering priority access that were raised by the commenters. Those issues include the assignment of priority levels and safeguarding against potential abuses of priority access systems. Another issue we are deferring is who should have or share responsibility in the administration of priority access, *e.g.*, whether administrators of the regional planning committees and Public Safety Answering Points[389] should have a role. While we have decided to defer consideration of these issues, we encourage government entities, public safety agencies, and commercial providers of wireless service to continue to work together to resolve them.

IV. PROTECTION OF TELEVISION SERVICES

A. Background

228. In this section of the Notice, we discuss technical requirements for protecting incumbent broadcast licensees and planned DTV allotments against interference. In the *DTV Proceeding*,[390] we stated that all analog TV and DTV operations in the 746-806 MHz band would be fully protected during the DTV transition period. In the *Allocation Notice*[391] we noted that new licensees in the band will have to protect both analog TV and DTV operations from interference.

229. We note that land mobile and TV stations have successfully shared the 470-512 MHz band (TV Channels 14-20) in 11 major metropolitan areas of the United States.[392] In

[389] *See E911 Report and Order*, 11 FCC Rcd at 18678-79 (paras. 2-3).

[390] *See DTV Sixth Report and Order* at para. 80.

[391] *Allocation Notice* at para. 17.

[392] *See* Section 2.106 of the Commission's Rules, 47 C.F.R. § 2.106, Notes NG66, NG114, and NG127. The 11 urbanized areas where UHF channels may be used for land mobile operations and the channels set aside for such operations in those areas are:

GEOGRAPHIC AREA	TV CHANNEL
New York, N.Y.; Northeastern New Jersey	14, 15
Los Angeles, Cal.	14, 16, 20

the 470-512 MHz band, we permit land mobile base stations or mobile relay stations to be located within 80 kilometers (km) (50 miles) of the geographic center of these cities. We also permit mobile units to operate within 48 km (30 miles) of any base station. We protect TV stations from interference by requiring land mobile licensees to observe a range of specific geographical separation, antenna height, and power limits. Geographical separations between land mobile base stations and protected co-channel TV stations range between 193 km (120 miles) and 260 km (162 miles), depending on the power and height above average terrain of the land mobile base station.[393]

230. These spacing requirements were adopted in 1970 to assure the maintenance of a ratio of at least 50 dB between desired TV signals and undesired co-channel land mobile signals (the D/U signal ratio) at a Grade B contour 55 miles in radius from a protected TV station.[394] We also adopted separations based on a 40 dB D/U signal ratio, which is used currently only for channel 15 frequencies in the New York metropolitan area.[395] The 40 dB ratio reduced the separations to a distance range between 145 km (90 miles) and 209 km (130 miles).[396] For protection of first adjacent channel TV operations, the spacing requirements were based on a D/U signal ratio of 0 dB, and result in geographical separations between 96

GEOGRAPHIC AREA	TV CHANNEL
Chicago, Ill.; Northwestern Indiana	14, 15
Philadelphia, Pa.; New Jersey	19, 20
San Francisco, Cal.; Oakland, Cal.	16, 17
Boston, Mass.	14, 16
Washington, D.C; Maryland; Virginia	17, 18
Pittsburgh, Pa.	14, 18
Miami, Fla.	14
Houston, Tex.	17
Dallas, Tex.	16

[393] *See* Sections 90.307 through 90.309 of the Commission's Rules, 47 C.F.R. §§ 90.307-90.309.

[394] *See* Amendment of Parts 2, 89, 91, and 93, Geographic Reallocation of UHF-TV Channels 14 through 20 to the Land Mobile Radio Services for Use Within the 25 Largest Urbanized Areas of the United States, Docket No. 18261, First Report and Order, 23 F.C.C.2d 325, 342 (para. 44) (1970) (*Geographic Reallocation First Report and Order*). For definitions and measurement provisions for the Grade B contour of TV stations, see Sections 73.683 through 73.684 of the Commission's Rules, 47 C.F.R. §§ 73.683-73.684. *See also* note 400, *infra.*

[395] *Geographic Reallocation First Report and Order*, 23 F.C.C.2d at 342 (para. 44).

[396] *See* Section 90.309 of the Commission's Rules, 47 C.F.R. § 90.309.

km (60 miles) and 108 km (67 miles).[397] We also provided that any land mobile base station with associated mobiles must have a geographic separation of at least 145 km (90 miles) from adjacent channel TV stations.

231. In 1985, the Commission proposed to change the D/U signal ratio from 50 dB to 40 dB for all TV/land mobile sharing. In so doing, we stated that our earlier 50 dB ratio was too conservative, and that the 40 dB ratio would result in minimal impact on co-channel TV service due to additional interference reductions resulting from receiving antenna and polarization discrimination.[398] We also solicited comment on whether we should change the 0 dB D/U signal ratio for adjacent channel TV stations, and on whether new land mobile stations should be allowed to operate inside the Grade B contour of adjacent channel TV stations.[399] This proposal was held in abeyance pending completion of the *DTV Proceeding*.

B. Discussion

1. Protection Criteria

232. We recognize that our previous sharing criteria and analyses were based upon use of "traditional" private land mobile technology that typically employed a high powered base station to provide wide area coverage. We anticipate that public safety users will employ such systems to a significant degree. At this juncture, however, it is not clear what types of services, technologies, or system architectures may be used for new types of public safety services. Accordingly, we believe it is appropriate to consider in this proceeding a variety of approaches and criteria for protecting TV broadcasting from the services that will occupy Channels 60-69.

a. Geographic Spacing Requirements Based on 55-Mile Reference Grade B Contour

233. One approach would be to protect co-channel analog TV stations on channels 60-69 during the DTV transition period by adopting geographical spacing requirements based

[397] *See Geographic Reallocation First Report and Order*, 23 F.C.C.2d at 342 (para. 45).

[398] *See* Amendment of the Rules Concerning Further Sharing of the UHF Television Band by Private Land Mobile Radio Services, GEN Docket No. 85-172, Notice of Proposed Rulemaking, 101 F.C.C.2d 852, 861 (para. 19) (1985) (*UHF-TV Sharing Proceeding*).

[399] *See id.* at 862 (para. 20).

on a 40 dB D/U signal ratio at the 55-mile Grade B contour of the protected TV station.[400] We could protect adjacent channel TV operations by adopting geographical spacing requirements based on a 0 dB D/U signal ratio.[401] This approach would be based on experimental data that resulted in our earlier proposal to lower the D/U signal ratio to 40 dB and our use of this standard to protect TV service from interference in the New York metropolitan area.

234. If we were to adopt this approach, we would favor development of a table permitting operation at distances based on particular powers and antenna heights, similar to that in the current geographic separation standards in Subpart L of Part 90 of the Commission's Rules.[402] We note that separation tables are clear and easily applied, and we tentatively conclude that use of such tables should simplify communications system planning for new licensees, including local government and other public safety entities. Moreover, because the tables would be based on the assumption that TV stations are operating near full facilities,[403] they would also allow some flexibility for broadcasters operating at less than full facilities to modify their facilities during the DTV transition period without raising new interference concerns.

235. The above analysis is based on the protection necessary for analog TV. We recognize, however, that we must also address protection criteria for DTV stations operating on Channels 60-69 during the transition period. DTV transmissions could exhibit a greater resistance to interference than do analog TV transmissions. Therefore, DTV stations may be able to accept a lesser amount of protection from co-channel and adjacent channel land mobile and fixed stations than the 40 dB and 0 dB D/U ratios we propose for analog TV stations.

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[400] Section 90.309 of the Commission's Rules, 47 C.F.R. § 90.309, contains tables of separations based on a 40 dB D/U signal ratio. Smaller geographic separations are permitted for land mobile stations that use lower transmitter powers or antenna heights. The separations we propose in this Notice would assume the use of these tables to allow these smaller separations, where appropriate. The geographical separations described in Sections 90.307 through 90.309 of the Commission's Rules, 47 C.F.R. §§ 90.307-90.309, are also based on the assumption that the protected TV station is operating at one megawatt effective radiated power, using a 2,000 foot HAAT (height above average terrain) antenna. These operating parameters result in a Grade B contour of 64 dbuV/m at a distance of 55 miles from the TV transmitter. The Grade B contours are computed using the "F(50,50) curves" discussed in FCC Research Division Report No. R-6602, released Sept. 7, 1966.

[401] The adjacent channel separation requirement would also apply to protection of analog television operations on Channel 59.

[402] *See, e.g.*, Tables A, B, and E of Section 90.309 of the Commission's Rules, 47 C.F.R. § 90.309.

[403] Maximum facilities for TV stations operating in the UHF band are 5 megawatts effective radiated power, at an antenna HAAT of 610 meters (2,000 feet). *See* Section 73.614 of the Commission's Rules, 47 C.F.R. . § 73.614.

We seek comment on the appropriate D/U ratios that should be applied for the protection of DTV stations.

236. We recognize that a table that permits operation at closer distances based on reduced power and antenna height may still be unnecessarily restrictive. For example, public safety systems could reduce interference through a variety of engineering techniques such as use of directional and down-tilt antennas. Also, certain modulation technologies may be employed to further reduce interference.[404] In addition, we note that there is a somewhat greater attenuation of signal in the 746-806 MHz band as compared with the 470-512 MHz band, and that it may be possible to take advantage of the fact that TV receivers are less sensitive to interfering signals in some parts of the TV channel than others.

237. In light of these considerations, we request comment on whether adopting uniform geographical spacings based on the use of separation tables would be appropriate, and if so, what separation distances should be used in such tables. We also invite comment as to whether we should establish different separation distances to protect TV operations from interference from fixed and mobile operations in the 746-806 MHz band. Further, we solicit views as to whether we should use different spacing requirements depending on the technology employed, location in the TV channel, or any other factor. Finally, we tentatively conclude that, given the variables, it would be appropriate to allow new licensees and TV licensees privately to negotiate shorter geographic separations than those we have proposed.

b. Other Approaches

238. We also request comment on whether approaches other than the use of geographic separation tables based on the assumption of a 55-mile reference Grade B contour should be employed for the protection of TV operations. For example, since TV broadcast stations are authorized with effective radiated power (ERP) levels up to 5 megawatts, at an antenna HAAT of 610 meters (2,000 feet),[405] we request comment on whether the size of the reference contour should be increased accordingly. We also seek comment on whether the use of tables based on a particular reference Grade B contour could unnecessarily inhibit innovative or case-specific solutions to potential interference problems.

[404] For example, TDMA- and CDMA-based systems might produce interference effects that differ from those of traditional analog FM systems. Also, due to the directive nature of fixed transmissions, fixed stations may produce interference effects that differ from those of land mobile stations.

[405] These parameters result in a Grade B contour distance of 107 kilometers (66.5 miles), calculated according to Sections 73.683 and 73.684 of the Commission's Rules, 47 C.F.R. §§ 73.683-73.684.

239. We therefore seek comment on whether protection criteria should instead be based on requiring that a predicted D/U signal ratio be met based on a TV licensee's authorized facilities, as proposed in the *UHF Sharing Proceeding*.[406] For example, we could require that public safety and other new service operations ensure that a D/U signal ratio of at least 40 dB is maintained at a TV licensee's Grade B contour to protect analog television operations. Thus, the fundamental emissions from co-channel operations outside the Grade B contour would be limited to a predicted field strength of 24 dBμV/m (= 64 dBμV/m - 40dB) at the Grade B contour.[407] For first adjacent analog TV channels, the fundamental emission of new fixed or mobile stations outside the Grade B contour would be limited to a predicted field strength of 64 dBμV/m (= 64 dBμV/m - 0 dB) at the Grade B contour. For DTV stations, appropriate co-channel and adjacent channel D/U ratios could apply to either the Grade B contour of the companion analog station or to the DTV station's noise-limited service area. We request comment on this alternative approach.

2. Other Issues

240. In the *DTV Proceeding*, we raised the possibility that, in negotiating among themselves for changes in allotments and assignments, TV licensees could include agreements for compensation. We propose to permit new licensees in this spectrum similarly to reach agreements with licensees of protected TV stations, including holders of construction permits, compensating them for converting to DTV transmission only before the end of the DTV transition period, accepting higher levels of interference than those allowed by the protection standards, or otherwise accommodating new licensees in these bands. We believe that these measures would benefit the public by accelerating the transition to DTV and clearing the 746-806 MHz band for public safety services.

V. PROCEDURAL MATTERS

A. Regulatory Flexibility Analyses

241. The Initial Regulatory Flexibility Analysis, as required by Section 603 of the Regulatory Flexibility Act,[408] is set forth in Appendix A. The Commission has prepared the Initial Regulatory Flexibility Analysis of the expected impact on small entities of the proposals suggested in this Notice. Written public comments are requested on the Initial Regulatory

[406] See note 398, *supra*.

[407] "Co-channel" in this context means that the authorized bandwidth of the protected TV station and the fixed or mobile stations overlap.

[408] 5 U.S.C. § 603.

Flexibility Analysis. In order to fulfill the mandate of the Contract with America Advancement Act of 1996 regarding the Final Regulatory Flexibility Analysis, we ask a number of questions in our Initial Regulatory Flexibility Analysis regarding the prevalence of small businesses in the affected industries.

242. Comments on the Initial Regulatory Flexibility Analysis must be filed in accordance with the same filing deadlines as comments on this Notice, but they must have a separate and distinct heading designating them as responses to the Initial Regulatory Flexibility Analysis. The Secretary shall send a copy of this Notice, including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration in accordance with Section 603(a) of the Regulatory Flexibility Act.[409]

B. Paperwork Reduction Analyses

243. This Notice contains proposed information collection requirements applicable to the public. As part of our continuing effort to reduce paperwork burdens, we invite the general public to take this opportunity to comment on the information collections contained in this Notice, as required by the Paperwork Reduction Act of 1995.[410]

244. Public and agency comments regarding the information collections contained in this Notice are due on or before 60 days after the publication of the Notice in the Federal Register.

245. Comments submitted on information collections contained in this Notice should address:

- Whether the collection of information is necessary for the proper performance of the functions of the Commission, including whether the information shall have practical utility.
- The accuracy of the Commission's burden estimates.
- Ways to enhance the quality, utility, and clarity of the information collected.
- Ways to minimize the burden of the collection of information on the respondents, including the use of automated collection techniques or other forms of information technology.

[409] 5 U.S.C. § 603(a).

[410] 44 U.S.C. § 3506(c)(2).

246. In addition to filing these comments on information collections contained in the Second Notice of Proposed Rulemaking with the Secretary, a copy of any such comments should be submitted to Judy Boley, Federal Communications Commission, Room 234, 1919 M Street, N.W., Washington, D.C. 20554, or via the Internet to jboley@fcc.gov. Furthermore, a copy of any such comments should be submitted to Timothy Fain, OMB Desk Officer, 10236 NEOB, 725 - 17th Street, N.W., Washington, D.C. 20503 or via the Internet at fain_t@al.eop.gov. For additional information regarding the information collections contained herein, contact Judy Boley.

C. Ex Parte Presentations

247. This Notice is a permit-but-disclose notice and comment rulemaking proceeding. *Ex parte* presentations are permitted, provided they are disclosed as provided in Commission rules.[411]

D. Pleading Dates

248. Pursuant to applicable procedures set forth in Sections 1.1415 and 1.419 of the Commission's Rules,[412] interested parties may file comments to this Notice on or before **December 22, 1997**, and reply comments on or before **January 12, 1998**. All relevant and timely comments will be considered by the Commission before final action is taken in this proceeding. To file formally in this proceeding, participants must file an original and five copies of all comments, reply comments, and supporting comments. If participants want each Commissioner to receive a personal copy of their comments, an original and nine copies must be filed. Comments and reply comments should be sent to the Office of the Secretary, Federal Communications Commission, Washington, D.C. 20554. Comments and reply comments will be available for public inspection during regular business hours in the FCC Reference Center (Room 239) of the Federal Communications Commission, 1919 M Street, N.W., Washington, D.C. 20554. Copies of comments and reply comments are available through the Commission's duplicating contractor: International Transcription Service, Inc. (ITS, Inc.), 1231 20th Street, NW, Washington, DC 20036, (202) 857-3800.

E. Further Information

249. For further information concerning this rulemaking proceeding, contact the following staff of the Wireless Telecommunications Bureau, Federal Communications Com-

[411] *See generally* Sections 1.1202, 1.1203, and 1.1206(a) of the Commission's Rules, 47 C.F.R. §§ 1.1202, 1.1203, 1.1206(a).

[412] 47 C.F.R. §§ 1.1415, 1.419.

mission, Washington, D.C. 20554: Marty Liebman, Mary Woytek, Ed Jacobs, David Siehl, or Jon Reel, Policy Division, at (202) 418-1310.

VI. ORDERING CLAUSES

250. Accordingly, IT IS ORDERED, pursuant to Sections 1, 4(i), 10, 201, 202, 303(b), 303(g), 303(j), 303(r), and 403 of the Communications Act, 47 U.S.C. §§ 151, 154(i), 160, 201, 202, 303(b), 303(g), 303(j), 303(r), 403, that NOTICE IS HEREBY GIVEN of the proposed regulatory changes described in this Second Notice of Proposed Rulemaking, and that COMMENT IS SOUGHT on these proposals.

251. IT IS FURTHER ORDERED that the Secretary shall send a copy of this Second Notice of Proposed Rulemaking, including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration in accordance with Section 603(a) of the Regulatory Flexibility Act.[413]

252. IT IS FURTHER ORDERED that the Petition for Rulemaking filed on October 19, 1995, on behalf of the National Communications System IS GRANTED IN PART TO THE EXTENT INDICATED HEREIN.

FEDERAL COMMUNICATIONS COMMISSION

William F. Caton
Acting Secretary

[413] Pub. L. No. 96-354, 94 Stat. 1165, 5 U.S.C. §§ 601-612 (1980).

APPENDIX A

Initial Regulatory Flexibility Analysis

As required by the Regulatory Flexibility Act (RFA),[1] the Commission has prepared this present Initial Regulatory Flexibility Analysis (IRFA) of the expected significant economic impact on small entities by the policies and rules proposed in this Second Notice of Proposed Rulemaking (Notice). Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments on the Notice provided above in paragraph 248 of the Notice. The Commission will send a copy of the Notice, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).[2] In addition, the Notice and IRFA (or summaries thereof) will be published in the Federal Register.[3]

A. Need for, and Objectives of, the Proposed Action

This rulemaking proceeding was initiated to propose service rules for 24 megahertz of spectrum in the 746-806 MHz band. The spectrum, which is currently used by television (TV) Channels 60-69, is being made available to meet various public safety communications needs.

This rulemaking proceeding was also initiated to seek comment regarding whether certain commercial mobile radio service (CMRS) providers should be authorized to offer priority access service on a voluntary basis for purposes of enhancing national security and emergency preparedness (NSEP) functions. Priority access service will enable NSEP personnel and other public safety users to receive priority to available channels during emergencies. The rulemaking proceeding is also initiated to secure comment on other issues concerning such priority access.

We endeavor to (1) provide for modern and innovative communications at high levels of efficiency and effectiveness required by the Nation's public safety entities; (2) explore the possibility of certain commercial services being used for public safety applications; and (3) protect TV stations on Channels 60-69 during the transition to digital television (DTV).

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[1] *See* 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. §§ 601-612, has been amended by the Contract with America Advancement Act of 1996, Pub. L. No. 104-121, 110 Stat. 847 (1996) (CWAAA). Title II of the CWAAA is the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA).

[2] *See* 5 U.S.C. § 603(a).

[3] *See id.*

B. Legal Basis

The proposed action is authorized under Sections 1, 4(i), 10, 201, 202, 303(b), 303(g), 303(j), 303(r), and 403 of the Communications Act, 47 U.S.C. §§ 151, 154(i), 160, 201, 202, 303(b), 303(g), 303(j), 303(r), 403.

C. Reporting, Recordkeeping, and Other Compliance Requirements

The Commission proposes the filing of regional plans drafted by planning committees made up of representatives of the public safety community. Applicants for public safety licenses may be required to make submissions to the planning committees justifying their requests for spectrum, and will be required to submit applications for spectrum licenses on Form 601. The proposals under consideration in the Notice include the possibility of imposing recordkeeping and reporting requirements on individuals or organizations involved in establishing a national planning process to develop a nationwide interoperability plan, on individuals or organizations that may assist us in developing technical standards, and on small government agencies who may request extended implementation. We request comment on how these requirements can be modified to reduce the burden on small entities and still meet the objectives of this proceeding.

With respect to priority access service, the proposals of the Commission in this Notice do not entail reporting, recordkeeping, or other compliance requirements. If, however, there are matters pertaining to such requirements that relate to those issues on which we also seek comment in this Notice, we invite commenters to address how those matters may affect small entities who may be potential providers of priority access service.

D. Description and Number of Small Entities Involved

This Notice will affect TV station licenses on Channels 60-69, public safety entities, and commercial mobile radio service (CMRS) providers. Commenters are requested to provide information regarding how many entities (overall) and how many small entities would be affected by the proposed rules in the Notice.

(a) Television Stations

(1) Television Station Estimates Based on Census Data

The Notice will affect full service TV stations, TV translator facilities, and low power TV (LPTV) stations. The Small Business Administration defines a TV broadcasting station

that has no more than $10.5 million in annual receipts as a small business.[4] TV broadcasting stations consist of establishments primarily engaged in broadcasting visual programs by TV to the public, except cable and other pay TV services.[5] Included in this industry are commercial, religious, educational, and other TV stations.[6] Also included are establishments primarily engaged in TV broadcasting and which produce taped TV program materials.[7] Separate establishments primarily engaged in producing taped TV program materials are classified under another SIC number.[8]

There were 1,509 TV stations operating in the Nation in 1992.[9] That number has remained fairly constant as indicated by the approximately 1,551 operating TV broadcasting stations in the Nation as of February 28, 1997.[10] For 1992[11] the number of TV stations that produced less than $10.0 million in revenue was 1,155 establishments, or approximately 77 percent of the 1,509 establishments.[12] There are currently 95 full service analog TV stations,

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[4] 13 C.F.R. § 121.201, Standard Industrial Code (SIC) 4833 (1996).

[5] Economics and Statistics Administration, Bureau of Census, U.S. Department of Commerce, 1992 Census of Transportation, Communications and Utilities, Establishment and Firm Size, Series UC92-S-1, App. A-9 (1995) (ESA 1992 Census).

[6] *Id. See* Executive Office of the President, Office of Management and Budget, Standard Industrial Classification Manual (1987), at 283, which describes TV Broadcasting Station (SIC Code 4833) as:

> Establishments primarily engaged in broadcasting visual programs by television to the public, except cable and other pay television services. Included in this industry are commercial, religious, educational and other television stations. Also included here are establishments primarily engaged in television broadcasting and which produce taped television program materials.

[7] ESA 1992 Census at App. A-9.

[8] *Id.*; SIC 7812 (Motion Picture and Video Tape Production); SIC 7922 (Theatrical Producers and Miscellaneous Theatrical Services (producers of live radio and TV programs).

[9] *Allocation Notice*, at App. C; ESA 1992 Census at App. A-9.

[10] *Allocation Notice*, at App. C.

[11] A census for communications establishments is performed every five years ending with a "2" or "7." *See* ESA 1992 Census at III.

[12] The amount of $10 million was used to estimate the number of small business establishments because the relevant Census categories stopped at $9,999,999 and began at $10,000,000. No category for $10.5 million existed. Thus, the number is as accurate as it is possible to calculate with the available information.

either operating or with approved construction permits on channels 60-69.[13] In the *DTV Proceeding*, we adopted a DTV Table which provides only 15 allotments for DTV stations on channels 60-69 in the continental United States.[14] There are seven DTV allotments in channels 60-69 outside the continental United States.[15] Thus, the rules will affect approximately 117 TV stations; approximately 90 of those stations may be considered small businesses.[16] These estimates may overstate the number of small entities since the revenue figures on which they are based do not include or aggregate revenues from non-TV affiliated companies. We recognize that the rules may also impact minority-owned and women-owned stations, some of which may be small entities. In 1995, minorities owned and controlled 37 (3.0 percent) of 1,221 commercial TV stations in the United States.[17] According to the U.S. Bureau of the Census, in 1987 women owned and controlled 27 (1.9 percent) of 1,342 commercial and non-commercial TV stations in the United States.[18]

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[13] *See Allocation Notice* at para. 2.

[14] *See DTV Proceeding, Sixth Report and Order*, App.B.

[15] *Allocation Notice* at para. 2 n.5.

[16] We use the 77 percent figure of TV stations operating at less than $10 million for 1992 and apply it to the 117 TV stations to arrive at 90 stations categorized as small businesses.

[17] *Minority Commercial Broadcast Ownership in the United States*, U.S. Dep't of Commerce, National Telecommunications and Information Administration, The Minority Telecommunications Development Program ("MTDP") (Apr. 1996). MTDP considers minority ownership as ownership of more than 50 percent of a broadcast corporation's stock, voting control in a broadcast partnership, or ownership of a broadcasting property as an individual proprietor. *Id.* The minority groups included in this report are Black, Hispanic, Asian, and Native American.

[18] *See* Comments of American Women in Radio and TV, Inc. in MM Docket No. 94-149 and MM Docket No. 91-140, at 4 n.4 (filed May 17, 1995), *citing* 1987 Economic Censuses, *Women-Owned Business*, WB87-1, U.S. Dep't of Commerce, Bureau of the Census, August 1990 (based on 1987 Census). After the 1987 Census report, the Census Bureau did not provide data by particular communications services (four-digit SIC Code), but rather by the general two-digit SIC Code for communications (#48). Consequently, since 1987, the Census Bureau has not updated data on ownership of broadcast facilities by women, nor does the Commission collect such data. However, we sought comment on whether the Annual Ownership Report Form 323 should be amended to include information on the gender and race of broadcast license owners. Policies and Rules Regarding Minority and Female Ownership of Mass Media Facilities, Notice of Proposed Rulemaking, 10 FCC Rcd 2788, 2797 (1995).

There are currently 4,977 TV translator stations and 1,952 LPTV stations.[19] Approximately 1,309 low power TV and TV translator stations are on channels 60-69[20] which could be affected by policies in this proceeding. The Commission does not collect financial information of any broadcast facility and the Department of Commerce does not collect financial information on these broadcast facilities. We will assume for present purposes, however, that most of these broadcast facilities, including LPTV stations, could be classified as small businesses. As indicated earlier, approximately 77 percent of TV stations are designated under this analysis as potentially small businesses. Given this, LPTV and TV translator stations would not likely have revenues that exceed the SBA maximum to be designated as small businesses.

(2) Alternative Classification of Small TV Stations

An alternative way to classify small TV stations is by the number of employees. The Commission currently applies a standard based on the number of employees in administering its Equal Employment Opportunity (EEO) rule for broadcasting.[21] Thus, radio or TV stations with fewer than five full-time employees are exempted from certain EEO reporting and recordkeeping requirements.[22] We estimate that the total number of commercial TV stations with four or fewer employees is 132 and that the total number of non-commercial educational

[19] *Allocation Notice*, at App. C.

[20] *Allocation Notice* at para 2 n.3.

[21] The Commission's definition of a small broadcast station for purposes of applying its EEO rule was adopted prior to the requirement of approval by the Small Business Administration pursuant to Section 3(a) of the Small Business Act, 15 U.S.C. § 632(a). However, this definition was adopted after public notice and an opportunity for comment. *See* Petition for Rulemaking To Require Broadcast Licensees To Show Non-Discrimination in Their Employment Practices, Docket No. 18244, RM-1144, Report and Order, 23 FCC 2d 430 (1970).

[22] *See, e.g.*, 47 C.F.R. § 73.3612 (requirement to file annual employment reports on Form 395 applies to licensees with five or more full-time employees); Amendment of Broadcast Equal Employment Opportunity Rules and FCC Form 395, Docket No. 21474, First Report and Order, 70 FCC 2d 1466 (1979). The Commission is currently considering how to decrease the administrative burdens imposed by the EEO rule on small stations while maintaining the effectiveness of our broadcast EEO enforcement. *See* Streamlining Broadcast EEO Rule and Policies, Vacating the EEO Forfeiture Policy Statement and Amending Section 1.80 of the Commission's Rules to Include EEO Forfeiture Guidelines, MM Docket No. 96-1611, Order and Notice of Proposed Rulemaking, 11 FCC Rcd 5154 (1996). One option under consideration is whether to define a small station for purposes of affording such relief as one with ten or fewer full-time employees. *Id.* at para. 21.

TV stations with four or fewer employees is 136.[23] We do not know how many of these stations operate on Channels 60-69.

(b) Public Safety Entities

The public safety entities that will be affected by this Notice are governmental entities. The definition of a small governmental entity is one with a population of fewer than 50,000.[24] There are approximately 85,006 governmental entities in the Nation.[25] This number includes such entities as States, counties, cities, utility districts, and school districts. There are no figures available on what portion of this number have populations of fewer than 50,000. However, this number includes 38,978 counties, cities, and towns, and, of those, 37,566, or 96 percent, have populations of fewer than 50,000.[26] The Census Bureau estimates that this ratio is approximately accurate for all government entities. Thus, of the approximately 85,006 governmental entities, we estimate that 96 percent, or 81,600, are small entities that may be affected by our rules. We solicit comment on this estimate.

(c) Entities with regard to Priority Access Service

Concerning the provision of priority access service, commenters are requested to provide information regarding how many providers of CMRS, existing and potential, will be considered small businesses. "Small business" is defined as having the same meaning as the term "small business concern" under the Small Business Act.[27] A small business concern is one which (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by SBA. We seek comment as to whether this definition is appropriate in this context. Additionally, we request each commenter to identify whether it is a small business under this definition. If the commenter is a subsidiary of another entity, this information should be provided for both the subsidiary and the parent corporation or entity.

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[23] We base this estimate on a compilation of 1995 Broadcast Station Annual Employment Reports (FCC Form 395-B), performed by staff of the Equal Opportunity Employment Branch, Mass Media Bureau, FCC.

[24] 5 U.S.C. § 601(5).

[25] 1992 Census of Governments, U.S. Bureau of the Census, U.S. Department of Commerce.

[26] *Id.*

[27] 15 U.S.C. § 601(3) (incorporating by reference the definition of "small business concern" in 15 U.S.C. § 632).

The Commission has not yet developed a definition of small entities which respect to the provision of a CMRS service offering of priority access. Therefore, for entities not falling within other established SBA categories, the applicable definition of small entity is the definition under the SBA applicable to the "Communications Services, Not Elsewhere Classified" category. This definition provides that a small entity is one with $11.0 million or less in annual receipts.[28] The Census Bureau estimates indicate that of the 848 firms in the "Communications Services, Not Elsewhere Classified" category, 775 are small businesses. While the Commission anticipates some CMRS providers would elect to provide priority access service, it is not possible to predict either how many, or what percentage, of these providers would be small entities.

(1) Cellular Radio Telephone Service

The Commission has not developed a definition of small entities applicable to cellular licensees. Therefore, the applicable definition of small entity is the definition under the SBA rules applicable to radiotelephone companies. This definition provides that a small entity is a radiotelephone company employing no more than 1,500 persons.[29] The size data provided by the SBA does not enable us to make a meaningful estimate of the number of cellular providers which are small entities because it combines all radiotelephone companies with 500 or more employees.[30] We therefore used the 1992 Census of Transportation, Communications, and Utilities, conducted by the Bureau of the Census, which is the most recent information available. That census shows that only 12 radiotelephone firms out of a total of 1,178 such firms which operated during 1992 had 1,000 or more employees.[31] Therefore, even if all 12 of these large firms were cellular telephone companies, all of the remainder were small businesses under the SBA's definition. We assume that, for purposes of our evaluations and conclusions in this IRFA, all of the current cellular licensees are small entities, as that term is defined by the SBA. Although there are 1,758 cellular licenses, we do not know the number of cellular licensees, since a cellular licensee may own several licenses.

[28] 13 C.F.R. § 120.21, SIC Code 4899.

[29] 13 C.F.R. § 121.201, Standard Industrial Classification (SIC) Code 4812.

[30] U.S. Small Business Administration 1992 Economic Census Employment Report, Bureau of the Census, U.S. Department of Commerce, SIC Code 4812 (radiotelephone communications industry data adopted by the SBA Office of Advocacy).

[31] U.S. Bureau of the Census, U.S. Department of Commerce, 1992 Census of Transportation, Communications, and Utilities, UC92-S-1, Subject Series, Establishment and Firm Size, Table 5, Employment Size of Firms: 1992, SIC Code 4812 (issued May 1995).

(2) Broadband Personal Communications Service

The broadband PCS spectrum is divided into six frequency blocks designated A through F. Pursuant to Section 24.720(b) of the Commission's Rules,[32] the Commission has defined "small entity" for Block C and Block F licensees as firms that had average gross revenues of less than $40 million in the three previous calendar years. This regulation defining "small entity" in the context of broadband PCS auctions has been approved by the SBA.[33]

The Commission has auctioned broadband PCS licenses in all of its spectrum blocks A through F. We do not have sufficient data to determine how many small businesses under the Commission's definition bid successfully for licenses in Blocks A and B. As of now, there are 90 non-defaulting winning bidders that qualify as small entities in the Block C auction and 93 non-defaulting winning bidders that qualify as small entities in the D, E, and F Block auctions. Based on this information, we conclude that the number of broadband PCS licensees that would be affected by the proposals in this Notice includes the 183 non-defaulting winning bidders that qualify as small entities in the C, D, E, and F Block broadband PCS auctions.

(3) Specialized Mobile Radio

Pursuant to Section 90.814(b)(1) of the Commission's Rules,[34] the Commission has defined "small entity" for geographic area 800 MHz and 900 MHz SMR licenses as firms that had average gross revenues of less than $15 million in the three previous calendar years. This regulation defining "small entity" in the context of 800 MHz and 900 MHz SMR has been approved by the SBA.[35]

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[32] 47 C.F.R. § 24.720(b).

[33] *See* Implementation of Section 309(j) of the Communications Act — Competitive Bidding, PP Docket No. 93-253, Fifth Report and Order, 9 FCC Rcd 5532, 5581-84 (1994).

[34] 47 C.F.R. § 90.814(b)(1).

[35] *See* Amendment of Parts 2 and 90 of the Commission's Rules to Provide for the Use of 200 Channels Outside the Designated Filing Areas in the 896-901 MHz and the 935-940 MHz Bands Allotted to the Specialized Mobile Radio Pool, PR Docket No. 89-553, Second Order on Reconsideration and Seventh Report and Order, 11 FCC Rcd 2639, 2693-702 (1995); Amendment of Part 90 of the Commission's Rules to Facilitate Future Development of SMR Systems in the 800 MHz Frequency Band, PR Docket No. 93-144, Implementation of Sections 3(n) and 322 of the Communications Act — Regulatory Treatment of Mobile Services, GN Docket No. 93-252, Implementation of Section 309(j) of the Communications Act — Competitive Bidding, PP Docket No. 93-253, First Report and Order, Eighth Report and Order, and Second Further Notice of Proposed Rulemaking, 11 FCC Rcd 1463 (1995).

The proposals set forth in the Notice may apply to SMR providers in the 800 MHz and 900 MHz bands. We do not know how many firms provide 800 MHz or 900 MHz geographic area SMR service, nor how many of these providers have annual revenues of less than $15 million.

The Commission recently held auctions for geographic area licenses in the 900 MHz SMR band. There were 60 winning bidders who qualified as small entities under the Commission's definition in the 900 MHz auction. Based on this information, we conclude that the number of geographic area SMR licensees affected by the proposals set forth in this Notice includes these 60 small entities.

No auctions have been held for 800 MHz geographic area SMR licenses. Therefore, no small entities currently hold these licenses. A total of 525 licenses will be awarded for the upper 200 channels in the 800 MHz geographic area SMR auction. However, the Commission has not yet determined how many licenses will be awarded for the lower 230 channels in the 800 MHz geographic area SMR auction. There is no basis to estimate, moreover, how many small entities within the SBA's definition will win these licenses. Given the facts that nearly all radiotelephone companies have fewer than 1,000 employees and that no reliable estimate of the number of prospective 800 MHz SMR licensees can be made, we assume, for purposes of our evaluations and conclusions in this IRFA, that all of the licenses will be awarded to small entities, as that term is defined by the SBA.

(4) 220 MHz Service

Licensees for 220 MHz services that meet the definition of CMRS may be providers of priority access service if there is a demand for these services during emergencies and disasters. The Commission has classified providers of 220 MHz service into Phase I and Phase II licensees. There are approximately 2,800 non-nationwide Phase I licensees and 4 nationwide licensees currently authorized to operate in the 220 MHz band. The Commission has estimated that there are approximately 900 potential Phase II licensees.

At this time, however, there is no basis upon which to estimate definitively the number of 220 MHz service licensees, either current or potential, that are small businesses. To estimate the number of such entities that are small businesses, we apply the definition of a small entity under SBA rules applicable to radiotelephone companies. This definition provides that a small entity is a radiotelephone company employing no more than 1,500 persons.[36] However, the size data provided by the SBA do not allow us to make a meaningful estimate of the number of 220 MHz providers that are small entities because they combine all

[36] 13 C.F.R. § 121.201, Standard Industrial Classification (SIC) Code 4812.

radiotelephone companies with 500 or more employees.[37] We therefore use the 1992 Census of Transportation, Communications, and Utilities, conducted by the Bureau of the Census, which is the most recent information available. Data from the Bureau of the Census' 1992 study indicate that only 12 out of a total 1,178 radiotelephone firms which operated during 1992 had 1,000 or more employees — and these may or may not be small entities, depending on whether they employed more or less than 1,500 employees.[38] But 1,166 radiotelephone firms had fewer than 1,000 employees and therefore, under the SBA definition, are small entities. However, we do not know how many of these 1,166 firms are likely to be involved in the 220 MHz service.

To assist the Commission in this analysis, commenters are requested to provide information regarding how many total 220 MHz service entities, existing and potential, may offer a priority access service. In particular, we seek estimates of how many 220 MHz service entities, existing or potential, will be considered small businesses.

(5) Mobile Satellite Services (MSS)

The Commission has not developed a definition of small entities applicable to licensees in the international services. Therefore, the applicable definition of small entity is the definition under the SBA rules applicable to Communications Services, Not Elsewhere Classified (NEC). This definition provides that a small entity is expressed as one with $11.0 million or less in annual receipts.[39] According to the Census Bureau, there were a total of 848 communications services, NEC in operation in 1992, and a total of 775 had annual receipts of less than $9,999 million.[40]

Mobile Satellite Services or Mobile Satellite Earth Stations are intended to be used while in motion or during halts at unspecified points. These stations operate as part of a network that includes a fixed hub or stations. The stations that are capable of transmitting

[37] 1992 Economic Census Employment Report, Bureau of the Census, U.S. Department of Commerce, Table 3, SIC Code 4812 (industry data adapted by the Office of Advocacy for the U.S. Small Business Administration).

[38] U.S. Bureau of the Census, U.S. Department of Commerce, 1992 Census of Transportation, Communications, and Utilities, UC92-S-1, Subject Series, Establishment and Firm Size, Table 5, Employment Size of Firms; 1992, SIC Code 4812 (issued May 1995).

[39] 13 C.F.R. § 120.121, SIC Code 4899.

[40] 1992 Economic Census Industry and Enterprise Receipts Size Report, Table 2D, SIC 4899 (U.S. Bureau of the Census data under contract to the Office of Advocacy of the U.S. Small Business Administration).

while a platform is moving are included under Section 20.7(c) of the Commission's Rules[41] as mobile services within the meaning of Sections 3(27) and 332 of the Communications Act.[42] Those MSS services are treated as CMRS if they connect to the Public Switched Network (PSN) and also satisfy other criteria of Section 332. Facilities provided through a transportable platform that cannot move when the communications service is offered are excluded from Section 20.7(c).[43]

The MSS networks may provide a variety of land, maritime and aeronautical voice and data services. There are eight mobile satellite licensees. At this time, we are unable to make a precise estimate of the number of small businesses that are mobile satellite earth station licensees and could be considered CMRS providers of priority access service.

(6) Other Commercial Mobile Radio Services

Other CMRS services may potentially be providers of priority access service if there is a demand for the transmission of voice, data, or text messages during emergencies and disasters.

a. *Paging and Radiotelephone Service, and Paging Operations*

The Commission has proposed a two-tier definition of small businesses in the context of auctioning licenses in the paging service. Under the proposal, a small business will be defined as either (1) a entity that, together with its affiliates and controlling principals, has average gross revenues for the three preceding years of not more than $3 million; or (2) an entity that, together with affiliates and controlling principals, has average gross revenues for the three preceding calendar years of not more than $15 million. Since the SBA has not yet approved this definition for paging companies, we utilize the SBA's definition applicable to radiotelephone companies, *i.e.*, an entity employing no more than 1,500 persons.[44]

The Commission estimates that the total current number of paging carriers is approximately 600. In addition, the Commission anticipates that a total of 16,630 non-nationwide geographic area licenses will be granted or auctioned. The geographic area licenses will consist of 2,550 Major Trading Area (MTA) licenses and 14,080 Economic Area

[41] 47 C.F.R. § 20.7(c).

[42] 47 U.S.C. §§ 153(27), 332.

[43] 47 C.F.R. § 20.7(c).

[44] 13 C.F.R. § 121.201, SIC 4812.

(EA) licenses. In addition to the 47 Rand McNally MTAs, the Commission is licensing Alaska as a separate MTA and adding three MTAs for the U.S. territories, for a total of 51 MTAs. No auctions of paging licenses have been held yet, and there is no basis to determine the number of licenses that will be awarded to small entities. Given the fact that nearly all radiotelephone companies have fewer than 1,000 employees, and that no reliable estimate of the number of paging licensees can be made, we assume, for purposes of this IRFA, that all of the current licensees and the 16,630 geographic area paging licensees either are or will consist of small entities, as that term is defined by the SBA.

Although the Notice requests comment concerning all CMRS providers, the number of paging licensees that elect to provide some form of priority access service may depend on whether there is a market for wireless data or message text transmissions in emergency and disaster environments. The number may also depend on whether two-way paging providers, rather than providers of traditionally one-way service, are eventually included under any priority access rules.

b. *Narrowband PCS*

The Commission has auctioned nationwide and regional licenses for narrowband PCS. The Commission does not have sufficient information to determine whether any of these licensees are small businesses within the SBA-approved definition. At present, there have been no auctions held for the MTA and Basic Trading Area (BTA) narrowband PCS licenses. The Commission anticipates a total of 561 MTA licensees and 2,958 BTA licensees will be awarded in the auctions. Those auctions, however, have not yet been scheduled. Given that nearly all radiotelephone companies have fewer than 1,500 employees and that no reliable estimate of the number of prospective MTA and BTA narrowband licensees can be made, we assume, that all of the licensees will be awarded to small entities, as that term is defined by the SBA.[45]

c. *Air-Ground Radiotelephone Service*

The Commission has not adopted a definition of small business specific to the Air-Ground Radiotelephone Service, which is defined in Section 22.99 of the Commission's rules.[46] Accordingly, we will use the SBA's definition applicable to radiotelephone companies, *i.e.*, an entity employing no more than 1,500 persons.[47] There are approximately

[45] *See id.*

[46] 47 C.F.R. § 22.99.

[47] 13 C.F.R. § 121.201, SIC 4812.

100 licensees in the Air-Ground Radiotelephone Service, and we estimate that almost all of them qualify as small under the SBA definition.

E. Steps Taken To Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered

We have reduced burdens wherever possible. To minimize any negative impact, however, we propose certain incentives for small entities, which will redound to their benefit. While public safety entities will be required to submit regional plans (to enable the Commission to accommodate regional needs and preferences), they will be able to pool their resources in developing such plans. The regulatory burdens we have retained, such as filing applications on appropriate forms, are necessary in order to ensure that the public receives the benefits of innovative new services in a prompt and efficient manner. We will continue to examine alternatives in the future with the objectives of eliminating unnecessary regulations and minimizing significant economic impact on small entities. We seek comment on significant alternatives commenters believe we should adopt.

With respect to priority access service, we are seeking comment regarding whether the provision of priority access service by wireless carriers should be on a voluntary basis. Thus, small entities at their option can elect to provide the service should they determine that there is a competitive market opportunity to do so. In addition, we are proposing that in providing priority access service, providers of certain CMRS services are to be insulated from liability under Section 202 of the Communications Act.[48] We also seek comment on alternatives regarding the priority access issues raised in the Notice.

F. Federal Rules Which Overlap, Duplicate or Conflict With These Rules

None.

[48] 47 U.S.C. § 202.

APPENDIX B

List of Pleadings

Public Safety Communications

The following is a list of parties filing comments and reply comments in response to the Notice of Proposed Rulemaking in The Development of Operational, Technical, and Spectrum Requirements for Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year 2010, WT Docket No. 96-86, 11 FCC Rcd 12460 (1996).

Comments

2GHz MSS Coalition (2GHz Coalition)
ADI Ltd. (ADI)
Aeronautical Radio, Inc. (ARINC)
Alarm Industry Communications Committee (AICC)
American Petroleum Institute (API)
American Association of State Highway and Transportation Officials (AASHTO)
American Automobile Association (AAA)
Ameritech Mobile Services, Inc. (Ameritech)
AMSC Subsidiary Corporation (AMSC)
APCO Project 25 (Project 25)
Association of American Railroads (AAR)
Association of Federal Communications Consulting Engineers (AFCCE)
Association of Public-Safety Communications Officials-International, Inc. (APCO)
Baldwin Fire District Operations (Baldwin)
California Department of General Services, Telecommunications Division (Cal. Telecom.)
California Public Safety Radio Association (CPRA)
Clackamas County (Clackamas)
Dallas, City of (Dallas)
Digital Voice Systems, Inc. (DVSI)
E. F. Johnson Company (EFJohnson)
Elk Grove Village Fire Department (Elk Grove)
Ericsson Inc. (Ericsson)
Federal Law Enforcement Wireless Users Group (FLEWUG)
Federal Bureau of Investigation (FBI)
Florida Department of Management Services (FDMS)
Fort Worth, City of (Fort Worth)
Garden City Fire Department (Garden City)

Gardena, City of (Gardena)
Glendale, City of (Glendale)
Hamilton, County of (Hamilton)
Hennepin County Sheriff, Office of the (Hennepin)
Illinois State Toll Highway Authority (Illinois Tollway)
Industrial Telecommunications Association, Inc. (ITA)
Intelligent Transportation Society of America (ITSA)
International Association of Chiefs of Police (IACP)
International Municipal Signal Association and the International Association of Fire Chiefs (IMSA/IAFC)
Island County Emergency Services Communications Center (I-COM)
Johnson County Kansas (Johnson County)
Kansas Division of Emergency Management Committee (Kansas-EMC)
La Grande, City of (La Grande)
Long Beach, City of (Long Beach)
Los Angeles, County of (plus addendum) (LA County)
Los Angeles Police Department (LAPD)
Maxon American, Inc. (Maxon)
Mesa, City of (Mesa)
Metro-North Police (MTA)
Mineola Fire Department (Mineola)
Minnesota Department of Transportation (MnDOT)
Motorola, Inc. (Motorola)
Nassau County
National Rural Electric Cooperative Association (NRECA)
National Association of State Telecommunications Directors (NASTD)
National League of Cities (NLC)
Nebraska Public Power District (Nebraska PPD)
Nebraska, State of (Nebraska)
New York, City of, Fire Department (NYFD)
New York State Thruway Authority (NYSTA)
New Hampshire, State of (New Hampshire)
New York State Police (NYSP)
New York, City of, DoITT (NYDoITT)
New York City Transit Authority (NYCT)
Nextel Communications, Inc. (Nextel)
Newport Beach Police Department (Newport Beach)
Nippon Telegraph and Telephone Corporation (Nippon)
North Bellmore Fire District (N. Bellmore)
Northern California Chapter of the Association of Public/Safety Officials (Nor. Cal. APCO)
Ohio Department of Administrative Services (Ohio-DAS)

Orange, County of, California (Orange County)
Orange, County of, Sheriff-Coroner Department, California (Orange County S-C)
Oregon Chapter, Associated Public Safety Communications Officers, Inc. (Oregon APCO)
Orlando, City of (Orlando)
Overland Park, City of (Overland Park)
Owensboro Kentucky, City of (Owensboro)
Powell, John S. (including Addendum (Powell)
Preble County 9-1-1 Advisory Board (Preble County)
Prince George's County (PG County)
Prince William, County of (PW County)
Public Safety Wireless Advisory Committee (Final Report) (PSWAC)
Quantum Radionics Corporation (Quantum)
Racal Communications (Racal)
Region-20 Public Safety Review Committee (Region-20)
Richardson, City of (Richardson)
Rural Cellular Association (RCA)
San Diego, City of (San Diego)
Securicor Radiocoms Limited (Securicor)
SNOPAC 9-1-1 Communications (SNOPAC)
South Bay Regional Public Communications Authority (South Bay)
South Nyack Grand View Police Department (SNGVPD)
Suffolk, County of, Police Department (Suffolk)
Telecommunications Industry Association (TIA)
Texas Department of Public Safety (Texas-DPS)
Texas Advisory Commission on State Emergency Communications (Texas-ACSEC)
Thomas Jefferson Inc. (Jefferson)
Transcrypt International, Inc. (Transcrypt)
Tri-Com 911 Dispatch System (Tri-Com)
Union County, Sheriff of (Union County)
University of California, Irvine (UC Irvine)
US Dept of Transportation (DOT)
UTC, the Telecommunications Association (UTC)
Virginia, Commonwealth of, Dept of State Police (VA State Police)
Whatcom County Sheriff's Office (Whatcom)
Wisconsin State Patrol (WI State Patrol)
Yonkers, City of (Yonkers)

Reply Comments

Addison Fire Protection Dist #1 (Addison)
Airtouch Paging (Airtouch)
American Association of State Highway and Transportation Officials (AASHTO)
Ameritech Mobile Services, Inc. (Ameritech)
Arch Communications Group, Inc. (Arch)
Association of Public-Safety Communications Officials-International, Inc. (APCO)
Association of American Railroads (AAR)
Cellular Telecommunications Industry Association (CTIA)
E.F. Johnson (EFJohnson)
East Rockaway Fire Department (East Rockaway)
Ericsson, Inc. (Ericsson)
Floral Park Fire Department (Floral Park)
Forestry-Conservation Communications Association (FCCA)
Industrial Telecommunications Association, Inc. (ITA)
Intelligent Transportation Society of America (ITS)
International Taxicab and Livery Association (ITLA)
International Municipal Signal Association and the International Association of Fire Chiefs (IMSA/IAFC)
Lakeview Fire District (Lakeview)
Los Angeles, County of (LA County)
Lucas, County of (Lucas)
Manufacturers Radio Frequency Advisory Committee, Inc. (MRFAC)
Margate Fire Department (Margate)
Marin County, The Board of Supervisors of (Marin)
Massapequa Fire District (Massapequa)
Meadowmere Park Fire Department (Meadowmere)
Motorola, Inc. (Motorola)
National Association of Broadcasters (NAB)
National Communications System (NCS)
Nevada Department of Transportation (NDOT)
New York, the City of, Department of Correction (NYDC)
New Hyde Park Fire Department (New Hyde Park)
Nippon Telephone and Telegraph Corporation (Nippon)
Ohio Department of Transportation (Ohio-DOT)
Plainview Fire Department (Plainview)
Project 25 Steering Committee (Project 25)
RELM Communications, Inc. (RELM)
Securicor Radiocoms Limited (Securicor)
Sherman County Communications and Emergency Management (Sherman)

Society of Broadcast Engineers, Inc. (SBE)
Special System Services (Special Systems)
Strategic Policy Research (SPR)
Uniondale Fire Department (Uniondale)
United States Department of Transportation (DOT)
UTC, the Telecommunications Association (UTC)
Valley Stream Fire Department (VSFD)
Westbury Fire Department (Westbury)
Westchester County Fire Training Center (Westchester)

Priority Access Service

The following is a list of parties filing comments and reply comments in response to the Public Notice, Petition for Rulemaking Filed, Commission Seeks Comment on Petition for Rulemaking filed by National Communications System, DA 96-604, WT Docket No. 96-86 (released Apr. 18, 1996).

Comments

Association of Public-Safety Communications Officials-International, Inc. (APCO)
AT&T Wireless Services, Inc. (AT&T)
Bell Atlantic Nynex Mobile (BANM)
Bell Communications Research, Inc. (BellCore)
BellSouth Corp. and BellSouth Cellular Corp. (BellSouth)
Cellular Telecommunications Industry Association (CTIA)
Dixon, Alan (Dixon)
Florida Department of Management Services (FDMS)
GTE Mobilnet (GTEM)
Los Angeles County Sheriff's Department and the County of Los Angeles, Internal Services Department (LA County Sheriff)
National Association of State Telecommunications Directors (NASTD)
National Communications System (NCS)
National Emergency Number Association (NENA)
Oregon State Police (Oregon)
Southwestern Bell Mobile System, Inc. (SBMS)
Tennessee Emergency Management Agency (TEMA)
Texas Advisory Commission on State Emergency Communications (Texas-ACSEC)
UTC, the Telecommunications Association (UTC)
Vanguard Cellular Systems, Inc. (Vanguard)

Virginia, Commonwealth of, Dept of Military Affairs,
Army National Guard (VA National Guard)
Virginia, Commonwealth of, Dept of State Police (VA State Police)
Washington State Emergency Management (WSEM)

Reply Comments

AT&T Wireless Services, Inc. (AT&T)
National Communications System (NCS)
National Emergency Number Association (NENA)
Southwestern Bell Mobile Systems, Inc. (SBMS)