Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Improving Public Safety Communications in the 800 MHz Band	)	WT Docket 02-55
	)	
Consolidating the 800 and 900 MHz Industrial/Land Transportation and Business Pool Channels	)	ET Docket No. 00-258
Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems	)	RM-9498
Petition for Rule Making of the Wireless Information Networks Forum Concerning the Unlicensed Personal Communications Service	)	RM-10024
Petition for Rule Making of UT Starcom, Inc., Concerning the Unlicensed Personal Communications Service	)	ET Docket No. 95-18
Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for use by the Mobile Satellite Service	)	

REPORT AND ORDER, FIFTH REPORT AND ORDER, FOURTH MEMORANDUM OPINION AND ORDER, AND ORDER

Adopted: July 8, 2004 **Released: August 6, 2004**

By the Commission: Chairman Powell, Commissioners Abernathy, Copps, and Adelstein issuing separate statements.

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I. INTRODUCTION

1. The Homeland Security obligations of the Nation's public safety agencies make it imperative that their communications systems are robust and highly reliable.[1] Accordingly, in this *Report and Order*, we adopt technical and procedural measures designed to address the ongoing and growing problem of interference to public safety communications in the 800 MHz band.[2] In reaching our decisions herein, we are fulfilling the Commission's obligation to "promote safety of life and property through the use of wire and radio communication."[3] We also reiterate our continuing commitment to "ensuring that essential public health and safety personnel have effective communications services available to them in emergency situations."[4]

[1] 47 U.S.C. § 337(f) defines "public safety services" as services:

(continued….)

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2. With many of our Nation's first responders using the 800 MHz band for critical public safety communications (*e.g.*, to communicate with their respective dispatchers and each other at the scene of an incident), this band has become a linchpin in their ability to communicate effectively. In recent years, however, public safety systems in this band have encountered increasing amounts of interference from commercial mobile radio service (CMRS) providers. The interference problem in the 800 MHz band is caused by a fundamentally incompatible mix of two types of communications systems: cellular-architecture multi-cell systems—used by ESMR and cellular telephone licensees[5]—and high-site non-cellular systems—used by public safety, private wireless, and some SMR licensees and stems primarily from the operations of Nextel Communications, Inc. (Nextel), an "Enhanced" Specialized Mobile Radio (ESMR) provider in the 800 MHz band,[6] as well as the operations of cellular telephone providers in the Cellular A and B bands.[7] Throughout this proceeding, we have sought a solution to the interference problem that achieves the following paramount goals:

- a solution that abates "unacceptable interference" caused by ESMR and cellular systems to

(Continued from previous page)

(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 government entity whose primary mission is the provision of such services; and

(C) that are not made commercially available to the public by the provider.

[2] For purposes of this proceeding, "800 MHz band" refers to spectrum from 806-824/851-869 MHz, which is licensed to public safety, commercial, and private wireless operators pursuant to Part 90 of the Commission's rules.

[3] 47 U.S.C. § 151.

[4] Federal Communications Commission Strategic Plan FY 2003-FY2008, p.5 (2002).

[5] For the purposes of this proceeding, the term "800 MHz cellular system" will refer to systems which employ a "high-density cellular" architecture. *See* ¶ 172 *infra* for a definition of "800 MHz cellular systems."

[6] Specialized Mobile Radio (SMR) systems provide land mobile communications services (other than radiolocation services) in the 800 MHz and 900 MHz band on a commercial basis. *See* 47 C.F.R. §§ 90.7, 90.601 *et seq.* ESMR is a term coined by Nextel to describe SMR systems, such as Nextel's, that use cellular architecture, *i.e.,* systems that use multiple, interconnected, multi-channel transmit/receive cells and employ frequency reuse to serve a larger number of subscribers than is possible using non-cellular technology. The particular ESMR technology used by Nextel—the Motorola iDEN system—is capable of using cellular architecture in non-contiguous spectrum. A similar, derivative Motorola technology, known as "Harmony," is also in limited use. Although the term "ESMR" does not appear in the Commission's rules, it has appeared in the Commission's case law. *See* Request of Fleet Call, Inc. *Memorandum Opinion and Order*, FCC 91-56, 6 FCC Rcd 1533 ¶ 13(1991). More recently, the Wireless Telecommunications Bureau has defined ESMR as an alternative method to provide wireless service that is based on digital TDMA technology and operates with individual base stations. *See* "Wireless Telecommunications Bureau Seeks Comment on Qualcomm Inc.'s Petition," *Public Notice*, 15 FCC Rcd 2580, 2619 (WTB 2000).

[7] Cellular telephone providers are licensed in the Cellular Radiotelephone Service, pursuant to Part 22 of the Commission's rules, and operate cellular architecture systems in the Cellular A and B bands (824-849/864-894 MHz), which lie immediately above the 800 MHz band. *See* 47 C.F.R. § 22.99. Hereinafter, for brevity's sake, we refer to these systems as "cellular telephone" or "cellular" systems. While cellular telephone systems are similar to ESMR systems, they operate in contiguous spectrum and employ somewhat different technology.

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800 MHz public safety systems; [8]

- a solution that is both equitable and imposes minimum disruption to the activities of all 800 MHz band users, including public safety, non-cellular[9] SMR, and Business, Industrial and Land Transportation (B/ILT) systems;[10]
- a solution that results in responsible spectrum management; and
- a solution that provides additional 800 MHz spectrum that can be quickly accessed by public safety agencies and rapidly integrated into their existing systems.

3. Based on the extensive record of this proceeding and the goals we seek to accomplish, we conclude that the most effective solution to the public safety interference problem in the 800 MHz band is a Commission-derived plan, which is comprised of both long-term and short-term components. As the short-term vehicle by which we ensure a more effective response to the ongoing interference problem, we implement technical standards defining unacceptable interference in the 800 MHz band as well as procedures detailing who bears responsibility for abating this interference and what steps responsible parties must take. For the long-term, we reconfigure the 800 MHz band to address the identified root cause of the interference by separating generally incompatible technologies.

4. To achieve this new 800 MHz band plan, we establish a transition mechanism by which (1) there is minimal disruption to the operations of all affected 800 MHz incumbents during the transition period; (2) the associated reconfiguration costs are funded; and (3) the public safety community and, later, critical infrastructure industries (CII),[11] obtain access to an average additional 4.5 megahertz of 800 MHz

[8] "Unacceptable interference" is a term of art adopted for the limited purposes of this proceeding. *See* ¶¶ 97-107 *supra*. It defines a bright-line test for interference protection that takes into account, among other factors, the strength of the desired signal and the characteristics of the receiver being employed. It is not intended to determine what level of interference is unacceptable for any other purpose or in any other band.

[9] "Non-cellular" systems are systems that provide service to their mobile users or subscribers from one or a small number of base stations, which are typically "high site" (*i.e.*, located at high elevations, on towers, mountains, hill tops, or tall buildings) multiple, interconnected, multi-channel transmit/receive cells and employ frequency reuse to serve a larger number of subscribers. For the purposes of this proceeding, the term non-cellular will refer to systems which do not employ a "high-density cellular" architecture. *See* ¶¶ 170-174 *infra*.

[10] Business and Industrial/Land Transportation (B/ILT) licensees are licensed in the Private Land Mobile Radio Service pursuant to Part 90 of the Commission's Rules and utilize their systems for private, internal needs in a variety of commercial applications (e.g., factories, taxis. B/ILT typically use "high-site, high power" systems in the 800 MHz and 900 MHz. See 47 C.F.R. 90.35. *See also* n. 9 for a description of high site, high power systems.

[11] For purposes of this *Report and Order*, we define as CII licensees those entities, outside of the scope of the "public safety service" definition of 47 U.S.C. § 337(f), *see* n. 1 *supra*, but which operate "public safety" radio services within the scope of Section 309(j)(2) of the Act. 47 U.S.C. § 309(j)(2) defines "public safety radio services" as including private internal radio services used by State and local governments and non-government entities, and including emergency road services provided by not-for profit organizations, that: (i) are used to protect the safety of life, health, or property; and (ii) are not made commercially available to the public.

Examples of CII licensees include 800 MHz systems that provide private internal radio services used by utilities, railroads, metropolitan transit systems, pipelines, private ambulances, volunteer fire departments, and not-for-profit organizations that offer emergency road services, such as the American Automobile Association (AAA).

We recognize that the section 309(j)(2) definition is more encompassing than that proposed by Nextel in the "White Paper." *See* Promoting Public Safety Communications, Realigning the 800 MHz Land Mobile Radio (continued….)

band spectrum. We believe that the totality of these measures will both eliminate unacceptable interference currently encountered by 800 MHz public safety and CII systems[12] and reflect sound spectrum management principles. Our plan incorporates essential elements of a proposal developed by Nextel, the major public safety organizations, and various private wireless organizations (the so-called "Consensus Parties").[13]

(Continued from previous page)
Band to Rectify Commercial Mobile Radio - Public Safety Interference and Allocate Additional Spectrum to Meet Critical Public Safety Needs, Nextel Communications, Inc, submitted by Robert S. Foosaner, Nextel Communications, Inc., to Thomas J. Sugrue, Chief, Wireless Telecommunications Bureau, FCC (cover letter dated Nov. 12, 2001) (White Paper) at 46. In this regard, we observe that in the White Paper, Nextel cites a study undertaken by the Department of Commerce, National Telecommunications and Information Administration, which requested comment on a broader definition of CII, including pipelines and railroads. *See* White Paper at n. 60; Request for Comment on Energy, Water and Railroad Service Providers' Spectrum Use Study, 66 Fed Reg. 18447 (2001). Section 309(j)(2) also is broader than the definition proposed by the Critical Infrastructure Communications Council (CICC), which is composed of the following organizations: The American Gas Association, the American Petroleum Institute, the American Public Power Association, the American Water Works Association, the Association of American Railroads, the Edison Electric Institute, the Interstate Natural Gas Association of America, the National Association of Water Companies, the National Rural Electric Cooperative Association, and the United Telecom Council (UTC). *See* UTC Comments at n. 2. We nonetheless believe that this expanded definition is appropriate in this context because it recognizes that the very nature of the services provided by the included entities involves potential hazard to life and property and that CII entities often work hand in hand with public safety officials at the scene of an incident. Indeed, reliable CII radio communications have long proven essential in speeding recovery from natural or man-made disasters. Our decision to define CII is confined to this proceeding and does not represent a Commission decision that CII entities are public safety entities.

[12] Although we focus on the benefits to public safety and CII, we do not intend to imply that other 800 MHz radio systems will not be beneficiaries of the actions we take today. Except where specifically stated otherwise, the interference protections we afford today inure to the benefit of all 800 MHz non-cellular licensees. "Non-cellular 800 MHz licensees," as used herein, refers to public safety, CII, B/ILT and non-cellular SMR licensees.

[13] The proponents of this proposal have referred to themselves as the "Consensus Parties" and we use that term for reference purposes in this *Report and Order*. The Consensus Parties' members are the Association of Public Safety Communications Officials-International (APCO), International Association of Chiefs of Police (IACP), International Association of Fire Chiefs, Inc. (IAFC), International Municipal Signal Association (IMSA), Major Cities Chiefs Association (MCCA), Major County Sheriffs' Association (MCSA), National Sheriffs' Association (NSA), Aeronautical Radio, Inc. (ARINC), American Mobile Telecommunications Association (AMTA), American Petroleum Institute (API), Association of American Railroads (AAR), Forest Industries Telecommunications (FIT), Industrial Telecommunications Association (ITA), PCIA - The Wireless Infrastructure Association (PCIA), Taxicab, Limousine and Paratransit Association (TLPA), National Stone, Sand and Gravel Association (NSSGA), and Nextel. *See* Letter, dated October 29, 2002, from Robert M. Gurss, Esq., Counsel for APCO to Marlene H. Dortch, Secretary, Federal Communications Commission. *See* n. 172 *infra*. However, while the Consensus Parties represent a broad coalition of commercial and public safety entities, we recognize that their position does not reflect a consensus of all of the various parties to this proceeding, including some public safety entities that object to the Consensus Parties' proposal or elements thereof. *See*, *e.g.*, Letter, dated March 24, 2004, from Chuck Canterbury, National President, Fraternal Order of Police (FOP) to George W. Bush, President, United States of America: Letter, dated March 25, 2004 from Art Gordon, National Executive Vice President, Federal Law Enforcement Officers Association to George W. Bush, President, United States of America. With regard to the Fraternal Order of Police letter, we observe that on July 1, 2004, the FOP indicated that their concerns over the Consensus Plan have been addressed and that they now support the Consensus Plan. *See* Letter dated July 1, 2004, from Chuck Canterbury, National President, Fraternal Order of Police, to Michael K. Powell, Chairman, Federal Communications Commission.

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5. In recognition of the public interest benefit derived from robust and reliable public safety communications coupled with the spectrum rights Nextel will surrender as well as financial commitments that Nextel will incur in connection with band reconfiguration, upon acceptance of Nextel of the conditions and obligations that we place on it in this R&O, we will modify certain Nextel licenses to provide it with rights to operate on ten megahertz of spectrum in the 1.9 GHz band, conditioned on fulfillment of the obligations we place on it in this *Report and Order.*[14] As a necessary predicate for the license modifications, we also take action by this Order in ET Docket No. 00-258 and ET Docket No. 95-18 to redesignate the spectrum for the provision of licensed Fixed and Mobile services to be used for Advanced Wireless Services (AWS).[15] To ensure that by these actions Nextel, other licensees and the public are treated equitably, and that Nextel does not realize any windfall gain, we confer these 1.9 GHz spectrum rights on a "value for value" basis. Under this approach, we credit Nextel for (1) the net value of spectrum rights that Nextel is relinquishing to public safety, CII, and other 800 MHz band licensees; (2) the actual cost of 800 MHz band reconfiguration (including both Nextel's costs to support relocation by other licensees and Nextel's own relocation costs); and (3) costs incurred by Nextel to clear the 1.9 GHz band, less any reimbursed expenses. If these combined offsets ultimately total less than the value determined by this *Report and Order* for the 1.9 GHz spectrum rights, we require Nextel to make a payment to the U.S. Treasury at the conclusion of the transition process equal to the difference.[16]

6. In complying with the obligations we place upon it in this *Report and Order,* we recognize that Nextel may have to shift some of its operations from the 800 MHz band to 900 MHz band frequencies in order to provide the "green space" necessary to effect reconfiguration of the 800 MHz band. Moreover, in some areas, Nextel may have to share spectrum in the 817-824 MHz/862-869 MHz segment of the reconfigured band with other ESMR licensees.[17] To the extent that such sharing may reduce the amount of 800 MHz spectrum available to Nextel, we believe we should provide the regulatory flexibility necessary for Nextel to make up the shortfall by using 900 MHz band channels. We therefore amend our rules to allow 900 MHz band licensees to initiate CMRS operations on their currently authorized spectrum or to assign their authorizations to others for CMRS use.[18]

7. The totality of the actions we take today are based on unique and compelling public interest considerations in the record before us regarding the serious and continuing public safety interference problems in the 800 MHz band. These considerations require that we take the most effective actions, in the short-term and long-term, to promote robust and reliable public safety communications in the 800 MHz band to ensure the safety of life and property. While we are mindful of our statutory obligations under Section 309(j) of the Act regarding the use of competitive bidding procedures for the assignment of

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[14] We make these modifications under the authority granted us by Sections 4, 301, 303 and 316 of the Act, 47 U.S.C. §§ 316, 303, 301, and 154(i). We set forth a detailed description of our legal authority in ¶¶ 62-87 *infra.*

[15] *See* ¶¶ 223-276 *infra.* AWS is the collective term we use for new and innovative fixed and mobile terrestrial wireless applications using bandwidth that is sufficient for the provision of a variety of applications, including those using voice and data (such as Internet browsing, message services, and full-motion video) content. Although AWS is commonly associated with so-called third generation (3G) applications and has been predicted to build on the successes of such current-generation commercial wireless services as cellular and Broadband PCS, the services ultimately provided by AWS licensees are only limited by the fixed and mobile designation of the spectrum we allocate for AWS and the service rules we ultimately adopt for the bands.

[16] *See* ¶¶ 210-212 *infra.*

[17] *See* ¶¶ 159-163 *infra.*

[18] *See* 47 C.F.R. § 90.621(f) in Appendix C *infra.*

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spectrum, we nonetheless believe the license modifications we approve today are consistent with Section 309(j) of the Act and our other spectrum management obligations. This action does not signal any change in the Commission's policy of using competitive bidding as a licensing tool in other contexts, consistent with statutory requirements.

II. EXECUTIVE SUMMARY

8. In this *Report and Order,* we adopt a two-prong solution to the public safety interference problem in the 800 MHz band, with each prong having several components. First, to more adequately respond to individual interference events immediately, we establish an objective standard for defining "unacceptable interference" to 800 MHz non-cellular systems, establish rules and procedures for the expeditious implementation and enforcement of this standard, and endorse a variety of technical solutions and mechanisms, defined as "Enhanced Best Practices," to address interference abatement in the short-term. Second, to provide a better spectrum environment for public safety in the long-term, we adopt a plan for reconfiguration of the 800 MHz band and provide for a thirty-six-month transition by incumbent licensees from their current frequency assignments to new frequency assignments in the band.

9. Based on the extensive and comprehensive record of the proceeding, we are convinced that neither band reconfiguration alone, nor application of "technical fixes" on a case-by-case basis would adequately address the interference to 800 MHz public safety communications systems. Thus, we have adopted a Commission-derived solution which, in addition to decisions we have reached independently, incorporates both recommendations made by the proponents of case-by-case "technical fixes" and the proponents of band reconfiguration. In reaching this solution, we were aided by technical and economic studies, research data and legal analyses contained in the record.[19] We believe that the approach we adopt is technically and legally sound, logistically achievable, and representative of the collective expertise of all of the various interests which have addressed this significant issue.

10. In the first prong of this *Report and Order*, we take a number of steps to provide for immediate abatement of interference to 800 MHz band public safety and other non-cellular systems:

- We adopt a new, objective definition of "unacceptable interference," for purposes of this proceeding only, to determine when public safety and other non-cellular 800 MHz band licensees are entitled to interference protection.[20]

- We assign strict responsibility for eliminating unacceptable interference to the ESMR or cellular telephone operator(s) implicated in the interference occurrence, and assign joint responsibility to all involved commercial operators if unacceptable interference results from a combination of signals from multiple systems.[21]

- We require ESMR and cellular telephone licensees, on request, to notify public safety and

[19] A detailed overview of the record is set forth in ¶ 61 *infra.* For citation purposes, we refer to comments received to the *Notice of Proposed Rulemaking* in this proceeding using the following format: [Party Name] Comments/Reply Comments at [Page or Paragraph Number]. We refer to comments received in response to the Consensus Parties Reply Comments using the following format: Comments of [Party Name] to the Consensus Parties Reply Comments at [Page or Paragraph Number]; we refer to comments received in response to the Supplemental Comments of the Consensus Parties using the following format: Comments/Reply Comments of [Party Name] to Supplemental Comments of the Consensus Parties at [Page or Paragraph Number].

[20] *See* ¶ 107 *infra.*

[21] *See* ¶ 130 *infra.*

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CII licensees prior to activating new or modified cells, and require public safety and CII licensees receiving such information to notify ESMR and cellular telephone licensees of changes in system parameters.[22]

11. Under the second prong of the *Report and Order*, we take steps to reconfigure the 800 MHz band to separate public safety, CII, and other non-cellular systems on the one hand, and ESMR systems, such as Nextel's, on the other:

- We designate fourteen megahertz in the upper portion of the 800 MHz band (817-824 MHz/862-869 MHz) for ESMR systems, while designating eighteen megahertz in the lower portion of the 800 MHz band (806-815 MHz/851-860 MHz) for use by public safety, CII, and other non-cellular systems.[23] Between the upper and lower band segments, we establish an Expansion Band and a Guard Band to separate ESMR operations from public safety and CII operations and protect the latter from interference.

- As part of band reconfiguration, we require Nextel to relinquish all of its 800 MHz band spectrum holdings below 817 MHz/862 MHz.[24] This will result in an additional average of 4.5 megahertz of 800 MHz band spectrum becoming available to the public safety community, particularly in the major markets where the shortage of public safety spectrum is most acute.

- We require band reconfiguration to be completed through a phased transition process within thirty-six months of release of a Public Notice announcing the start date of reconfiguration in the first NPSPAC region.[25] We provide for an independent Transition Administrator to oversee the band reconfiguration process.[26]

- We assign financial responsibility to Nextel for the full cost of relocation of all 800 MHz band public safety systems and other 800 MHz band incumbents to their new spectrum assignments with comparable facilities, *i.e.*, systems with comparable technological and operational capability.[27] We adopt financial, licensing, and administrative safeguards to ensure completion of band reconfiguration regardless of Nextel's financial condition.[28]

12. In connection with the reconfiguration of the 800 MHz band, as described above, we take the following additional spectrum-related actions:

- We accept Nextel's relinquishment of its current spectrum rights in the 700 MHz Guard Band and contemplate a future *Further Notice of Proposed Rulemaking* to determine the

[22] *See* ¶¶ 124-127 *infra.*

[23] *See* ¶ 151 *infra.*

[24] *See* ¶ 198 *infra.*

[25] *See* ¶ 201 *infra.*

[26] *See* ¶¶ 190-200 *infra.*

[27] *See* ¶¶ 177-178 *infra.*

[28] *See* ¶¶ 180-187 *infra.*

disposition of this spectrum.[29]

- In exchange for the spectrum rights Nextel is surrendering, coupled with the obligations it is incurring to accomplish 800 MHz band reconfiguration, we will modify certain Nextel licenses to provide Nextel with nationwide authority to operate in ten megahertz of spectrum at 1910-1915 MHz/1990-1995 MHz.[30] We require Nextel to reimburse UTAM Inc. (UTAM) for the cost of clearing the 1910-1915 MHz band, and to clear the 1990-2025 MHz band of BAS incumbents within thirty months of the effective date of this *Report and Order*.[31]

- To ensure that Nextel is treated equitably but does not realize an undue windfall, we condition the grant of 1.9 GHz band spectrum rights to Nextel on its meeting the obligations imposed by this *Report and Order*, and on its payment to the U.S. Treasury of any difference between the value of the 1.9 GHz band spectrum rights, the value of spectrum rights relinquished by Nextel, and Nextel's costs incurred in reconfiguring the 800 MHz band and clearing the 1.9 GHz band.[32]

- We reject Nextel's proposed relinquishment of 900 MHz spectrum as part of the Consensus Parties' proposal,[33] but allow 900 MHz band Private Land Mobile Radio (PLMR) service licensees to initiate CMRS operations on their currently authorized spectrum or to assign their authorizations to others for CMRS use.[34]

III. MAJOR FINDINGS AND DECISIONS

A. The 800 MHz Interference Problem and Solutions

13. In the *NPRM*, the Commission documented the increasing incidence of interference to 800 MHz band public safety systems from high density ESMR and cellular telephone systems.[35] We tentatively concluded that interference to public safety represented "a sufficiently serious problem that a solution must be found."[36] We find that the record in this proceeding supports the following findings:

- The public safety interference problem described in the *NPRM* is serious and will only increase in severity as private, public safety and commercial use of the 800 MHz band

[29] *See* ¶¶ 207-209 *infra.*

[30] *See* ¶¶ 217-222 *infra.*

[31] *See* ¶¶ 239-263 *infra.*

[32] *See* ¶ 212 *infra.*

[33] *See* ¶ 207 *infra.*

[34] *See* ¶¶ 335-337 *infra.*

[35] *See* Improving Public Safety Communications in the 800 MHz Band; Consolidating the 900 MHz Industrial/Land Transportation and Business Pool Channels, WT Docket No. 02-55, *Notice of Proposed Rulemaking*, 17 FCC Rcd 4873, 4482 ¶ 16 (2002), as modified in *Erratum*, 17 FCC Rcd 7169 (PSPWD 2002) (*NPRM*).

[36] *Id.* at 4882 ¶ 16.

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intensifies.

- Public safety agencies are becoming increasingly dependent on the 800 MHz band to meet their communications needs as spectrum used by public safety in lower bands has become congested, particularly in urban areas.[37]

- Although many ESMR and cellular telephone licensees have been commendably cooperative in bearing the responsibility for identifying and promptly curing interference at their own expense, their ability to continue to do so effectively will become problematic as more intense use is made of 800 MHz band and cellular telephone spectrum.

- Despite the claims by some that licensees in the cellular telephone bands cause little interference to 800 MHz band public safety systems,[38] strong evidence exists to the contrary.[39]

- We must take the actions necessary to ensure that first responders—both public safety and CII personnel—have communications channels free of unacceptable interference and thereby suitable for mission-critical operations including rapid response to major incidents that threaten Homeland Security.

14. Until now, the Commission's approach to interference resolution in the 800 MHz band has been to urge the involved parties to make voluntary technical changes to prevent or reduce interference at particular sites.[40] This is consistent with the policy reflected in current rules that require affected licensees to resolve interference through mutually satisfactory arrangements.[41] While these measures have helped to alleviate interference in some instances, the record leads us to conclude that the interference problem will only intensify as cellular-architecture licensees make more intensive use of their spectrum and that voluntary measures alone will not stem the growth of unacceptable interference. We thus are convinced that unacceptable interference will be stemmed in an efficient and effective manner, only by the actions we take today to establish mandatory interference-abatement rules.

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[37] Although the Commission has designated spectrum for public safety use in the spectrally adjacent 700 MHz band (764-776 MHz and 794-806 MHz), that band currently is not usable by public safety in most of the population centers of the United States because of the presence of high-power television station incumbents. *See* Section 337(a) of the Communications Act, 47 U.S.C. § 337(a), as amended by § 3004 of the Balanced Budget Act of 1997, Pub. L. No. 105-33, 111 Stat. 251 (1997). *See also* Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year 2010, WT Docket 96-86. As a result, the potential for the public safety community to access the 700 MHz band in the near future is limited.

[38] *See, e.g.,* Verizon Comments at 3; Cingular and Alltel Comments at 2-3. Some parties argued that reports of interference were anecdotal in nature, and for that reason, did not represent a true evaluation of the problem. *See* Cinergy Comments at 7-9.

[39] *See, e.g., ex parte* comments, dated June 10, 2003, from City and County of Denver (Denver June 10 *Ex Parte*); *ex parte* comments, dated July 29, 2003, from Anne Arundel County (Anne Arundel July 29 *Ex Parte*).

[40] In 2000, public safety and CMRS entities incorporated many of these technical changes into a *Best Practices Guide*. *See* Avoiding Interference Between Public Safety Wireless Communications Systems and Commercial Wireless Communications Systems at 800 MHz, a Best Practices Guide, December 2000 at 5 (*Best Practices Guide*).

[41] *C.f.* 47 C.F.R. § 90.173(b); *see also* 47 C.F.R. § 90.403(e).

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15. In this proceeding, parties have presented us with two long-term alternatives for addressing the 800 MHz interference problem:

- The Consensus Parties have proposed a band reconfiguration plan that would move ESMR systems—most notably Nextel—to the upper portion of the 800 MHz band, move all public safety and "high site" operators to the lower portion of the band, and make additional spectrum in the band available for public safety use.[42]

- Other parties, including cellular telephone licensees and their representatives, utilities and even some public safety agencies, have questioned the need for band reconfiguration, and aver that technical changes accompanied by certain mandatory procedural requirements, such as prior coordination of cell sites, would suffice to solve the interference problem without the need to reconfigure the 800 MHz band. One group of entities, the 800 MHz User Coalition, refers to this alternative as the "Balanced Approach."[43]

16. We agree, in part, with the suggestion by proponents of the Balanced Approach and other parties that we should augment the technical and procedural changes contained in the *Best Practices Guide* and apply certain of them on a mandatory basis. While we do not adopt all of the suggested technical restrictions, we have carefully considered various technical measures suggested by the parties and supplemented them with certain procedural rules. Hereinafter, we refer to this Commission-derived set of practices and procedures as Enhanced Best Practices.

17. On this record, however, we disagree with those parties that contend that exclusive reliance on Enhanced Best Practices on a case-by-case basis is the best long-term solution to the interference problem.[44] Although case-by-case treatment of potential and actual interference under an Enhanced Best Practices regime provides clear benefits over the current voluntary regime, we conclude that that approach, by itself, does not provide the best long-term answer to the problem of interference to public safety and other non-cellular operations in the 800 MHz band. Our finding in that regard rests on the following facts:

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[42] The designations "high-site" and "low-site" are often used to distinguish cellularized from non-cellularized systems. Thus, for example, the typical public safety 800 MHz system will employ one, or only a few, base stations with antennas located on high terrain, towers, buildings, etc. to provide wide-area coverage from the base station. Cellular-architecture systems, by comparison, make use of multiple, localized coverage, base stations whose antennas generally are mounted on low towers or other structures. We note, however, that the term "low-site" is often used to denominate cells *within* a cellularized system that have *very low* antenna elevations, *e.g.* thirty-feet and, accordingly, have a greater potential to cause interference than high-elevation cells in the system. *See* ¶¶ 170-174 *infra.*

[43] *See* http://www.fix800mhznow.com/documents/800_MHz_COALITION_10_29_03.pdf. The 800 MHz Users Coalition consists of: ALLTEL Communications, Ameren Corporation, American Electric Power (AEP), Applied Technology Group, Inc., AT&T Wireless Services, Inc., Cinergy Corporation, City of Baltimore, Maryland, City of Colorado Springs, Colorado, Consumers Energy Co., Edison Electric Institute (EEI), Fresno Mobile Radio, Inc., Holy Cross Electric Association, Mobile Relay Associates, National Rural Electrical Cooperative Association (NRECA), Palomar Communications, Preferred Communication Systems, Small Business in Telecommunications, Southern Company/Southern LINC, Supreme Radio Communications, Inc., U.S. Cellular Corp., UTC, and Western Wireless.

[44] *See, e.g.,* Letter, dated May 29, 2003, from Jill Lyon, Esq., Vice President and General Counsel, UTC to Marlene H. Dortch, Secretary, Federal Communications Commission (800 MHz Users Coalition May 29, 2003 *ex parte*).

- Addressing interference on a case-by-case basis is both labor-intensive and expensive.[45]
- The transactional costs of applying Enhanced Best Practices as an exclusive remedy would increase as new public safety and other non-cellular systems were implemented and ESMR and cellular licensees increased the capacity of their systems by adding more cells.
- The increased costs and labor burden disproportionately affects public safety agencies, many of which operate with very limited human, technical, and financial resources.
- Some interference situations respond poorly, if at all, to the use of the techniques contained in the Enhanced Best Practices.
- ESMR and cellular systems will continue to expand. This will increase congestion in the 800 MHz band as well as the attendant interference to public safety systems operating in the band. We would disserve the public interest if we allowed unacceptable interference to become ubiquitous before addressing the fundamental causes of this interference.

18. In contrast, band reconfiguration confers the following greater benefits over the long-term:

- Band reconfiguration addresses interference comprehensively and proactively by eliminating the current interleaving of public safety and commercial channels in the 800 MHz band and separating cellularized multi-cell and non-cellularized high-site systems within the band.
- Although there are significant short-term costs associated with band reconfiguration, it is the solution most likely to yield maximum interference protection benefits for the least cost over the long run.[46]
- Once implemented, a reconfigured band will reduce both the upfront amount of coordinated engineering work necessary to prevent interference and the burden of troubleshooting interference incidents on a case-by-case basis.
- Eliminating interleaving of public safety and commercial channels will reduce the number of "band edges" between spectrum utilized by the two different network architectures thus significantly reducing the risk of interference to public safety systems.
- With adoption of band reconfiguration, public safety entities will have access, on average, to 4.5 megahertz of additional 800 MHz spectrum, which they can readily incorporate into existing systems to enhance their ability to protect the safety of life and property. Moreover, public safety entities that wish to do so will have the option of using spectrum in the Expansion Band or the Guard Band, subject to the technical and operational limitations on those bands.
- The relocation of the current NPSPAC channels from their current position to the lowest

[45] We also note that the record reflects instances in which, despite diligent effort on the part of all concerned, technical changes have been unable to abate interference. *See e.g.,* Denver June 10 *Ex Parte* at 12 -13; Anne Arundel July 29 *Ex Parte*.

[46] We note that the interference abatement measures used prior to band reconfiguration will remain necessary even after band reconfiguration is completed. Thus, although we expect instances of interference to be far less frequent under the reconfigured band plan, the availability of Enhanced Best Practices will ensure the quick and effective abatement of any residual interference that may occur.

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segment of the 800 MHz band will result in a greater potential for interoperability with public safety systems in the spectrally adjacent 700 MHz public safety band.

- The adoption of a reconfigured 800 MHz band plan will provide certainty to licensees planning to implement new 800 MHz systems or modify existing systems.

B. Entitlement to Interference Protection

19. We are adopting a new objective technical standard for determining whether a public safety or other non-cellular 800 MHz band licensee is entitled to interference protection. We adopt this standard to more finely adapt our rules to the technologies being deployed in the 800 MHz band. Specifically:

- "Unacceptable interference" is defined, for the limited purpose of this proceeding, as a function of threshold median received power levels of desired signals. Specifically, "unacceptable interference" occurs when the signals from a cellular architecture station or stations, cause the carrier-to-noise plus interference ratio of a radio meeting TIA-equivalent Class A standards to degrade below 20 dB in an area in which the median measured received signal power of the desired signal is equal to or greater than -104 dBm for mobile units or -101 dBm for portable units.[47] In the case of data radios, unacceptable interference occurs when the received signal power criteria, above, are met and the bit error rate of the radio exceeds the value specified by the radio's manufacturer for reliable operations.[48]

- Under the rules adopted in this Order, desired signals from systems operating in the 806-816 MHz/851-861 MHz band segment that equal or exceed the threshold are entitled to protection from unacceptable interference as defined above. Non-cellular systems operating from 816-817 MHz/861-862 MHz in the Guard Band are also provided interference protection, but to a lesser degree.[49]

- In recognition of the role that receiver characteristics play in the interference calculus, we are affording full protection against unacceptable interference only to systems whose mobile or portable receivers are capable of satisfactory operation at the threshold signal power in the absence of interference.[50] Other systems will receive lesser protection as a function of the degree to which their receivers exhibit inferior performance.

20. The method of interference abatement we adopt herein leaves to the involved parties—and not the Commission—the choice of how best to ensure that their systems do not cause unacceptable interference. Thus, a given party may choose from a variety of methods encompassed in the Enhanced Best Practices in each area where interference occurs, including, but not limited to, modification of the cell that is the source of interference or technical improvements to the affected public safety system or other non-cellular 800 MHz systems (at the commercial operator's expense).[51] In addition, to the extent that

[47] *See* ¶¶ 105-107 *infra.*

[48] *Id.*

[49] *See* ¶ 158 and Figure 1 *supra.*

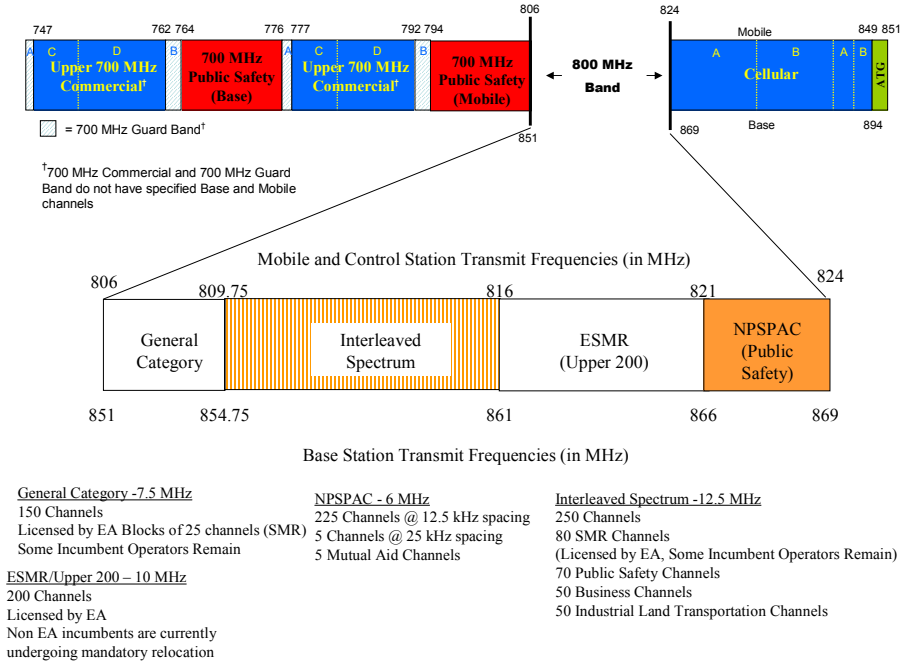
[50] In this *Report and Order,* we are relating entitlement to full interference protection to conformance with certain sensitivity, selectivity, and intermodulation-rejection performance standards typical of TIA "Class A" receivers. *See* ¶ 109 *infra.*

[51] We stress, however, that we expect parties to vigorously implement Enhanced Best Practices to abate interference even if this involves implementing a "channel swap" prior to official rebanding. *See* ¶ 123 *infra.*

interference results from the combination of signals from multiple transmitters, and potentially multiple licensees, we place joint and several responsibility on such CMRS licensees to eliminate unacceptable interference using the remedies of their choice. In not imposing new, across-the-board emission limitations that would necessitate highly expensive technical changes to most, if not all, ESMR and cellular systems nationwide, we have heeded the filings of those parties who have decried the expense of such technical micromanagement and urged that the same goal can be achieved otherwise, for example, by the less intrusive means we adopt today.[52]

C. 800 MHz Band Reconfiguration

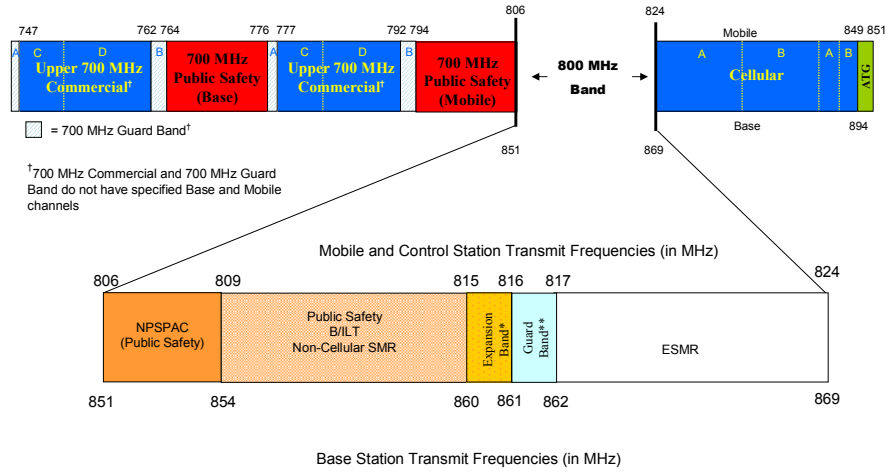
21. The 800 MHz band is currently configured as follows:



22. Our plan for reconfiguration of the 800 MHz band is designed to spectrally segregate public safety systems from ESMR and cellular telephone systems. In reaching this spectrum management decision, we are guided by the principle that we can minimize unacceptable interference in the 800 MHz band by placing similar system architectures in like spectrum and isolating dissimilar architectures from one another.[53] Under the new band plan adopted in this *Report and Order*, the 800 MHz band will be configured as follows:

[52] *See* Public Safety Wireless Network Comments at 18. *See also* Reply Comments of Rural Telecommunications Group to Supplemental Comments of the Consensus Parties.

[53] *See* FCC Staff Report, Spectrum Policy Task Force Report in ET Docket No. 02-135, 4, 22 (released Nov. 22, 2002).



*No public safety system will be required to remain in or relocate to the Expansion Band; although they may do so if they choose.

**No public safety or CII licensee may be involuntarily relocated to occupy the Guard Band.

23. The new band plan will have the following impact on existing licensees in the band:

- Systems in the current NPSPAC band will be relocated to 806-809/851-854 MHz in the current General Category band.[54] To accommodate NPSPAC relocation, Nextel will relinquish its General Category licenses and other existing General Category systems will be relocated elsewhere in the 800 MHz band.[55]

- Existing public safety systems and non-cellular B/ILT and SMR systems operating on interleaved channels between 809.75-816 MHz/854.75-861 MHz will continue to operate on those channels.

- Nextel will relocate to the 817-824 MHz/862-869 MHz band, and will vacate all channels it now uses in the 806-817 MHz/851-862 MHz band segment. Public safety, and later CII agencies will have exclusive access to all channels vacated by Nextel in the interleaved portion of the band below 815 MHz/860 MHz for a limited-year period of time.[56]

- No public safety licensee will be required to operate in the 815-816 MHz/860-861 MHz Expansion Band. Any public safety system currently located in the Expansion Band will be relocated to spectrum below the Expansion Band unless it exercises its option to remain in the

[54] *See* ¶ 37 *infra*.

[55] In some circumstances, public safety and CII systems operating in the 809-809.75 /854-854.75 MHz portion of the General Category band will not have to be relocated. Public safety will also have exclusive access to spectrum vacated by Nextel in this portion of the General Category Band for five years, and CII licensees will have access from year three to year five.

[56] These channels will be restricted to public safety eligibles for three years from the effective date of this *Report and Order*. Thereafter, for an additional two-year period, only public safety and CII eligibles may apply for said channels. At the end of this five-year period, any eligible applicant may apply.

Expansion Band.[57]

- No public safety or CII licensee will be required to operate in the 816-817 MHz/861-862 MHz Guard Band. Only licensees who voluntarily choose to relocate to the Guard Band will occupy this portion of the band.[58]

- Unless the subject of mutual agreement among affected parties, non-Nextel ESMR operations below 816/861 MHz may stay where they are, subject to a stringent non-interference obligation.[59]

24. Providing public safety with additional spectrum rights in the 800 MHz band, instead of elsewhere as others have proposed,[60] has significant advantages. First, spectrum rights in the 800 MHz band are currently more valuable to public safety licensees than spectrum rights in the 700 MHz public safety band which can be subject to interference from incumbent television stations. This interference may foreclose extensive use of the 700 MHz public safety band in certain markets for several years. Second, 800 MHz band spectrum rights are of particular value to public safety licensees because new channels can be integrated into their existing infrastructure at little additional cost: the additional channels can be added to existing base station sites with, typically, only minor hardware changes; and most existing public safety mobile and portable radios can be adapted to receive the additional channels with only minor modification or reprogramming. In sum, providing public safety with access to additional spectrum in the 800 MHz band can provide a virtually instant capacity increase for public safety systems and will facilitate interoperability with other agencies—an important capability for Homeland Security operations. To the extent that band reconfiguration may require extensive replacement of existing 800 MHz band public safety equipment, manufacturers likely will achieve economies of scale in the process. We urge manufacturers to pass on such savings to public safety agencies.

25. In crafting the band plan adopted herein, we examined all proposals submitted in the course of this proceeding. While we did not adopt any proposal in its entirety, we did extract elements from several proposals and adopted a modified version of the only band plan that with an effective, comprehensive approach for resolving the interference problems that jeopardized public safety.[61] We nonetheless

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[57] Under the relocation provisions we adopt today, public safety licensees will generally be located outside of the Expansion Band, except when a public safety licensee currently operating in these bands either explicitly declines to relocate or requests a channel therein. Those public safety systems operating in the Expansion Band will receive the same interference protection as if they were located outside of this band. *See* ¶¶ 154-156 *infra.*

[58] The Guard Band is carved from current EMSR spectrum. Therefore, no public safety licensees currently occupy the Guard Band and no public safety licensees will need to be relocated from this portion of the band. Systems that choose to relocate to the Guard Band will be entitled to limited interference protection as described at ¶¶ 158 and Figure 1 *infra*.

[59] In some Southeastern markets where both Southern LINC and Nextel offer ESMR service, insufficient spectrum exists in the 816-824/861-869 MHz band segment to accommodate existing ESMR systems and ESMR systems that may seek to exercise their option to relocate from the lower channels. In order not to unduly restrict ESMR operations in this region, we define the ESMR band in these markets as the band segment 813.5-824 MHz/858.5-869 MHz. The Expansion Band in this region will extend from 812.5-813.5 MHz/857.5-858.5 MHz. All licensees operating below 813.5 MHz/858.5 MHz in this region will be afforded full protection against unacceptable interference as specified in the *Report and Order*. *See* ¶¶ 164-169 *infra*.

[60] *See* Comments of Preferred Communications to Supplemental Comments of the Consensus Parties at 19-20.

[61] For example, only one proposal contained a feasible means of paying for band reconfiguration. *See* Supplemental Comments of the Consensus Parties at ii (Nextel commitment to provide up to $850 million for band (continued….)

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recognize that the band plan we adopt is in some respects inconsistent with current international agreements. As a result, implementing the band plan in areas of the United States bordering Mexico and Canada will require modifications to international agreements for use of the 800 MHz band in the border areas. Since we value highly our agreements with these countries we intend to promptly pursue those modifications during our bilateral discussions with those countries' relevant regulatory bodies.[62] During the pendency of such modifications, all 800 MHz band operations (both cellular and non-cellular alike) must continue to be consistent with current international agreements. Consequently, if a region containing a border area is reconfigured, all 800 MHz band operations within the border area must conform to all international agreements unless and until such international agreements are amended to reflect a reconfigured 800 MHz band. We envision and intend that interference-free cross-border mutual-aid capability remain paramount during this interim period preceding modification of the applicable international agreements.

D. Band Reconfiguration Process

26. We recognize that our decision to reconfigure the 800 MHz band raises significant transition issues, particularly with respect to the relocation of public safety and other non-cellular licensees from old to new frequency assignments. We are sensitive to the concerns raised about service and operational disruption and are committed to ensuring that the band reconfiguration process does not result in degradation of existing service or an adverse effect on public safety communications and operations. We therefore have adopted rules that ensure both continuity of service and that relocating licensees receive "comparable facilities" on their new frequency assignments, whether this requires retuning existing equipment or providing replacement equipment.[63]

27. In an effort to further ensure a smooth transition to the new 800 MHz band plan, the relocation process will be managed by an independent Transition Administrator.[64] A committee of major 800 MHz band stakeholders will select the Transition Administrator who will perform a variety of administrative functions and mediate, or refer to mediation, any disputes that may arise in connection with band reconfiguration. Should any such disputes not be resolved by mediation, the Transition Administrator will compile a record and transmit it to the Commission. The Commission then will review the disputed matter *de novo.*[65]

28. We are committed to having band reconfiguration completed through a phased transition process within thirty-six months of release of a Public Notice announcing the start date of reconfiguration

(Continued from previous page)
reconfiguration). We note, also, that, later in this proceeding, the proponents of the Balanced Approach said that certain of their members were committed to pay the cost of implementing Best Practices applied on a case-by-case basis when their facilities were involved. We commend that commitment, which is consistent with the interference abatement responsibility policy we adopt herein. *See* ¶¶ 128-131 *infra.*

[62] Commission staff meet periodically, and whenever needed, with their regulatory counterparts from Mexico and Canada to discuss cross border issues and, when duly authorized, to derive recommended changes to existing international agreements. When formal amendments to agreements are needed, they are made through a process that requires the sanction of the government entity officially designated with the responsibility for international treaty consultations, which in the case of the United States is the Department of State.

[63] *See* ¶ 201 *infra.*

[64] *See* ¶¶ 190-200 *infra.*

[65] Such *de novo* Commission review is anticipated only after all other avenues have been exhausted, *e.g.,* mediation, arbitration or other alternative dispute resolution techniques based on the good faith effort of the parties.

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in the first NPSPAC region. To ensure timely completion, we require Nextel to meet both an interim benchmark and a final benchmark. As an interim benchmark, within eighteen months of release of a Public Notice announcing the start date of reconfiguration in the first NPSPAC region Nextel must complete, and the Transition Administrator must certify that Nextel has completed, the retuning of Channels 1-120 for twenty NPSPAC Regions. If Nextel fails to meet this interim benchmark, for reasons that Nextel, with the exercise of due diligence, could reasonably have avoided, the Commission may consider and exercise any appropriate enforcement action within its authority, including assessment of monetary forfeitures or, if warranted, license revocation.[66] At thirty-six months, Nextel must complete, and the Transition Administrator must certify, all relocation of 800 MHz incumbents required by this Report and Order. If Nextel fails to meet this benchmark, for reasons that Nextel could reasonably have avoided, the Commission will determine whether forfeitures should be imposed and/or whether Nextel licenses, including, but not limited to, its 1.9 GHz licenses, should be revoked.

E. Guarantee of Sufficient Funds for Band Reconfiguration

29. Nextel has committed to pay up to $850 million for retuning and replacement expenses associated with its own relocation and the related relocations discussed in this *Report and Order*, an amount it claims is sufficient to cover all such costs. We do not believe, however, that Nextel should be able to cap its obligation to pay relocation costs, because doing so could leave public safety and other relocating entities without the means to complete the relocation process in the event that Nextel's estimates prove low and relocation costs exceeded any such cap. Therefore, we decline to "cap" Nextel's obligations at $850 million or any other amount but instead require Nextel to pay all costs of band reconfiguration, as defined in this *Report and Order.*

30. In addition, to protect against possible changes to Nextel's financial condition, we require Nextel to secure its commitment by means of an irrevocable letter of credit in the amount of $2.5 billion, within sixty days of the date this *Report and Order* is published in the Federal Register.[67] We believe this letter of credit strikes the appropriate balance between Nextel's estimate that band reconfiguration would cost $850 million and others' contention that Nextel's estimates were unrealistically low. We further note that Nextel may be required to obtain additional letters of credit if ongoing experience with band reconfiguration show the initial letter of credit to be inadequate.

F. Equitable Compensation for Band Reconfiguration

31. Nextel proposes that, as compensation for its relinquishment of some of its spectrum rights in the 700, 800 and 900 MHz bands and its commitment to pay 800 MHz band incumbent relocation costs, it should receive a nationwide license for ten megahertz of spectrum in the 1.9 GHz band.[68] We conclude that it is in the public interest to compensate Nextel for the surrendered spectrum rights and costs it incurs

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[66] We note that the Commission has issued Notices of Apparent Liability for Forfeiture assessing substantial penalties on carriers that have failed to comply with Commission rules intended to enhance the safety of life and property. *See* In re T-Mobile USA, Inc., *Notice of Apparent Liability for a Forfeiture*, 18 F.C.C.R. 3501 (EB 2003); *see also* In re AT&T Wireless Services, Inc., *Notice of Apparent Liability for a Forfeiture,* 17 F.C.C.R. 9903 (EB 2002).

[67] *See* ¶ 182 *infra.*

[68] This modification of Nextel's original White Paper position was first put forth in December 2001 in an *ex parte* filing by the Consensus Parties. *See* n. 172 *infra.* We note that other parties contend that the value of the spectrum rights Nextel seeks substantially exceeds the value of spectrum rights it has offered to give up, and therefore would constitute an unwarranted windfall to Nextel. *See* n. 661 *infra.*

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as a result of band reconfiguration. By facilitating band reconfiguration, giving up spectrum rights, and bearing the financial burden of the relocation process for all affected incumbents, Nextel will play a critical role in solving the 800 MHz band public safety interference problem.[69]

32. However, we agree with the parties who have urged us to reject modifying Nextel's licenses on a "megahertz-for-megahertz" basis whereby Nextel would receive rights to ten megahertz of spectrum in the 1.9 GHz band region in exchange for the rights to approximately ten megahertz of combined spectrum it offers to surrender in the 700, 800, and 900 MHz bands.[70] We reject this approach, *inter alia,* because we perceive insufficient benefit to public safety,[71] and do not find the spectrum rights offered to be comparable in value to the spectrum rights sought. Instead, to ensure that the public and our licensees including Nextel are treated equitably, and that Nextel does not gain undue advantage, we will compensate Nextel on a "value for value" basis.

33. Accordingly, by means of a *Fifth Report and Order* in ET Docket No. 00-258 we designate two paired five megahertz blocks in the 1910-1915 MHz and 1990-1995 MHz bands for the provision of new services, including AWS, which we make available to Nextel as part of the public safety rebanding approach described above. In addition, we adopt a *Fourth Memorandum Opinion and Order* in ET Docket No. 95-15 to provide for clearing of incumbents from this spectrum. More specifically:

- We make the 1910-1915 MHz block available by redesignating the band from Unlicensed Personal Communications Services (UPCS) use to licensed fixed and mobile services to be used for AWS, and adopt a plan that provides reimbursement compensation to UTAM for relocation expenses it has incurred in relocating incumbents from the band and allows for the relocation of remaining incumbent licensees.

- In the 1990-1995 MHz block, which has already been reallocated for fixed and mobile services, we make the band available to Nextel subject to the condition that it relocate incumbent BAS licensees in the 1990-2025 MHz band within thirty months.[72] We also address several petitions for reconsideration and clarification regarding the existing relocation and reimbursement plan for incumbent BAS licensees in the 1990-2025 MHz band.

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[69] We provide this compensation under the authority granted us by Sections 4, 301, 303 and 316 of the Act, 47 U.S.C. §§ 316, 303, 301, and 154(i). We set forth a detailed description of our legal authority in ¶¶ 62-87 *infra.*

[70] *See, e.g.,* Comments of Access Spectrum to Supplemental Comments of Consensus Parties at 11-12; Comments of Boeing to Supplemental Comments of Consensus Parties at 19; Comments of CTIA to Supplemental Comments of Consensus Parties at 15-16.

[71] We note that the Commission has previously designated twenty-four megahertz of spectrum to public safety in the 700 MHz band. *See* ¶ 40 *infra*. We note that a "megahertz for megahertz" comparison of the spectrum currently held by Nextel and the spectrum it seeks is unjustified, *inter alia,* because the bands differ in spectral characteristics, operating parameters, the number and kind of incumbent licensees and the number of markets in which Nextel holds its spectrum. Moreover, under the band reconfiguration plan we adopt today, Nextel may require its 900 MHz band spectrum in order to make up for spectrum it may need to vacate in the 800 MHz band in order to accommodate other ESMR licensees in the ESMR segment of the 800 MHz band. *See* ¶¶ 159-163 *infra.*

[72] If Nextel fails to meet this benchmark, for reasons that Nextel could reasonably have avoided, the Commission will determine whether forfeitures should be imposed and/or whether Nextel licenses, including, but not limited to, its 1.9 GHz licenses, should be revoked.

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34. Nextel will receive rights to the 1.9 GHz band spectrum conditioned on its meeting the obligations imposed by this *Report and Order,* and on its payment to the U.S. Treasury of any difference between the value of 1.9 GHz band spectrum rights and Nextel's costs incurred in reconfiguring the 800 MHz band and clearing the 1.9 GHz band. Specifically, the amount due the U.S. Treasury will be the net of our estimate of the current value of the 1.9 GHz band spectrum rights, discounted by the actual cost of 800 MHz band reconfiguration (including Nextel's own relocation costs), clearing the 1.9 GHz band, and the value of the additional 800 MHz band and 700 MHz band spectrum rights that Nextel will relinquish.

35. At the conclusion of the thirty-six month band reconfiguration process specified herein, but no later than six months thereafter, the following financial reconciliation will be made:

- Nextel will be allotted a $1.607 billion credit[73] for relinquishing rights to an average of 4.5 megahertz of spectrum in the 800 MHz band.
- Nextel will provide the Transition Administrator an accounting of the funds spent:
  - to reconfigure its own systems in the 800 MHz band;[74] and
  - to clear the 1.9 GHz band of incumbents and to reimburse UTAM.
- Nextel will also provide the Transition Administrator an accounting of the funds received as reimbursement for clearing the 1.9 GHz band.
- The Transition Administrator shall provide an accounting of the funds spent to reconfigure the systems of incumbent operators in the 800 MHz band, including its own salary and expenses.[74A] This accounting shall include certifications from each relocated licensee that all necessary reconfiguration work has been completed and that Nextel and said licensee agree on the sum paid for such work.
- Upon verification of these accountings, Nextel will be allotted an appropriate credit.
- To the extent that those combined credits total less than the value of the 1.9 GHz band spectrum, Nextel shall be obligated to make a payment to the United States Treasury at the conclusion of the relocation process equal to the difference.
- Within ten days of the calculation of the amount of this payment, the Wireless Telecommunications Bureau will issue a Public Notice specifying the amount that Nextel will pay the United States Treasury If Nextel does not make payment of any amount that it owes within thirty days of issuance of this Public Notice, the amount Nextel owes will be paid from the letter(s) of credit. If the letter(s) of credit do not secure sufficient funds, then the Commission will determine whether forfeitures should be imposed and/or whether Nextel licenses, included, but not limited to its 1.9 GHz licenses, should be revoked.

[73] "Credit," as used in this context, means the amount that will be deducted from the sum that Nextel will be required to deposit with the U.S. Treasury after completion of band reconfiguration. The calculation of the credit is discussed at ¶ 323 *infra*.

[74] Nextel's credit for this category of expenditure shall be strictly limited to those costs absolutely essential to implement band reconfiguration and shall not include any costs for improvement, by way of equipment replacement or otherwise, of the capacity or features of Nextel's infrastructure or subscriber units.

[74A] *See* n. 510A, *infra.*

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IV. REGULATORY BACKGROUND

A. 800 MHz Band

36. In the mid-1970's, the Commission reallocated spectrum in the 806-947 MHz band for land mobile operations and designated portions of this spectrum for high capacity common carrier mobile communications (*i.e.* cellular systems) and PLMR; and reserve spectrum for future land mobile communications needs.[75] The Commission allotted one-third of the spectrum for conventional operation and the remaining two-thirds for trunked operation.[76] By the close of the 1970's, the Commission had released a portion of reserve 800 MHz spectrum to alleviate spectrum shortages confronting users of conventional channels.[77] In the early 1980's, the Commission adopted rules for the release of the remaining reserve spectrum according to radio service categories and established the 800 MHz Public Safety, B/ILT, and SMR service categories.[78] The specific channel pairs allotted to the various services differ along the U.S. border areas with Mexico and Canada.[79] The Commission did not make contiguous spectrum available to each radio service because technology limitations at that time did not readily accommodate the use of contiguous spectrum at a single base station site.[80] Instead, the channel pairs made available to each radio service were "interleaved" between channels allotted to the other radio services.[81] The Commission provided for inter-category sharing (*i.e.*, sharing between radio services) to

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[75] *See* Inquiry Relative to the Future Use of the Frequency Band 806-960 MHz and Amendment of Parts 2, 18, 21, 73, 74, 89, 91, and 93 of the Rules Relative to Operations in the Land Mobile Service Between 806 and 960 MHz, Docket No. 18262, *First Report and Order and Second Notice of Inquiry*, 19 Rad. Reg. 2d (P&F) 1663 (1970). *See also* Inquiry Relative to the Future Use of the Frequency Band 806-960 MHz and Amendment of Parts 2, 18, 21, 73, 74, 89, 91, and 93 of the Rules Relative to Operations in the Land Mobile Service Between 806 and 960 MHz, Docket No. 18262, *Second Report and Order*, 46 FCC 2d 752 (1974), *reconsidered, Memorandum Opinion and Order*, 51 FCC 2d 945 (1975).

[76] *Id*.

[77] *See* Inquiry Relative to the Future Use of the Frequency Band 806-960 MHz and Amendment of Parts 2, 18, 21, 73, 74, 89, 91, and 93 of the Rules Relative to Operations in the Land Mobile Service Between 806 and 960 MHz, Docket No. 18262, *Order* (on further reconsideration), FCC 78-854 (1978); *aff'd sub nom*. *NARUC v. FCC*, 525 F.2d 630 (D.C. Cir. 1976), *cert. denied* 425 U.S. 992 (1976).

[78] The initial allotment to public safety was fifty channels. *See* Amendment of Part 90 of The Commission's Rules to Designate Frequencies in the 806-821 and 851-866 MHz Bands for Slow-Growth Land Mobile Radio Systems of Utilities and Public Safety Agencies, PR Docket No. 79-191 *Report and Order*, 48 Rad. Reg. 2d (P&F) 837, FCC 80-663 (1980). This was later increased to seventy channels. *See* Amendment of Part 90 of the Commission's Rules to Release Spectrum in the 806-21/851-866 MHz Bands and to Adopt Rules and Regulations Which Govern Their Use; Amendment of Part 90 of the Commission's Rules to Facilitate Authorization of Wide-Area Mobile Radio Communications Systems; An Inquiry Concerning the Multiple Licensing of 800 MHz Radio Systems (community repeaters); Amendment of Section 90.385(c) of the Commission's Rules to Allow Transmission of Non-Voice Signals at 800 MHz, PR Docket No. 79-191, PR Docket No. 79-334, PR Docket No. 79-107, PR Docket No. 81-703, *Second Report and Order*, 90 FCC 2d 1281, 52 Rad. Reg. 2d (P&F) 11, FCC 82-338 (1982) (*Pool Order*). Subsequently, the Commission added 225 25 kHz channels spaced 12.5 kHz apart and five 25 kHz channels spaced 25 kHz apart at 866-869 MHz—the so-called "NPSPAC Channels." *See* ¶ 37 *infra.*

[79] *See, e.g.*, 47 C.F.R. §§ 90.617, 90.619.

[80] *See NPRM,* 17 FCC Rcd at 4877.

[81] *Id*.

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permit licensees access to spectrum in instances in which the channels assigned to a licensee's particular radio service had been exhausted.[82] At the time, the Commission contemplated that the radio service categories could be phased out in three years.[83] However, the categories proved to have continuing utility and remain in use today. In 1986, based on experience with the radio service category structure in the 800 MHz band, the Commission adopted a similar structure for the 900 MHz band land mobile spectrum.[84]

37. In 1986, the Commission designated six megahertz of spectrum at 821-824 MHz/866-869 MHz for public safety use and established the NPSPAC to advise the Commission on rules for this spectrum.[85] After the NPSPAC filed its Initial Report, the Commission issued rules for the new public safety spectrum, which became known as the "NPSPAC Band," including five channels devoted to mutual aid (interoperability) use.[86] Thereafter, many jurisdictions began planning and implementing wide-area (often state-wide) 800 MHz band public safety systems that utilize NPSPAC and Public Safety Category channels.[87]

38. In 1990, the Commission established the General Category Radio Service at 806-809.75 MHz/851-854.75 MHz for either conventional or trunked operation by any eligible 800 MHz licensee.[88] A year later, the Commission waived its rule requiring SMR licensees to complete system construction in one

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[82] *Id*.

[83] *See Pool Order,* 90 FCC 2d 1303-1304 ¶ 66. In 1995, the Commission imposed a freeze on intercategory sharing, because, after the Commission elected to auction SMR licenses on a wide-area geographical basis, SMR applicants filed a disproportionate number of requests for intercategory sharing. *See* 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, *Second Report and Order*, 12 FCC Rcd 19079 (1997). This resulted in a shortage of channels for applicants in the other pools. *See* in the Matter Of Inter-Category Sharing Of Private Mobile Radio Frequencies in the 806-821/851-866 MHz Bands, *Order,* 10 FCC Rcd 7350 (WTB 1995) (*Intercategory Freeze Order*). To date, the freeze on intercategory sharing in the 800 MHz band remains in effect.

[84] *See* Amendment 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 MHz Reserve Band for Private Land Mobile Use Amendment 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 No. 84-1231 RM-4812, GEN Docket No. 84-1233 RM-4829, GEN Docket No. 84-1234, *Report and Order,* 2 FCC Rcd at 1825 ¶ 46 (1986).

[85] *Id.* at 1837.

[86] *See* 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 (1987).

[87] *See, e.g.*, State of Ohio, *Memorandum Opinion and Order*, 17 FCC Rcd 439 (WTB, PS&PWD 2002); State of Florida, *Memorandum Opinion and Order*, 16 FCC Rcd 2174 (WTB 2001); Commonwealth of Pennsylvania and GPU Energy, *Order*, 14 FCC Rcd 14029 (WTB, PS&PWD 1999); New Jersey Transit Authority, *Order*, 14 FCC Rcd 4334 (WTB 1999); State of South Carolina and Scana Communications, Inc., *Order*, 13 FCC Rcd 8787 (WTB 1997); State of Florida, *Order*, 12 FCC Rcd 11567 (WTB 1997); Seminole County, Florida, *Order*, 11 FCC Rcd 4105 (WTB 1996).

[88] *See* Trunking in the Private Land Mobile Radio Services for More Effective and Efficient Use of the Spectrum, PR Docket No. 87-213, *Report and Order*, 5 FCC Rcd 4016 (1990).

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year, to accommodate SMR licensees' interest in accumulating large numbers of 800 MHz channels and using advanced technology to increase spectrum reuse by employing cellular-type architecture to efficiently serve wide areas and large numbers of subscribers.[89] Thereby, it afforded Fleet Call, the predecessor of Nextel, sufficient time to develop and implement an SMR system offering wide-area digital voice and data service.[90]

39. In 1994, the Commission proposed a new licensing framework for SMR systems in the 800 MHz band.[91] After release of the *Further Notice*, there was a significant increase in the number of requests for General Category channels made by SMR applicants and licensees.[92] On October 4, 1995, the Wireless Telecommunications Bureau imposed a freeze on acceptance of new applications for the General Category channels to ensure that resolution of the spectrum allocation issues raised in the *Further Notice* would not be compromised.[93] In December 1995, the Commission established geographic area licensing and new service rules for the "upper 200" 800 MHz SMR channel pairs at 816-821 MHz/861-866 MHz where such wide-area digital voice and data services eventually proliferated.[94] The Commission subsequently redesignated the General Category channels exclusively to the 800 MHz SMR service, whereby mutually exclusive initial applications would be subject to competitive bidding, and excluded PLMR licensees from eligibility for this spectrum.[95] On reconsideration, however, the Commission reversed its decision concerning eligibility and reinstated the eligibility of PLMR applicants for General Category channels.[96] The Commission also partially lifted the freeze on General Category channels to permit Economic Area (EA) applicants[97] to relocate incumbents from the upper ten megahertz block of 800 MHz spectrum to the

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[89] *See NPRM*, 17 FCC Rcd at 4878 ¶ 9.

[90] *See, e.g.*, Fleet Call, Inc, *Memorandum Opinion and Order*, 6 FCC Rcd 1533, *recon. dismissed*, 6 FCC Rcd 6989 (1991).

[91] Amendment of Part 90 of the Commission's Rules to Facilitate Future Development of SMR Systems in the 800 MHz Frequency Band, *Further Notice of Proposed Rule Making*, PR Docket No. 93-144, PP Docket No. 93-253, 10 FCC Rcd 7970 (1994) (*Further Notice*).

[92] The General Category is comprised of 150 contiguous twenty-five megahertz channels in the 800 MHz band. *See* 47 C.F.R. § 90.615.

[93] Licensing of General Category Frequencies in the 806-809.750/851-854.750 MHz Bands, *Order,* 10 FCC Rcd 13190 (WTB 1995).

[94] *See* 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, *First Report and Order, Eighth Report and Order, and Second Further Notice of Proposed Rule Making*, 11 FCC Rcd 1463 (1995) (*800 MHz Report and Order*). Geographic licensing was also adopted for the General Category SMR channels.

[95] Amendment of Part 90 of the Commission's Rules to Facilitate Future Development of SMR Systems in the 800 MHz Frequency Band, *First Report and Order*, *Eighth Report and Order and Second Further Notice of Proposed Rulemaking*, PR Docket No. 93-144, GN Docket No. 93-252, PP Docket No. 93-253, 11 FCC Rcd 1463 (1995) (*800 MHz SMR Report and Order); Memorandum Opinion and Order on Reconsideration*, PR Docket No. 93-144, GN Docket No. 93-252, PP Docket No. 93-253, 12 FCC Rcd 9972 (1997) (*800 MHz SMR Memorandum Opinion and Order*).

[96] *800 MHz SMR Memorandum Opinion and Order*, 12 FCC Rcd at 9975 ¶ 4.

[97] In the *800 MHz SMR Report and Order*, the Commission adopted geographic licensing based on EAs for the upper ten megahertz of the 800 MHz SMR service. *See 800 MHz SMR Report and Order*, 11 FCC Rcd at 1484 ¶¶ 24-25. The U.S. Department of Commerce Bureau of Economic Analysis has established 172 EAs which (continued….)

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General Category channels.[98] In all other respects, the Commission maintained the freeze so as not to frustrate its efforts regarding future licensing of General Category channels.[99]

B. 700 MHz Band

40. Prior to 1997, the 700 MHz band (TV Channels 60-69) was exclusively used by broadcasters. In the Balanced Budget Act of 1997, Congress directed the Commission to reallocate twenty-four megahertz of this spectrum for public safety use and to auction thirty-six megahertz of this spectrum for commercial use.[100] Incumbent analog television stations on the 700 MHz band frequencies are allowed to remain in operation until December 31, 2006, and, under certain circumstances, well beyond that date.[101] These stations render the 700 MHz band unusable for public safety systems in the majority of metropolitan areas at this time.

41. In January 2000, the Commission established two paired 700 MHz guard bands (the 700 MHz Guard Bands), one of four megahertz and one of two megahertz, in the commercial use spectrum immediately adjacent to the public safety spectrum to insulate public safety operations from unacceptable interference from 700 MHz commercial services.[102] In the *Upper 700 MHz Second Report and Order*, the Commission adopted technical, operational, and licensing requirements for the 700 MHz Guard Bands,[103] including a ban on cellular operations.[104] The Commission's restriction on cellular operations stems from its experience in the 800 MHz land mobile band in which the incompatibility of "high-site" operations and cellular operations led to the instant rule making.[105] The Commission determined that the 700 MHz Guard Bands would be licensed by competitive bidding to a new class of commercial user called a Guard Band

(Continued from previous page)
cover the continental United States. *See* Final Redefinition of the BEA Economic Areas, 60 Fed. Reg. 31114 (Mar. 10, 1995).

[98] *See 800 MHz SMR Report and Order*, 11 FCC Rcd at 1508 ¶¶ 74-75.

[99] *Id.* at 1509 ¶ 76.

[100] *See* Section 337(a) of the Act, 47 U.S.C. § 337(a), as amended by § 3004 of the Balanced Budget Act of 1997, Pub. L. No. 105-33, 111 Stat. 251 (1997). The Commission's Wireless Telecommunications Bureau subsequently set a June 19, 2002, date for this auction. *See* Auction of Licenses in the 747-762 and 777-792 MHz Bands (Auction Nos. 31 and 44) scheduled for June 19, 2002, DA 01-2394, *Public Notice*, 16 FCC Rcd 18510 (2001). The spectrum assigned for public safety use corresponds to Television Channels 63-64 and 68-69.

[101] *See* 47 U.S.C. §§ 309(j)(14) and 337(e). *See also* Advanced Television Systems and Their Impact Upon Existing Television Broadcast Service, MM Docket No. 87-268, *Reconsideration of Fifth Report and Order*, 13 FCC Rcd 6860, 6887 (1998).

[102] The Guard Bands consist of paired one megahertz sub-bands at 746-747 MHz and 776-777 MHz and two paired two megahertz sub-bands at 762-764 MHz and 792-794 MHz. *See* Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules, WT Docket No. 99-168, *First Report and Order*, 15 FCC Rcd 476, 489-91 ¶¶ 30-34 (2000) (*Upper 700 MHz First Report and Order*).

[103] *See* Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules, WT Docket No. 99-168, *Second Report and Order*, 15 FCC Rcd 5299 (2000) (*Upper 700 MHz Second Report and Order*).

[104] *See* 47 C.F.R. §§ 27.2(b); 27.601(a).

[105] *See Upper 700 MHz Second Report and Order*, 15 FCC Rcd 5299.

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Manager who would lease the spectrum for value to third parties on a for-profit basis.[106] The Commission believed this process would allow third parties to more readily acquire spectrum for varied uses, enable these parties to take advantage of the efficiencies of site-by-site licensing, and streamline the Commission's spectrum management responsibilities.[107] In September 2000, the Commission completed the auction of the 700 MHz Guard Band spectrum.[108] However, in the Auction Reform Act of 2002, Congress directed the Commission to postpone auctioning the remaining thirty megahertz of the upper 700 MHz spectrum (747-762 MHz/777-792 MHz) until resolution of the 800 MHz public safety interference issues that are the subject of the instant rule making proceeding.[109]

C. 900 MHz Band

42. In 1986, based on experience with the pool structure in the 800 MHz band, the Commission adopted the same pool structure for the 900 MHz band land mobile spectrum and established the SMR, B/ILT Pools.[110] Given that success of inter-category sharing in the 800 MHz band, the Commission concluded that inter-category sharing should be implemented in the 900 MHz pool channels.[111]

43. The 900 MHz SMR service[112] was established in order to alleviate congestion in the 800 MHz SMR band.[113] To expedite service in major markets where demand for SMR service was greatest, the

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[106] *Upper 700 MHz Second Report and Order*, 15 FCC Rcd at 5311-13 ¶¶ 26-28. The Commission determined that this licensing scheme was consistent with the provisions of 47 U.S.C. § 337(a)(2) requiring that this spectrum be allotted for commercial use. *Upper 700 MHz Second Report and Order*, 15 FCC Rcd at 5316 ¶ 36; 47 U.S.C. § 337(a)(2).

[107] *Upper 700 MHz Second Report and Order*, 15 FCC Rcd at 5312-13 ¶¶ 27-28.

[108] *See* 700 MHz Guard Band Auction Closes; Winning Bidder Announced, *Public Notice*, 15 FCC Rcd 18026 (WTB 2000) (Auction No. 33).

[109] The Auction Reform Act of 2002, Pub. L. No. 107-195, 116 Stat. 715, § 2(4) (2002). Pub.L. 107-195 § 2(4) (Auction Reform Act of 2002) provided that: "The Federal Communications Commission is also in the process of determining how to resolve the interference problems that exist in the 800 megahertz band, especially for public safety. One option being considered for the 800 megahertz band would involve the 700 megahertz band. The Commission should not hold the 700 megahertz auction before the 800 megahertz interference issues are resolved or a tenable plan has been conceived." Previously, Section 309(j)(14) of the Communications Act required the Commission to assign spectrum recovered from broadcast television using competitive bidding and envisioned that the Commission would conduct an auction of this spectrum prior to September 30, 2002. *See* 47 U.S.C. § 309(j)(14).

[110] *See* Amendment 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 MHz Reserve Band for Private Land Mobile Use Amendment 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 No. 84-1231 RM-4812, GEN Docket No. 84-1233 RM-4829, GEN Docket No. 84-1234, *Report and Order*, 2 FCC Rcd 1825 ¶ 46 (1986). We observe that the Commission suggested that the pool framework would only be for a limited time period. *Id*.

[111] *Id*. at ¶ 52.

[112] The "900 MHz" SMR band refers to spectrum allocated in the 896-901 and 935-940 MHz bands. *See* 47 C.F.R. § 90.603.

[113] *Id*. at ¶ 46.

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Commission elected to use a two-phase licensing process. In Phase I, licenses were assigned in forty "Designated Filing Areas" (DFAs) comprised of the top fifty markets. Following Phase I, the Commission envisioned licensing facilities in areas outside these markets in Phase II. In the meantime, however, licensing outside the DFAs was frozen after 1986, when the Commission opened its filing window for the DFAs.[114]

44. In 1993, the Commission adopted a *First Report & Order and Further Notice of Proposed Rulemaking* in PR Docket 89-553, modifying its Phase II proposal and seeking comment on whether to license the 900 MHz SMR band to a combination of nationwide, regional, and local systems.[115] Shortly after the *First Report & Order/Further Notice*, Congress amended the Communications Act to reclassify most SMR licensees as CMRS providers and establish the authority to use competitive bidding to select from among mutually exclusive applicants for certain licensed services.[116] Accordingly, the Commission deferred further consideration of Phase II and incorporated the 900 MHz docket (as well as the companion docket relating to 800 MHz SMR),[117] into its CMRS proceeding to ensure that the regulation of all SMRs would be consistent with the regulation of competing CMRS services such as cellular and PCS[118] and to consider the impact of auction authority on the record of the pending 900 MHz proceeding.[119]

45. In the *CMRS Third Report & Order*, the Commission further revised its Phase II proposals and established the broad outlines for the completion of licensing in the 900 MHz SMR band. The Commission concluded that (1) the 900 MHz SMR band would be licensed in twenty ten-channel blocks using MTAs as service areas; (2) licensing of mutually exclusive applicants for this spectrum would be based on competitive bidding; and (3) incumbent licensees in the band would retain the right to operate under their existing authorizations, but would be required to obtain the relevant MTA license (or obtain the consent of

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[114] *See* Private Land Mobile Application Procedures for Spectrum in the 896-901 MHz and 935-940 MHz Bands, Public Notice, 1 FCC Rcd 543 (1986). In 1989, the Commission adopted a Notice of Proposed Rule Making in PR Docket 89-553, proposing to begin Phase II licensing of SMR facilities nationwide. The NPRM contained proposals intended to add flexibility to SMR systems. The Commission continued its freeze on licensing outside the DFAs while the rulemaking was pending, but some DFA licensees elected to become licensed for secondary sites (i.e., facilities that may not cause interference to primary licensees and must accept interference from primary licensees) outside their DFAs to accommodate system expansion. 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 935-940 MHz Bands Allotted to the Specialized Mobile Radio Pool, *Notice of Proposed Rulemaking*, PR Docket No. 89-553, 4 FCC Rcd 8673 (1989).

[115] *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 935-940 MHz Bands Allotted to the Specialized Mobile Radio Pool, *First Report and Order and Further Notice of Proposed Rulemaking*, PR Docket No. 89-553, 8 FCC Rcd 1469 (1993) (*Phase II First Report & Order & Further Notice*).

[116] Omnibus Budget Reconciliation Act of 1993, Pub.L. No. 103-66 (Budget Act), § 6002(b), 107 Stat. 312, 392 (1993) (codified at 47 U.S.C. § 332).

[117] Amendment of Part 90 of the Commission's Rules to Facilitate Future Development of SMR Systems in the 800 MHz Frequency Band, *Further Notice of Proposed Rulemaking*, PR Docket No. 83-144, FCC 94-271, 59 Fed.Reg. 60,111 (Nov. 22, 1994) (*800 MHz Further Notice*).

[118] *See* Implementation of Sections 3(n) and 332 of the Communications Act-- Regulatory Treatment of Mobile Services, Second Report and Order, 9 FCC Rcd 1411 (1994) (*CMRS Second Report & Order*); *CMRS Third Report & Order*, 9 FCC Rcd 7988 (1994).

[119] *Id*.

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the MTA licensee) to be able to expand their systems.[120] In 1996 the Commission completed its auction of 900 MHz SMR licenses and announced the winning bidders to use 900 MHz SMR in major MTAs.[121]

46. In the Balanced Budget Act proceeding, the Commission amended its rules to permit CMRS use of PLMRS frequencies in the 800 MHz land mobile band and allowed PLMRS licensees to transfer their licenses to CMRS entities.[122] In the *BBA R&O and FNPRM*, the Commission asked comment on whether, in the interest of regulatory symmetry, it should extend the same rules to 900 MHz band land mobile spectrum.[123] In the *NPRM* initiating this proceeding we sought comment on this issue in light of Nextel's proposal to accommodate 800 MHz incumbents in the 900 MHz band.[124]

D. 1.9 GHz Band

47. The Commission identified a large number of potential bands to support the types of innovative mobile services that it has broadly described as AWS in the January 2001 *Notice of Proposed Rulemaking and Order*,[125] and in the August 2001 *Memorandum Opinion and Order and Further Notice of Proposed Rule Making* in the ET Docket No. 00-258 proceeding.[126] Collectively, in the *Notice* and the *Further Notice*, the Commission sought comment on the suitability for use by AWS of frequency bands that included the 1910-1930 MHz band (designated for UPCS), the 1990-2025 MHz band (allocated for Mobile-Satellite Service (MSS)) and other bands. Subsequent decisions have narrowed the spectrum bands under consideration. In the September 2001 *First Report and Order and Memorandum Opinion and Order*, the Commission modified the existing allocation in the 2500-2690 MHz band to provide additional

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[120] *CMRS Third Report & Order* at ¶ 119. The Commission noted that some licensees had been granted authorizations to construct facilities outside of the DFAs, so they could link facilities in different markets. With respect to those unprotected sites (i.e., "secondary sites"), the Commission stated that those that were licensed on or before August 9, 1994, would be entitled to primary site protection. *Id*. The Commission also eliminated loading requirements for future MTA licensees, but retained them for incumbent 900 MHz SMR licensees that do not obtain MTA licenses. *Id*. at ¶ 194.

[121] In FCC Auction No. 7, the Commission auctioned 1,019 900 MHz SMR licenses in 51 MTAs. The FCC granted most of the licenses on August 12, 1996. *See Public Notice*, "FCC Announces Grant of 900 MHz Specialized Mobile Radio MTA Licenses," 12 FCC Rcd 13055 (1996).

[122] *See* Implementation of Sections 309(j) and 337 of the Communications Act of 1934 as Amended; Promotion of Spectrum Efficient Technologies on Certain Part 90 Frequencies; Establishment of Public Service Radio Pool in the Private Mobile Frequencies Below 800 MHz; Petition for Rule Making of the American Mobile Telecommunications Association, Report and Order and Further Notice of Proposed Rule Making, WT Docket No. 99-87, RM-9332, RM-9405, RM-9705, 15 FCC Rcd 22709, 22760-22761 (1999) (*BBA R&O and FNPRM*).

[123] *Id*. at 22773-22774.

[124] *NPRM*, 17 FCC Rcd at 4918 ¶ 86.

[125] Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems, ET Docket No. 00-258, *Notice of Proposed Rulemaking and Order*, 16 FCC Rcd 596 (2001) (*AWS Notice*).

[126] Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems, ET Docket No. 00-258, ET Docket No. 95-18, and IB Docket No. 99-81, *Memorandum Opinion and Order and Further Notice of Proposed Rule Making*, 16 FCC Rcd 16043 (2001) (*AWS Further Notice*).

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flexibility, but did not reallocate the band to AWS.[127] In the November 2002 *Second Report and Order*, the Commission allocated ninety megahertz of spectrum for AWS, consisting of forty-five megahertz of Federal Government-use spectrum in the 1710-1755 MHz band and forty-five megahertz in the 2110-2155 MHz band.[128]

48. Most recently, in its February 2003 *Third Report and Order, Third Notice of Proposed Rulemaking and Second Memorandum Opinion and Order*, the Commission considered use of spectrum in the 1910-1930 MHz band, as well as spectrum allocated to the 2 GHz MSS service in the 1990-2025 MHz and 2165-2200 MHz bands.[129] In the *Third R&O*, the Commission reallocated the 1990-2000 MHz, 2020-2025 MHz, and 2165-2180 MHz bands for Fixed and Mobile services.[130] In the *AWS Third NPRM*, the Commission identified a portion of the UPCS band at 1910-1920 MHz band as spectrum that could be made available for AWS or other purposes and sought comment with regard to using it for paired or unpaired operations—including entirely new AWS applications, expansion of existing Broadband PCS operations to support new and innovative mobile services, and as relocation spectrum for existing services. In a separate proceeding, ET Docket No. 95-18, the Commission had established the procedures by which 2 GHz MSS licensees would relocate BAS and FS licensees from the 1990-2025 MHz and 2165-2200 MHz bands, respectively. In light of the reallocation of a portion of this spectrum to support new fixed and mobile services, we issued a *Third Report and Order* in ET Docket No. 95-18 revising these relocation procedures to account for the new entrants into the band.[131]

49. Although the decisions we have made in the larger AWS and related proceedings directly affect the decisions we make today, the instant action focuses exclusively on allocations we make in the 1910-1915 MHz and 1990-1995 MHz bands. Accordingly, we address each of those bands individually, and then address the merits of creating a paired allocation consisting of the two bands.

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[127] Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems, ET Docket No. 00-258, *First Report and Order and Memorandum Opinion and Order*, 16 FCC Rcd 17222 (2001) (*AWS First R&O and MO&O*).

[128] Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems, ET Docket No. 00-258, *Second Report and Order*, 17 FCC Rcd 23193 (2002) (*AWS Second R&O*).

[129] Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems, ET Docket No. 00-258, IB Docket No. 99-81, *Third Report and Order, Third Notice of Proposed Rulemaking and Second Memorandum Opinion and Order*, 18 FCC Rcd 2223 (2003) (*AWS Third R&O, Third NPRM, and Second MO&O*).

[130] *Id.* at 2238 ¶ 28. We note that there are pending petitions for reconsideration that request changes to decisions made in the *AWS Third R&O*. The thirty megahertz was reallocated as follows: fourteen megahertz of spectrum that was held in "reserve" from the 2 GHz MSS licensees, and sixteen megahertz of spectrum that was "abandoned" as a result of 2GHz MSS licensees not meeting initial milestones. *Id.* at 2239 ¶ 32.

[131] *See* Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for use by the Mobile Satellite Service, ET Docket No. 95-18, *Third Report and Order and Third Memorandum Opinion and Order*, 18 FCC Rcd 23638 (2003) (*MSS Third R&O*).

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1. 1910-1915 MHz Band

50. The 1910-1915 MHz band is a subset of a larger twenty megahertz band at 1910-1930 MHz that is allocated to the fixed and mobile services on a primary basis,[132] and is designated for use by UPCS devices.[133] Under the current rules, the 1910-1920 MHz portion of the band may be used for asynchronous (generally data) UPCS devices and the 1920-1930 MHz portion may be used for isochronous (generally voice) UPCS devices.[134]

51. Before the 1910-1930 MHz band was made available for UPCS applications, this band was used by fixed point-to-point microwave links. To facilitate the introduction of UPCS systems, the Commission established policies in the *Emerging Technologies* proceeding for the relocation of incumbent microwave systems from this band and designated a single entity, UTAM, to coordinate and manage the transition.[135] Unlike Broadband PCS, the record for UPCS deployment has been mixed. Currently, the most widespread application of the 1920-1930 MHz UPCS band is for wireless PBX systems.[136] A search of our equipment authorization database reveals no UPCS equipment authorized for the 1910-1920 MHz band.

52. In the *AWS Third NPRM*, we revisited the issue of redesignating all or a portion of the 1910-1930 MHz band for fixed and mobile services with the intent of promoting AWS use, pairing this band with spectrum in the 1990-2000 MHz band, and establishing reimbursement procedures for UTAM's relocation of incumbent microwave links in the UPCS band. As an initial matter, we decided to retain the 1920-1930 MHz band for isochronous UPCS use, given the existing voice applications that have been deployed in that band segment.[137] In the *AWS Third NPRM*, we also sought comment on reallocation options for the 1910-1920 MHz band. Specifically, we noted that asynchronous UPCS applications had not been developed since the service was authorized in 1994, and concluded the public interest would not be served if the ten megahertz of spectrum designated for asynchronous use in the 1910-1920 MHz band

[132] *See* 47 C.F.R. § 2.106.

[133] *See* 47 C.F.R. Part 15 – Radio Frequency Devices. Subpart D of Part 15 is titled "Unlicensed Personal Communications Service Devices."

[134] Asynchronous devices are defined as those "that transmit RF energy at irregular time intervals, as typified by local area network data systems," and isochronous devices are defined as those "that transmit at a regular interval, typified by time-division voice systems." *See* 47 C.F.R. § 15.303(a)-(d). To minimize the potential of systems in each band interfering with other systems operating in the same band, the Commission adopted rules requiring UPCS devices to monitor the spectrum prior to transmitting. Specific requirements for the operation of asynchronous devices in the 1910-1920 MHz band are codified at 47 C.F.R. § 15.321 and specific requirements for the operation of isochronous devices in the 1920-1930 MHz band are codified at 47 C.F.R. § 15.323.

[135] *See* Amendment of the Commission's Rules to Establish New Personal Communications Services, GEN Docket No. 90-314, *Fourth Memorandum Opinion and Order*, 10 FCC Rcd 7955 (1995). UTAM is the Commission's frequency coordinator for UPCS devices in the 1910-1930 MHz band. The UPCS band relocation policies are codified at 47 C.F.R. §§ 101.69-101.81.

[136] *AWS Third NPRM*, 18 FCC Rcd 2223 ¶ 40.

[137] *Id.* at ¶ 46.

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remained fallow when there were many applications that could put it to good use.[138]

53. In conjunction with its proposal to redesignate as much as ten megahertz in the 1910-1920 MHz band, the Commission recognized that new licensees in the band would reap the benefits of UTAM's band clearing efforts and concluded that UTAM should be adequately reimbursed for its efforts. Therefore, we sought comment on proposals for reimbursing UTAM. In particular, we proposed that UTAM be entitled to a percentage of the total reimbursement expenses incurred for the 1910-1930 MHz band as of the effective date of any final rules adopted in the AWS proceeding.[139]

54. We also note that there are several outstanding petitions that relate to use of the 1910-1915 MHz band segment. There are four petitions for waiver filed by Lucent, UTStarcom & Drew University, Ascom, and Alaska Power;[140] and two petitions for rulemaking filed by WINForum[141] and UTStarcom,[142] most of which request various unlicensed uses of the band. In the *AWS Further Notice*, the Commission sought comment on whether a portion of, or the entire, 1910-1930 MHz band should be redesignated for AWS or as relocation spectrum for incumbents in other frequency bands that are displaced by new AWS licensees.[143]

2. 1990-1995 MHz Band

55. The 1990-2110 MHz band (2 GHz BAS band) is currently used extensively by the BAS for mobile TV pickup (TVPU) operations, including electronic newsgathering (ENG) operations to cover

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[138] In 1994, the Commission anticipated that the 1910-1920 MHz band would be used for data applications such as high-speed, high-capacity LANs. *See* Amendment of the Commission's Rules to Establish New Personal Communications Services, GEN Docket No. 90-314, *Second Report and Order*, 8 FCC Rcd 7700 (1993).

[139] For example, the redesignation of five megahertz of the twenty megahertz band would entitle UTAM to twenty-five percent of its total.

[140] In its petition for waiver, Lucent requests that it be allowed to use the 1910-1920 MHz band for its Definity PBX voice system within the confines of Cook County, Illinois. Also, UTStarcom & Drew University request permission to use the 1910-1920 MHz band to install the UTStarcom Personal Access System (PAS) on the campus of Drew University in Madison, New Jersey, in order to provide wireless telephone service to the students and staff, as an extension of the university's wired telephone system. In addition, Ascom requests that it be allowed to use the 1910-1920 MHz band for its Freeset DCT 1900 PBX voice system within the confines of Cook County, Illinois; New York City; and San Francisco County, California, because several of its customers, which are boards of trade or stock exchange entities, need high-capacity indoor wireless communications. Finally, Alaska Power requests a waiver of Part 15 asynchronous spectrum etiquette to operate a community wireless voice system over the 1910-1920 MHz (data) band, in order to serve small rural areas in Alaska that are currently unserved or underserved by wireless service providers.

[141] In its petition for rulemaking, WINForum asks the Commission to allow isochronous UPCS devices to use the 1910-1920 MHz band and to phase out asynchronous use in this band, thereby providing twenty megahertz of spectrum (1910-1930 MHz) for isochronous devices, and also to modify certain technical requirements for UPCS devices in Part 15.

[142] In its rulemaking petition, UTStarcom requests that the 1910-1920 MHz band be made available for licensing via competitive bidding to permit the establishment of community wireless network service, using the UTStarcom PAS which is based on Japan's RCR-28 Personal Handy Phone System (PHS) standard.

[143] *AWS Further Notice*, 16 FCC Rcd 16043 ¶ 9.

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events of interest.[144] The original 2 GHz BAS channel plan divided the band into seven channels, each consisting of between 16.5 and 18 megahertz.[145] In the *MSS Second R&O*, the Commission reallocated the 1990-2025 MHz segment to the MSS and established a relocation plan for incumbent BAS.[146] The Commission adopted a two-phase relocation plan with a cutover schedule based on market size in which the BAS would eventually have access to seven 12 megahertz channels in the 2025-2110 MHz band at the end of the transition.[147] The Commission also identified four broad categories of BAS markets—"LA" (Los Angeles television market), "Metro" (remaining top 30 television markets), "Light" (television markets 31-100), and "Rural" (television markets 101 and above).[148] The Commission specified different relocation schedules for BAS facilities based on the size of the market.[149] For example, BAS incumbents in markets 1-30 were to be relocated on an earlier schedule than incumbents in markets 31-100.

56. In the *MSS Third R&O,* the Commission modified the plan that 2 GHz MSS licensees were to follow when relocating incumbent BAS licensees to the 1990-2025 MHz band.[150] The modified plan provides for the relocation of BAS licensees to the 2025-2110 MHz band in a single step, retains the distinction of BAS licensees by market size, and requires the relocation of those licensees within the time periods specified for their respective market categories.[151] The Commission also noted that, subsequent to its establishment of the BAS relocation plan, it had reallocated fifteen megahertz of spectrum in the 1990-

[144] A TVPU station is a land mobile station used for the transmission of TV program material and related communications from scenes of events back to the TV station or studio. *See* 47 C.F.R. § 74.601(a) (listing classes of TV broadcast auxiliary stations). The band is also used by fixed BAS operations such as studio-transmitter link (STL) stations, TV relay stations, and TV translator relay stations, but the majority of those operations are in higher frequency bands allocated to the BAS. *See* 47 C.F.R. §74.601(b). *See generally* 47 C.F.R. §74.600 ("Eligibility for license"). In addition, BAS spectrum in the 2 GHz band is authorized for use by the Cable Television Relay Service (CARS) and the Local Television Transmission Service (LTTS). *See* 47 C.F.R. §§ 74.602, 78.18(a)(6) and 101.801. We will refer to these services collectively as "BAS," and all decisions apply to CARS and LTTS operations in the band, as well as to BAS.

[145] The original 2 GHz BAS channel plan, which is still in use, is as follows: Channel 1 (1990-2008 MHz), Channel 2 (2008-2025 MHz), Channel 3 (2025-2042 MHz), Channel 4 (2042-2059 MHz), Channel 5 (2059-2076 MHz), Channel 6 (2076-2093 MHz), and Channel 7 (2093-2110 MHz).

[146] *See* Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for use by the Mobile-Satellite Service, ET Docket No. 95-18, *Second Report and Order and Second Memorandum Opinion and Order*, 15 FCC Rcd 12315 (2000) (*MSS Second R&O*).

[147] The Phase I channel plan—an interim channel plan using 102 megahertz of spectrum at 2008-2110 MHz during the transition—consisted of seven channels (six 14.5-megahertz wide channels and one 15-megahertz wide channel). The Phase II channel plan consisted of seven channels (six 12.1-megahertz wide channels and one 12.4-megahertz wide channel) within the final 85 megahertz of spectrum at 2025-2110 MHz.

[148] *MSS Second R&O*, 15 FCC Rcd at 12323 ¶ 19.

[149] *Id.* at 12326-27 ¶¶ 29-32.

[150] *MSS Third R&O*, 18 FCC Rcd 23638. In the *MSS Third R&O,* the Commission also modified the plan for relocating incumbent FS microwave licensees in the 2180-2200 MHz band to specify appropriate interference standards and relocation guidelines that new fixed and mobile licensees should use when entering the band. Any 2 GHz MSS system that can share spectrum with BAS and/or FS incumbents is exempt from relocation obligations in the band it can share. *Id.* at 23669-70 ¶¶ 62-63, 23671 ¶ 68.

[151] The new BAS channel plan consists of seven twelve-megahertz channels and two 500-kilohertz data return link (DRL) channels. *Id.* at 23666 ¶ 55.

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2025 MHz band for new AWS entrants.[152] The Commission concluded that it was necessary to give these new AWS entrants a realistic opportunity to seek early use of the band in exchange for the relocation of incumbent users, while minimizing the disruption to BAS incumbents to the extent possible.[153] The Commission found that given the need to provide for rapid introduction of AWS in the 2 GHz BAS band a two-phase relocation was no longer appropriate.[154]

57. In order to provide early access to the 1990-2025 MHz spectrum for MSS licensees while maintaining the integrity of the BAS system, the Commission set up a negotiation structure that provided for a one-year mandatory negotiation period, consistent with those procedures established in the *Emerging Technologies* proceeding.[155] Under this structure, incumbent BAS licensees in television markets 1-30 are required to negotiate in good faith with the new MSS entrant to facilitate relocation from the band.[156] Upon expiration of the mandatory negotiation period, the new MSS entrant may involuntarily relocate incumbent BAS licensees to the seven narrower channels in the 2025-2110 MHz band that make up the revised BAS channel plan.[157] Once BAS licensees in markets 1-30 and all fixed BAS stations, regardless of market size, have been relocated, MSS licensees may begin their nationwide operations in the 2000-

[152] Specifically, the fifteen megahertz of spectrum was reallocated from MSS in the 1990-2025 MHz band to support new fixed and mobile services—ten megahertz occupy the lower end (1990-2000 MHz) of the band and five megahertz are situated at the upper end (2020-2025 MHz). *See AWS Third R&O, Third NPRM, and Second MO&O*, 18 FCC Rcd 2223 ¶ 15.

[153] *MSS Third R&O*, 18 FCC Rcd at 23653-61 ¶¶ 29-44. The Commission noted that, although some time will be required to establish service rules and license new fixed and mobile entrants before they can secure entry into the band, the entry of these new AWS licensees may occur relatively quickly. Thus, the Commission expected the band to be used more fully and more quickly by the combination of the remaining MSS licensees and new AWS licensees than was anticipated in the *MSS Second R&O*, when the band was to be exclusively used by MSS licensees whose systems were expected to be deployed and to grow consistent with then distant milestones.

[154] The Commission determined that the initiation of the Phase I relocation and a subsequent quick transition to Phase II would undercut the principal rationale for a two-phase transition—that the potential to leave substantial amounts of spectrum unused for a long period of time would result in inefficient use of valuable 2 GHz spectrum. *See MSS Second R&O,* 15 FCC Rcd at 12327 ¶ 34 (stating that a phased approach will "assur[e] efficient use of the spectrum"). In addition, the Commission reasoned that, if Phase II of the transition was initiated during the time in which Phase I relocations are taking place, BAS operations could be on three different band plans, and some BAS licensees would face the disruption and down time associated with being twice relocated in a short period of time. *See MSS Third R&O,* 18 FCC Rcd at 23655 ¶ 33.

[155] *MSS Second R&O,* 15 FCC Rcd at 12328-31 ¶¶ 38-49. *See generally,* 47 C.F.R. § 101.73 (good faith negotiation requirement).

[156] For purposes of the relocation plan, BAS markets consist of Nielsen Designated Market Areas (DMAs) as they existed on June 27, 2000. *MSS Second R&O*, 15 FCC Rcd at 12331 ¶ 42.

[157] *MSS Second R&O,* 15 FCC Rcd at 12331 ¶ 48. *See generally,* 47 C.F.R. § 101.75. Under involuntary relocation, the new MSS entrant may, at its own expense, make necessary modifications to or replace the incumbent licensee's BAS equipment such that the BAS licensee receives comparable performance from the modifications or replaced equipment. The current mandatory negotiation periods adopted in the *MSS Third R&O* are as follows: MSS licensees and BAS incumbents in markets 1-30 and all BAS fixed stations, regardless of market size, begin a mandatory negotiation period that lasts for one year from December 8, 2003. *MSS Third R&O*, 18 FCC Rcd at 23659-60 ¶ 42. The Commission also provided for a sunset date, December 8, 2013, after which a new licensee's obligation to relocate an incumbent BAS operator in the 1990-2025 MHz band will end. At that time, BAS operations in the band (if any remain) will operate on a secondary basis. *See MSS Third R&O*, 18 FCC Rcd 23661-62 ¶¶ 45-47.

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2020 MHz band. On the date the first MSS licensee begins operations, all BAS licensees in markets 31-210 must immediately cease operations on existing channels 1 and 2 (1990-2025 MHz), and BAS operations will no longer be permitted in that spectrum. Also on this date, a one-year mandatory negotiation period will begin between MSS licensees and BAS incumbents in markets 31-210. Although MSS licensees may involuntarily relocate BAS incumbents at any time after the expiration of the one-year mandatory negotiation period, BAS incumbents in markets 31-100 must be relocated to the seven narrower channels in the 2025-2110 MHz band that make up the revised BAS channel plan within three years of the date the first MSS licensee begins operations, and BAS incumbents in markets 101-210 must be relocated within five years of this date.[158]

58. Petitions for reconsideration or clarification of BAS relocation decisions made in the *MSS Third R&O* were filed by the Association for Maximum Service Television (MSTV), National Association of Broadcasters (NAB), Society of Broadcast Engineers (SBE) and Boeing Company (Boeing). The Radio-Television News Directors Association (RTNDA) filed comments in support of the petition filed by the other broadcast parties. MSTV/NAB and Boeing filed oppositions. ICO Global Communications Limited (ICO), NAB/MSTV/SBE and Boeing filed reply comments. We will address the BAS relocation issues raised in these petitions in this proceeding.[159]

3. Band Pairing

59. In the AWS *Third NPRM*, we noted that the 1910-1920 MHz band (or a portion thereof) and the 1990-2000 MHz band (or a portion thereof) were well suited to be part of a paired spectrum allocation, and tentatively concluded that it would serve the public interest to adopt a five + five megahertz or a ten + ten megahertz pairing within these bands.[160] We noted that such a pairing would allow for a number of new uses, including an expansion of systems using the adjacent Broadband PCS bands. Moreover, both Nextel and parties representing MDS licensees in the 2150-2160 MHz band have expressed interest in obtaining this paired spectrum. In both instances, these parties proposed to make use of paired spectrum in the 1910-1920 MHz and 1990-2000 MHz band to offset spectrum they would no longer use, in order to address public safety interference concerns (in the case of Nextel) or would lose because the spectrum had been reallocated as part of the AWS proceeding (in the case of MDS licensees).

60. We noted that such an allocation might allow for quicker design and deployment of new equipment because existing Broadband PCS systems operate on adjacent bands, and that because the 1910-1920 MHz band lacks incumbent UPCS users, new licensees need only address relocation as it pertains to the relocation of incumbent point-to-point microwave systems in the band. We also noted that a five + five megahertz block pairing could accommodate the design specifications of both existing high-power mobile applications (such as Broadband PCS) and systems (such as WCDMA and CDMA-2000) that have commonly been proposed for AWS deployment.[161]

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[158] *MSS Third R&O,* 18 FCC Rcd at 23657 ¶ 38.

[159] *See* ¶¶ 264-276 *infra.* We note that there is an additional pending petition for clarification and reconsideration of FS relocation decisions made in the *MSS Third R&O* filed jointly by the American Petroleum Institute and UTC, but we will address the FS issues raised in this petition at a later date.

[160] *AWS Third NPRM*, 18 FCC Rcd 2223 ¶ 48.

[161] *Id.* at ¶¶ 48-49.

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V. RECORD OVERVIEW OF THE 800 MHZ PUBLIC SAFETY INTERFERENCE PROCEEDING

61. Our decisions in this *Report and Order* stem from a record that extends well beyond the typical comment/reply comment cycle. The record of over 2200 filings depicts an evolving understanding among the parties of how interference occurs in the 800 MHz band and how best to attack it at its source. Parties to the proceeding have contributed engineering, economic, legal and policy analyses, enabling us to craft a solution that is technically sound, effective, and equitable to the parties, consistent with precedent and in all respects realizable. Although we carefully reviewed all submissions in this docket, we list some of the major milestones on the road to that solution below:

- In April 2000, the Commission convened a meeting of representatives from APCO, Nextel, the CTIA, Motorola and the Public Safety Wireless Network (PSWN) to address the growing problem of interference to 800 MHz public safety systems. As an outcome of the meeting, the parties published the *Best Practices Guide*, which contained technical modifications and procedures to reduce interference.[162]

- On November 21, 2001, Nextel filed a White Paper proposing reconfiguration of the 800 MHz band to abate the interference being caused to 800 MHz public safety systems.[163] The White Paper proposed moving all non-cellular SMR and B/ILT licensees to other bands.[164] The 800 MHz spectrum available to public safety would double.[165] Nextel was to pay up to $500 million of the costs incurred by public safety entities in changing channels to facilitate band reconfiguration.[166] Other 800 MHz licensees were to bear their own cost of relocation to other bands.[167] Nextel also would relinquish its 700 MHz and 900 MHz band spectrum rights.[168] In return, Nextel would receive a nationwide allotment of ten megahertz of spectrum in the 2.1 GHz band.[169]

- On December 21, 2001, the National Association of Manufacturers (NAM) and MRFAC, one of the Commission's certified frequency coordinators, made a joint filing wherein they advanced a band reconfiguration plan which they claimed could be implemented without the need to give Nextel the requested 2.1 GHz spectrum.[170]

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[162] *See* n. 40 *supra.*

[163] *See generally* White Paper.

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

[165] *Id.* at 25.

[166] *Id.* at 8.

[167] *Id*. at 41 n. 54.

[168] *Id*. at 28-30.

[169] *Id.* at 8.

[170] *See* Letter, dated Dec. 21, 2001, from Jerry Jasinowski, President National Association of Manufacturers and Clyde Morrow, Sr., President, MRFAC, Inc. to Michael Powell, Chairman, Federal Communications Commission (NAM/MRFAC Proposal).

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- On March 15, 2002, the Commission issued the *NPRM* seeking comment on the two band reconfiguration proposals (Nextel and NAM/MRFAC) and on a variety of other issues, all related to abatement of interference to 800 MHz public safety systems.

- The Commission received 139 comments in response to the *NPRM* during the comment period of April 5, 2002, to May 6, 2002; and seventeen reply comments during the thirty-day reply comment period which ended on June 4, 2002.[171] In those comments, several parties advanced alternative band reconfiguration proposals. Other parties argued that technical measures short of band reconfiguration would remedy the interference problem. Some B/ILT and non-cellular SMR licensees objected to being required to relocate to other bands at their own expense.

- Although most of the reply comments were rebuttals to the comments, the Consensus Parties filed an extensive new proposal that effectively superseded the White Paper.[172] The new proposal included a band reconfiguration plan that would not displace B/ILT and non-cellular SMR licensees from the 800 MHz band. Nextel continued its commitment to pay up to $500 million for relocation of 800 MHz public safety systems and proposed to relinquish certain of its 700 MHz, 800 MHz, and 900 MHz spectrum rights. Nextel argued that it should be "made whole" for doing so as part of a "spectrum swap" that would net it ten megahertz of spectrum rights at 1.9 GHz.

- Because the reply comments contained new matters on which other parties had not had the opportunity to comment, a public notice establishing a September 23, 2002 deadline for the submission of comments addressing the new proposal was issued.[173] We received sixty-five comments, including one late-filed comment, in response to the *September 6th Public Notice*.

- On December 24, 2002, the Consensus Parties filed a supplement to their proposal in which Nextel agreed to pay up to $850 million of the costs of relocating any system—public safety, ESMR, non-cellular SMR or B/ILT—as necessary to implement the previously submitted band reconfiguration proposal.[174] Non-cellular 800 MHz systems were to be afforded protection against ESMR and cellular telephone interference, provided the desired signal was adequate in the area in which interference was being encountered.[175] The supplement also

[171] Two additional reply comments were filed on June 5, 2002.

[172] *See* ITA Reply Comments filed Aug. 7, 2002 (Consensus Party Reply Comments). Although ITA filed the comments, the comments represented the views of the Consensus Parties. *Id.* at iii.

[173] *See* Wireless Telecommunications Bureau Seeks Comment on "Consensus Plan" filed in the 800 MHz Public Safety Interference Proceeding, WT Docket 02-55, *Public Notice*, 17 FCC Rcd 16755 (2002) (*September 6th Public Notice*). Following the *September 6th Public Notice*, interested parties inquired whether comments could also be filed on the other band plans or proposals advanced in reply comments. On September 17, 2002, the Bureau released a *Public Notice* clarifying that all such comments were welcomed in the interest of developing a complete record. *See* Wireless Telecommunications Bureau Clarifies Scope of Comments Sought in 800 MHz Public Safety Proceeding, WT Docket 02-55, *Public Notice*, 17 FCC Rcd 17226 (2002) (*September 17th Public Notice*).

[174] *See* Supplemental Comments of the Consensus Parties, *ex parte* filing dated Dec. 24, 2002 (Supplemental Comments of the Consensus Parties).

[175] *Id.* at 39-44.

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contained a proposed band plan for use in the Canadian and Mexican border areas.[176]

- Because the revisions to the proposal were so extensive, on January 3, 2003, another pleading cycle was initiated, inviting comment on the Supplemental Comments of the Consensus Parties.[177] Sixty-four comments and thirty-nine reply comments were filed in response to the *January 3rd Public Notice*. Comments were received on February 3, 2003; reply comments on February 18, 2003, at which time the record was closed. However, as discussed below, we received an exceptionally large number of filings made pursuant to our rules allowing *ex parte* communications in a permit but disclose rulemaking proceeding such as this.[178]

- On April 18, 2003, the Chief of the Commission's Office of Engineering and Technology wrote to equipment manufacturers inquiring whether there were any recent developments in receiver technology that would aid in the reduction of interference to 800 MHz public safety systems.[179]

- On May 6, 2003, Motorola filed a letter reporting that it had developed an improved receiver with enhanced capability for rejecting intermodulation interference using switchable attenuators;[180] provided the receiver was presented with a sufficiently strong public safety signal.

- On May 29, 2003, a new party—the 800 MHz Users Coalition[181]—filed an *ex parte* document characterized as a "Balanced Approach" to interference abatement. The Balanced Approach was a set of specific procedures for identifying and eliminating interference to incumbent users and suggesting specific changes to the technical rules for the 806-824 MHz/851-869 MHz band to prevent future harmful interference to public safety and other licensees operating there. The 800 MHz Users Coalition claimed that the Balanced Approach would solve the interference problem completely and, therefore, that band reconfiguration was unnecessary.

- On July 29, 2003, Anne Arundel County, Maryland filed an *ex parte* letter confirming that the County reached a "channel swap" agreement with Nextel.[182] The County observes that the

[176] *Id.* at 35-39.

[177] *See* Wireless Telecommunications Bureau Seeks Comment on "Consensus Plan" filed in the 800 MHz Public Safety Interference Proceeding, WT Docket 02-55, *Public Notice*, 18 FCC Rcd 30 (2003) (*January 3rd Public Notice*) (comments and reply comments were due February 3, 2003, and February 18, 2003, respectively).

[178] 47 C.F.R. § 1.1200 *et. seq.*

[179] *See, e.g.,* Letter, dated Apr. 18, 2003, from Edmond J. Thomas, Chief, Office of Engineering and Technology, Federal Communications Commission, to Steve Sharkey, Director, Spectrum and Standards Strategy, Motorola, Inc.

[180] *See* Letter, dated May 6, 2003, from Steve B. Sharkey, Director, Spectrum and Standards Strategy, Motorola, Inc. to Marlene H. Dortch, Secretary, Federal Communications Commission (Motorola May 6 *Ex Parte).*

[181] *See* Letter, dated May 29, 2003, from Jill Lyon, Vice President and General Counsel, UTC to Marlene H. Dortch, Secretary, Federal Communications Commission (800 MHz Users Coalition May 29, 2003 *Ex Parte).*

[182] *See* Anne Arundel *ex parte* letter dated July 29, 2003; *see also* Letter, dated May 21, 2003, from James R. Hobson, Esq., Counsel for Anne Arundel County to Marlene H. Dortch, Secretary, Federal Communications Commission (describing frequency exchange discussions between the County and Nextel) (Anne Arundel *ex parte* letter dated May 21, 2003).

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frequency exchange agreement will relocate the County from the "middle portion" of the interleaved spectrum to slightly lower in the 800 MHz band. While the County believes that the exchange will improve the County's spectrum access and coverage, the County states that it will still be "interleaved" and near Nextel and cellular carrier's operations. Accordingly, the County submits, the channel swap, alone, cannot sufficiently eliminate all intermodulation and out-of-band emission (OOBE) interference;[183] and a permanent interference solution will require de-interleaving the channels used for noise-limited public safety systems from those allocated for high-capacity, multi-cell cellular systems.

- On August 7, 2003, the Consensus Parties filed an *ex parte* document which contained a rebuttal to the 800 MHz Users Coalition May 29, 2003 *Ex Parte* and an analysis purporting to show that the improved Motorola receivers, discussed *supra*, would not themselves provide sufficient relief from unacceptable interference; but that they would be a valuable adjunct to band reconfiguration.[184]

- On October 27, 2003, Verizon Wireless filed an economic study purporting to show that adoption of the Consensus Plan, including the allocation of ten megahertz of 1.9 GHz spectrum to Nextel, would increase the value of Nextel's spectrum rights by $7.2 billion.[185]

- On October 29, 2003, the Commission received comments from Industry Canada on the Consensus Parties' Plan. These comments addressed what Industry Canada perceived as shortcomings in the proposal for reconfiguring the 800 MHz band in the border area.[186]

- On November 3, 2003, Motorola filed an *ex parte* description of the embedded base of Motorola products in the 800 MHz band indicating which Motorola radios could be supplied with, or converted to, switchable attenuator circuitry.[187]

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[183] *See* ¶¶ 90-91 *infra.*

[184] *See* Ex Parte Submission of the Consensus Parties, *ex parte* filing dated August 7, 2003 (Consensus Parties August 7 *Ex Parte*).

[185] *See* "Determination of the Fair Market Value of the Certain Portions of FCC Licensed Wireless Spectrum Proposed For Realignment by Nextel Communications, Inc. under FCC WT Docket No. 02-55 as of December 31, 2002," by Kane Reece Associates, Inc., attached to Letter, dated Oct. 27, 2003, from John T. Scott, III, Esq., Vice President and Deputy General Counsel, Verizon Wireless to Marlene H. Dortch, Secretary, Federal Communications Commission (Kane Reece Study). *See also* Letter, dated May 27, 2004, from John T. Scott, III, Vice President and Deputy General Counsel, to Marlene H. Dortch, Secretary, Federal Communications Commission (arguing that contiguous spectrum is more valuable than non-contiguous spectrum).

[186] The Industry Canada comments were dated March 26, 2003. Industry Canada did not include an identifying docket number when it filed the document with the Commission's Secretary. Consequently, the filing was not associated with the docket file until October 29, 2003, when a Wireless Telecommunications Bureau attorney discovered a copy of the comments and directed that they be entered them into the record as an *ex parte* filing. *See* 47 C.F.R. § 1.1200 *et. seq.*

[187] *See* Letter, dated November 3, 2003, from Steve B. Sharkey, Director, Spectrum and Standards Strategy, Motorola, Inc. and Dr. Robert Kubik, Manager, Spectrum and Standards Policy, Motorola, Inc. to Edmond Thomas, Chief, Office of Engineering and Technology, Federal Communications Commission and John Muleta, Esq., Chief, Wireless Telecommunications Bureau, Federal Communications Commission (Motorola November 3 *Ex Parte).*

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- On November 6, 2003, the City of Denver filed a "channel swap" agreement it had reached with Nextel. Nextel and Denver entered into this agreement because implementation of the technical fixes identified in the *Best Practices Guide* had been ineffective in completely abating interference to Denver's 800 MHz public safety system.[188]

- On November 20, 2003, Nextel filed an *ex parte* economic evaluation of the Consensus Plan, the Motorola Plan, the July 9, 2003 CTIA economic estimates and the CTIA/UTC plan.[189]

- On December 24, 2003, the City and County of San Diego filed a "channel swap" agreement that the City and County reached with Nextel due to their belief that the Consensus Plan, as designed, in and of itself, will not work in San Diego.[190] The City and County agreement incorporates certain aspects of the Consensus Plan (*i.e.* Appendix F, as amended August 2003) and some revisions to the Balanced Approach Plan[191] in order to adequately address the City and County's concerns for reliable communications, mutual aid NSPAC channels, and interoperability.

- On February 10, 2004, Verizon Wireless filed a study by Kane Reece Associates contesting the spectrum evaluation contained in the Nextel Sunfire *ex parte.*[192]

- On February 19, 2004, Verizon Wireless filed a document entitled "Determination of the Fair Market Value of the Spectrum Proposed for Realignment by Nextel Communications, Inc." which reiterated their claim that adoption of the Consensus Plan, including the allocation of ten megahertz of 1.9 GHz spectrum rights to Nextel, would increase the value of Nextel's spectrum rights by $7.2 billion.[193] In addition, Verizon filed the following documents:

    - Pro Forma Analysis of Cingular/AT&T Wireless Transaction as of February 17, 2004, by Kane Reece;

    - Legg Mason, Spectrum Swap Looks Headed Nextel's Way, But With Wrinkle,

[188] *See* Letter, dated November 3, 2003, from Alan S. Tilles, Esq., Counsel to the City and County of Denver to John Muleta, Esq., Chief, Wireless Telecommunications Bureau, Federal Communications Commission. Because this filing contains a Statement of Work the parties refer to it as the Denver SOW.

[189] *See* Letter, dated November 20, 2003, from Lawrence R. Krevor, Esq., Vice President-Government Affairs, Nextel to Marlene H. Dortch, Secretary, Federal Communications Commission. Attached to one letter is an economic study authored by Dr. Gregory L. Rosston (Nextel Rosston *Ex Parte).* Attached to the second letter is "The Consensus Plan: Promoting the Public Interest," by Sun Fire Group, LLC, in which the value of the 1.9 GHz spectrum was inferred from the prices of recent secondary market transactions, asserted to be comparable spectrum licenses (Sun Fire Study*).*

[190] *See ex parte* comments, dated December 24, 2003, from City and County of San Diego (San Diego *Ex Parte*). The "San Diego Solution" described negotiations between the County, City, Nextel, APCO, UTC and representatives of the 800 MHz Users' Coalition.

[191] *See id*. at Attachment 1 (Balanced Approach – San Diego City and County Revision).

[192] *See* Kane Reece Analysis of Sunfire Study, dated February 9, 2004, attached to Letter, dated February 10, 2004, from John T. Scott III, Esq., Vice President and Deputy General Counsel – Regulatory Law, Verizon Wireless to Marlene Dortsch, Secretary, Federal Communications Commission (Kane Reece Study II).

[193] *See* Determination of the Fair Market Value of the Spectrum Proposed for Realignment by Nextel Communications, Inc., filed February 19, 2004.

January 22, 2004; and

- Goldman Sachs, NXTL (U/C) & FCC moving towards negotiated agreement on spectrum issues, October 5, 2003.

- On March 18, 2004, Nextel filed an analysis of the Kane Reece Spectrum Valuation challenging that valuation's conclusion that adoption of the Consensus Plan would result in a windfall to Nextel.[194]

- On March 31, 2004, Verizon Wireless filed a petition requesting that the Commission auction spectrum rights in the 1910-1915 MHz and 1990-1995 MHz bands.[195] On April 8, 2004, Verizon Wireless informed the Wireless Telecommunications Bureau that it is prepared to submit an initial opening round bid of $5 billion in such an auction.[196]

- On April 14, 2004, Verizon Wireless filed a letter indicating that Nextel had originally sought replacement spectrum in the 2.1 GHz band, instead of 1.9 GHz.[197]

- On April 22, 2004, Nextel filed a letter stating that it could not accept spectrum rights in the 2.1 GHz band in exchange for its commitment to fund the reconfiguration of the 800 MHz band.[198]

- On April 29, 2004, CTIA filed a proposal in which Nextel would establish a Public Safety Trust Fund with a minimum deposit of $3 billion. An independent trustee would administer

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[194] *See* Economic Analysis of the Kane Reece Spectrum Valuation by Dr. Gregory R. Rosston, dated March 18, 2004, attached to Letter, dated February 10, 2004, from Lawrence R. Krevor, Esq., Vice President-Government Affairs, Nextel to Marlene H. Dortch, Secretary, Federal Communications Commission. *See also* Analysis of the Kane Reece Spectrum Valuation by American Appraisal Associates, dated May 6, 2004 attached to Letter, dated May 6, 2004, from Lawrence R. Krevor, Esq., Vice President-Government Affairs, Nextel to Marlene H. Dortch, Secretary, Federal Communications Commission. *But see* Letter, dated April 8, 2004, from John T. Scott, III, Verizon Vice President and Deputy General Counsel to Marlene H. Dortch, Secretary, Federal Communications Commission (critique of Rosston Study); Letter, dated May 24 from Kane Reece Associates, Inc., to Donald C. Brittingham, Verizon, Director of Wireless Spectrum Policy attached to Letter, dated May 27, 2004, from John T. Scott, III, Verizon Vice President and Deputy General Counsel to Marlene H. Dortch, Secretary, Federal Communications Commission (critique of American Appraisal Associates analysis of Kane Reece Spectrum Valuation).

[195] Petition of Verizon Wireless for Expedited Action to License 1.9 GHz Spectrum for Personal Communications Services through Competitive Bidding, filed March 31, 2004.

[196] *See* Letter, dated April 8, 2004, from Margaret P. Feldman, Vice President Business Development, Verizon Wireless to John B. Muleta, Chief, Wireless Telecommunications Bureau, Federal Communications Commission.

[197] *See* Letter, dated April, 14, 2004, from R. Michael Senkowski, to Marlene H. Dortch, Secretary, Federal Communications Commission.

[198] *See* Letter, dated April 22, 2004, from Robert S. Foosaner, Senior Vice President and Chief Regulatory Officer, Nextel to Marlene H. Dortch, Secretary, Federal Communications Commission. *See also* Letter, dated May 11, 2004, from Timothy M. Donahue, Chief Executive Officer and President, Nextel to Michael K. Powell, Chairman, Federal Communications Commission; Letter, dated May 14, 2004, from Robert S. Foosaner, Senior Vice President and Chief Regulatory Officer, Nextel to Marlene H. Dortch, Secretary, Federal Communications Commission.

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this fund, which would fund band reconfiguration.[199] In exchange, CTIA proposes the Commission grant Nextel spectrum rights to ten megahertz in the 2.1 GHz band.

- On May 3, 2004, Nextel submitted a plan for relocating BAS licensees out of the 1990-2025 MHz band. Under this plan, Nextel would commit to funding the entire cost of relocating all BAS incumbents nationwide from the 1990-2025 MHz band, subject to Nextel's being assigned replacement spectrum in the 1910-1915/1990-1995 MHz band and receiving full credit for its contributions to the BAS relocation costs, which MSTV, NAB and Nextel estimate at $512 million.[200]

- On May 7, 2004, CTIA filed an analysis of the band clearing costs, propagation characteristics, equipment costs and valuation of the 2.1 GHz band.[201]

- On June 4, 2004, Nextel offered to surrender its rights to an additional two megahertz of 800 MHz spectrum as well as its rights to 700 MHz Guard Band Spectrum in forty markets, thus estimating that Nextel's spectrum and financial contributions would total $5.1 billion.[202]

- On June 16, 2004, Nextel modified its June 4 submission to include a sliding scale of interference protection in the 816-817 MHz/861-862 MHz band segment.[203]

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[199] *See* Letter, dated April 29, 2004, from Steve Largent, President and Chief Executive Officer, CTIA to Kevin J. Martin, Commissioner, Federal Communications Commission (CTIA April 29 *Ex Parte*).

[200] *See* Joint Proposed BAS Relocation Plan, dated May 3, 2004, from David Donovan, MSTV, Edward O. Fritts, President and CEO, NAB, and Roberts S. Foosaner, Senior Vice President and Chief Regulation Officer, Nextel. (MSTV/NAB/Nextel May 3, 2004 *Ex Parte*). *See also* Letter dated May 12, 2004, from Jack Goodman, Senior Vice President and Council, NAB to Marlene H. Dortch, Secretary, Federal Communications Commission (expressing support for Nextel/BAS relocation plan).

[201] *See* Letter, dated April 29, 2004, from Diane J. Cornell, Vice President, Regulatory Policy, CTIA to Marlene H. Dortch, Secretary, Federal Communications Commission. *See also* Letter, dated May 13, 2004, from Diane J. Cornell, Vice President, Regulatory Policy, CTIA to Marlene H. Dortch, Secretary, Federal Communications Commission (arguing that CTIA compromise plan is superior than Consensus Plan). *See also* Letter, dated May 27, 2004, from Helgi Walker, Council to Verizon Wireless to Marlene H. Dortch, Secretary, Federal Communications Commission (concurring with CTIA proposal). *See also* Letter dated May 19, 2004 from Steve Largent, President and Chief Executive Office, CTIA, to Michael K. Powell, Chairman, Federal Communications Commission (responding to Nextel May 14 letter).

[202] *See* Letter, dated June 4, 2004, from Robert S. Foosaner, Senior Vice President and Chief Regulatory Officer, Nextel to Marlene H. Dortch, Secretary, Federal Communications Commission (Nextel June 4, 2004 *Ex Parte*); Letter, dated June 21, 2004, from Regina Keeney, Counsel to Nextel to Marlene H. Dortch, Secretary, Federal Communications Commission (revising estimate to $5.4 billion to reflect increased filter costs) (Nextel June 24, 2004 *Ex Parte*). *See generally*, Letter dated June 14, 2004, from Vincent R. Stiles, APCO President, to Michael Powell, Chairman, Federal Communications Commission (supporting 4.5 MHz proposal). *But see* Letter, dated June 9, 2004, R. Michael Senkowski, Counsel to Verizon Wireless to Marlene H. Dortch, Secretary, Federal Communications Commission; Letter, dated June 16, 2004, R. Michael Senkowski, to Marlene H. Dortch, Secretary, Federal Communications Commission (criticizing 4.5 MHz proposal) (Nextel June 9, 2004 *Ex Parte*).

[203] *See* Letter, dated June 16, 2004, from Lawrence R. Krevor, Vice President-Government Affairs, Nextel to Marlene H. Dortch, Secretary, Federal Communications Commission. *See also* Letter, dated June 9, 2004, from Robert S. Foosaner, Senior Vice President and Chief Regulatory Officer, to Marlene H. Dortch, Secretary, Federal Communications Commission (describing technical details of 4.5 MHz proposal).

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- On June 30, 2004, Verizon Wireless submitted a legal analysis claiming that awarding Nextel spectrum rights in the 1.9 GHZ band violated the Anti Deficiency Act (ADA)[204] and the Miscellaneous Receipts Act (MRA).[205]

- On July 1, 2004, Verizon Wireless supplemented its June 30, 2004 legal analysis to further contend that the Nextel/BAS relocation plan violates the ADA and MRA.[206]

- On July 1, 2004, Nextel submitted a legal analysis claiming that awarding Nextel spectrum rights in the 1.9 GHz band would not violate the ADA and MRA.[207]

- On July 27, 2004, Nextel filed confirmations of its earlier record estimates of the costs it will incur installing filters in order to limit emissions into the lower-adjacent band and its retuning costs in order to complete band reconfiguration. The filing also discussed the eighteen month milestone.[208]

VI. DISCUSSION

A. The Commission's Spectrum Management and Legal Authority

62. Section I of the Act charges the Commission with "promoting safety of life and property through the use of wire and radio communication."[209] In the face of this mandate, we cannot fail to take effective action to address the untenable situation that has developed in the 800 MHz band—the fact that the safety of life and property is placed at risk daily when 800 MHz public safety radios fail due to interference from ESMR and cellular systems, thereby severing the communications link that public safety officers rely upon to summon help, coordinate actions with their fellow officers, request emergency medical services, and respond to incidents that threaten our Homeland Security. If unacceptable interference in the 800 MHz band were to remain unabated, this Commission would fail to achieve one of its prime directives: to manage the spectrum in a manner that promotes safety of life and property.

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[204] 31 U.S.C. § 1341.

[205] 31 U.S.C. § 3302. *See* Letter, dated June 28, 2004, from William Barr, Verizon to Michael Powell, Chairman, Federal Communications Commission; Letter dated June 30, 2004, from Walter Dellinger to Michael Powell, Chairman, Federal Communications Commission. *See also* Letter dated April 8, 2003, from Helgi C. Walker, Counsel to Verizon Wireless to Marlene H. Dortch, Secretary, Federal Communications Commission.

[206] *See* Letter, dated July 1, 2004, from Helgi Walker, Counsel to Verizon Wireless to Michael K. Powell, Chairman, Federal Communications Commission.

[207] *See* Letter, dated July 1, 2004, from Regina M. Keeney, Counsel to Nextel to Marlene H. Dortch, Secretary, Federal Communications Commission, accompanied by Letter, dated July 1, 2004, from Richard Thornburgh to Michael Powell, Chairman, Federal Communications Commission.

[208] *See* Letter, dated July 27, 2004, from Regina M. Keeney, Counsel to Nextel to Marlene H. Dortch, Secretary, Federal Communications Commission.

[209] 47 U.S.C § 151. *See also* 4.9 GHz Band Transferred from Federal Government Use, WT Docket No. 00-32, *Memorandum Opinion and Order and Third Report and Order*, 18 FCC Rcd 9152 (2003) (allocating spectrum for public safety in furtherance of Commission's Section 1 obligation to promote safety of life and property); E911 Accuracy Standards Imposed on TIER III Carriers for Locating Wireless Subscribers Under Rule Section 20.18(H), WT Docket No. 02-377, Order, FCC 03-297, (2003) (denying a petition for forbearance from certain E911 requirements because of the strong connection between such requirements and the Commission's obligation to promote safety of life).

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63. We conclude that in order to abate the interference in the 800 MHz band, the Commission has the authority to modify licenses so as to locate licensees in other portions of the spectrum. Indeed, in the Auction Reform Act of 2002, Congress found that one "option" available to the Commission to resolve the interference problem that exists in the 800 MHz band would involve the use of spectrum outside of the 800 MHz band.[210] Clearly Congress indicated its approval of our consideration of allocating spectrum in the Upper 700 MHz band, as well as other options, to resolve the interference problems in the 800 MHz band. As we discuss *infra,* over the course of this proceeding, we have considered several bands, including the Upper 700 MHz band, to facilitate the restructuring of the band. While the Upper 700 MHz band has not proven to be a viable option because of the inherent fluidity of the transition to DTV, we have found that the 1.9 GHz band is an option, and, in fact, the most viable and best option, to facilitate the restructuring of the 800 MHz band as contemplated by Congress.

64. We find we have legal authority under the Communications Act to implement the spectrum management plan set forth in this *Report and Order* including the authority to (i) modify Nextel's licenses to permit operations in the 1.9 GHz band and (ii) include relocation and potential "anti-windfall" payments from Nextel within the rebanding plan. Pursuant to Sections 316, 303, 301, and 4(i) of the Act,[211] we have broad authority to effectuate a spectrum management plan that includes license modifications to serve the public interest. Further, the courts have recognized and deferred to our policy responsibilities in assessing the public interest and exercising this authority.[212]

65. The Commission has the authority to modify licenses pursuant to Section 316 to solve the interference problems in the 800 MHz band. Specifically, Section 316(a)(1), provides that "[a]ny station license . . . may be modified by the Commission . . . if in the judgment of the Commission such action will promote the public interest, convenience and necessity."[213] As the D.C. Circuit recently explained in *California Metro Mobile Communications v. FCC* (*CMMC*), "Section 316 grants the Commission broad power to modify licenses; the Commission need only find that the proposed modification serves the public interest, convenience and necessity."[214] The D.C. Circuit has held that such modifications do not have to

[210] The Auction Reform Act of 2002. *See* n. 109 *supra*

[211] 47 U.S.C. §§ 316, 303, 301, and 154(i).

[212] *See, e.g., Teledesic LLC v. Federal Communications Commission*, 275 F.3d 75, 84 (D.C. Cir. 2001) ("[W]hen it is fostering innovative methods of exploiting the spectrum, the Commission 'functions as a policymaker and, inevitably, a seer—roles in which it will be accorded the greatest deference by a reviewing court.'") (citation omitted).

[213] 47 U.S.C. § 316 (a)(1).

[214] *California Metro Mobile Communications v. FCC,* 365 F.3d 38, 45 (D.C. Cir.2004) (*CMCC*). In *CMMC***,** the court upheld the authority of the Commission to modify CMMC's license by deleting a frequency which had the potential to cause interference to an existing licensee. The Commission undertook the action to correct an error of a frequency coordinator, who recommended that the Commission grant CMMC a license after the coordinator had incorrectly determined that the requested frequencies would not cause interference to any existing licensee. Among other things, the court found that section 316 is not unambiguous and therefore deferred to the Commission's interpretation that "section 316 contains no limitation on the time frame within which it may act to modify a license and that its action under the section is not subject to the limitations on revocation, modification or reconsideration imposed by [s]ection 405." 365 F.3d at 45 (*citations omitted*). The court also found that the Commission's modification served the public interest, even though the modification was based on potential rather than actual interference, and it caused a minor disruption in CMMC's operations. *Id*. at 46.

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be consensual[215], that license holders may be moved on a service-wide basis, without license-by-license consideration,[216] and that eliminating harmful interference is an accepted basis for ordering license modifications.[217]

66. Furthermore, the D.C. Circuit has upheld the Commission's authority to allocate the relocation costs associated with license modifications among the affected licensees. In *Teledesic, LLC v. FCC*, 275 F.3d 75, n. 212 *supra*, the court upheld the Commission's rules requiring satellite owners to pay the relocation costs of terrestrial users that they chose to displace as part of a rebanding of shared spectrum. The court noted that the approach to allocating relocation costs was similar to approaches that the Commission had adopted in both the Emerging Technologies and 2 GHz MSS relocation proceedings.[218]

67. The D.C. Circuit also has upheld license modifications that involve relocating existing licensees to new spectrum, outside of the auction process. Specifically, the court found that the Commission may approve spectrum swaps between existing licensees, without offering the swapped spectrum to alternative users.[219] The Commission also has moved licensees to unassigned spectrum under its modification authority. In the *MSS Order* the Commission, citing *Rainbow Broadcasting*, exercised its authority under Section 316 to assign open spectrum in the upper and lower L-bands to Motient Services (Motient).[220] The spectrum replaced spectrum that the Commission had assigned to Motient in the upper L-band that the United States had been unable to coordinate internationally for use by a U.S. licensee.[221] The Commission found that it was in the public interest to ensure that the existing MSS licensee was afforded sufficient spectrum to provide a viable service to remote and sparsely populated areas expeditiously, before opening up this spectrum to additional applications.[222] Similarly, in the *DEMS*

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[215] *Peoples Broadcasting Co. v. United States*, 209 F.2d 286, 288 (D.C. Cir. 1953). In *People's Broadcasting*, the court upheld the Commission's authority to modify a television station license without an application by the licensee for such a modification, noting that "if modification of licenses were entirely dependent upon the wishes of existing licensees, a large part of the regulatory power of the Commission would be nullified."

[216] *Community Television, Inc. v. FCC*, 216 F.3d 1133, 1140 (D.C. Cir. 2000). In *Community Television*, the court upheld the FCC's rules establishing procedures and timetable under which television broadcasting would migrate from analog to digital technology.

[217] *See CMCC,* 365 F.3d 38, n. 214 *supra.*

[218] *Teledesic LLC v. Federal Communications Commission*, 275 F.3d at 86.

[219] *See Rainbow Broadcasting v. FCC*, 949 F.2d 405, 410 (D.C. Cir. 1991)(*Rainbow Broadcasting*), in which the court held the Commission had the authority to allow noncommercial and commercial television licensees to exchange channels without exposing licensees to competing applications, despite third-party interest in acquiring swapped license. We disagree with commenters who assert that subsequent amendments in the Balanced Budget Act of 1997, which generally requires auctions whenever mutually exclusive applications for initial licenses are filed, change the applicability of these cases. *See* Attachment to Letter, dated April 2, 2004 from R. Michael Senkowski, Esq. to John Rogovin, General Counsel, Federal Communications Commission at 6. For the reasons we discuss at ¶ 73 *infra,* we believe that Section 309(j), as amended by the Balanced Budget Act, is consistent with our conclusion that we have the authority to avoid mutual exclusivity in this context if it is in the public interest to do so.

[220] Establishing Rules and Policies for the Use of Spectrum for Mobile Satellite Services in the Upper and Lower L-Band, *Report and Order*, 17 FCC Rcd 2704 (2002) (*MSS Order*).

[221] *MSS Order,* 17 FCC Rcd at 2795 ¶ 1.

[222] *MSS Order,* 17 FCC Rcd at 2713-2714 ¶ 25.

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Relocation Order,[223] the Commission, pursuant to Section 316, modified licenses to relocate the operations of certain Digital Electronic Message Service (DEMS) licensees from the 18 GHz band to the 24 GHz band, in order to accommodate Department of Defense military systems.

68. Here, we have determined that the subject license modifications clearly serve the public interest, convenience and necessity, as required by Section 316, because—as the record in this proceeding establishes—these modifications are essential components of the most effective and equitable band restructuring plan required to resolve serious and heretofore intractable interference problems—problems that have impaired and continue to impair public safety operations in the 800 MHz band.[224] As we stated at the outset of this *Report and Order*, to ensure that the Nation's public safety agencies can effectively carry out their Homeland Security obligations, we must remedy the problem of interference in the 800 MHz band and ensure that public safety agencies have access to sufficient spectrum. Relocating public safety users out of the 800 MHz band is not a viable option, for the reasons discussed at ¶ 207, *infra.* Without the removal of all of Nextel's 800 MHz spectrum below 817 MHz and the relocation of other licensees in the band (including public safety licensees), the spectrum-based problems facing public safety agencies in the 800 MHz band cannot be satisfactorily resolved. For practical reasons, we cannot place the financial burden of relocation on the thousands of incumbent non-cellular 800 MHz licensees, including state and local public safety agencies with very limited resources, and expect that the interference problem would be resolved in either a timely or acceptable manner. And, we would be failing to carry out our statutory duties as spectrum manager if we were to allow the current interference crisis to languish. By modifying Nextel's licenses to authorize operations in the 1.9 GHz band, we have created a mechanism to enable the band restructuring to occur without despite the significant, spectral, operational, financial and other obstacles. As the record demonstrates, this is the best option available to us.[225]

69. We also find that public safety rebanding does not trigger an auction requirement. We disagree with parties who argue that the *Ashbacker* doctrine and Section 309(j) of the Communications Act preclude us from granting the 1.9 GHz spectrum rights to Nextel pursuant to Section 316. In *Ashbacker*,[226] the Supreme Court held that under Section 309(a) of the Act,[227] in cases in which there are mutually exclusive applications for a license, the Commission must provide a hearing for each applicant. *Ashbacker*, however, did not preclude the Commission from adopting licensing mechanisms through its rulemaking process that foreclose competing applications. Subsequent to *Ashbacker*, Congress enacted Section 309(j) of the Act, which generally requires the Commission to dispose of mutually exclusive applications by auction.[228] Nothing in Section 309(j) requires the Commission to accept mutually

[223] Amendment of the Commission's Rules to Relocate the Digital Electronic Message Service from the 18 GHz Band to the 24 GHz band and to Allocate the 24 GHz Band for Fixed Service, *Order*, 12 FCC Rcd 3471 (1997).

[224] *See* ¶ 61 *supra* and ¶¶ 213-216 *infra.*

[225] *See* ¶¶ 217-222 *infra.*

[226] *Ashbacker v. FCC*, 326 U.S. 327 (1945).

[227] 47 U.S.C. § 309(a). This provision authorizes the Commission, upon examination of an application for a station license, to grant it if the Commission determines that the public interest, convenience, and necessity would be served by the grant.

[228] 47 U.S.C. § 309(j)(1) provides "[i]f, consistent with the obligations described in paragraph (6)(e), mutually exclusive applications are accepted for any initial license or construction permit, then . . . the Commission shall grant the license or permit to a qualified applicant through a system of competitive bidding that meets the requirements of this subsection."

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exclusive applications in the first place. Moreover, Section 309(j) applies only to initial licenses. As noted above, the D.C. Circuit has found that reassignments to new spectrum are not fundamental changes to the original licenses that themselves trigger the requirements for license revocation and reissuance.[229] Here, our order changing the frequency of licensees' facilities neither triggers a right to file competing applications under *Ashbacker* nor compels an auction pursuant to Section 309(j). As the court found in the *Rainbow* case,[230] the Commission is not required to open all frequencies for competing applications, as long as it provides a reasoned explanation of its decision not to do so. These principles are consistent with other Commission decisions where we modified licenses pursuant to Section 316. For example, in the *MSS Order*, where the Commission exercised its authority under Section 316 to assign to one licensee the rights for up to twenty megahertz of open spectrum, the Commission found that the proceeding "did not involve initial applicants and the hearing rights of eligible new applicants under Section 309."[231]

70. We also disagree with parties who argue that the 1.9 GHz spectrum to be assigned to Nextel is so much more valuable than the spectrum it is currently authorized to operate that the difference elevates the modification process to a "grant of an initial license, which under Section 309(j) [must] be subject to auction procedures."[232] To support this position, CTIA cites the Commission's *Competitive Bidding Second Report and Order* in which it adopted rules for competitive bidding pursuant to Section 309(j):

> Where a modification would be so major as to dwarf the licensee's currently authorized facilities and the application is mutually exclusive with other major modifications or initial applications, the Commission will consider whether these applications are in substance more akin to initial applications and treat them accordingly for purposes of competitive bidding.[233]

71. As a preliminary matter, the modification of Nextel's licenses does not create a circumstance in which an "application is mutually exclusive with other major modifications or initial applications." The Commission has accepted no other applications for the 1.9 GHz spectrum.[234] At least one commercial provider has stated its intention to participate in an "immediate auction of the 1.9 GHz spectrum."[235]

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[229] *See Community Television, Inc. v. FCC,* 216 F.3d 1133, n. 229 *supra*.

[230] *Rainbow Broadcasting,* 949 F.2d at 409-410.

[231] *MSS Order* 17 FCC Rcd at 2175 ¶ 27. *See also* Amendment of the Commission's Rules to Relocate the Digital Electronic Message Service from the 18 GHz Band to the 24 GHz band and to Allocate the 24 GHz Band for Fixed Service, *Memorandum Opinion and Order*, 13 FCC Rcd 15147 at 15173 ¶ 59 (1998) ("Because its actions [to relocate *DEMS* licensees to new spectrum] were license modifications under authority of Section 316, and did not involve the grant of initial licenses, the Commission was not authorized under 309(j) of the Act to use auction procedures.").

[232] *See, e.g.,* U.S. Cellular Comments at 5; CTIA December 4, 2003 *Ex Parte* at 8.

[233] CTIA December 4, 2003 *Ex Parte* at 8-9, *citing Implementation of Section 309(j) of the Communications Act—Competitive Bidding,* PP Docket No. 93-253, *Second Report and Order*, 9 FCC Rcd 2348, 2355 ¶ 37 (1994).

[234] Verizon Wireless submitted a ULS application and a Form 175 application for the 1910-1915 MHz/1990-1995 MHz band but these applications were dismissed on July 7, 2004. *See* Letter, dated July 7, 2004, from Kathryn Garland, Deputy Chief, Auctions and Spectrum Access Division, Wireless Telecommunications Bureau, Federal Communications Commission to John T. Scott, III, Cellco Partnership d/b/a Verizon Wireless; Letter, July 7, 2004, from Wireless Telecommunications Bureau to John T. Scott, III, Cellco Partnership d/b/a Verizon Wireless.

[235] Verizon Wireless White Paper at 9 (April 1, 2004) citation omitted

Nevertheless, we have not authorized the filing of applications for this spectrum, have never proposed to do so, and, for the reasons set forth herein relating to important public safety concerns, conclude that it is not in the public interest to open the spectrum for competitive applications.

72. The above-quoted language from the *Competitive Bidding Second Report and Order* also indicates that the Commission "will consider" the nature of the modification if it works a major change, and this is exactly what we have done here. The plan we adopt today places Nextel in a comparable position to that which it now occupies and contains a cash payment mechanism that would become effective if necessary to ensure that Nextel does not reap a windfall from savings in reconfiguration costs. As detailed elsewhere in this *Report and Order*, we have found that the license modifications that we are ordering in this proceeding clearly promote the public interest, convenience, and necessity, as required by Section 316, and that an alternative process that does not assign the 1.9 GHz band for use in connection with the public safety rebanding would, at best, provide fewer and less effective public interest benefits[236]

73. Moreover, Section 309(j) supports our conclusion that we have the authority to avoid mutual exclusivity in this context when it is in the public interest to do so. Although 309(j) generally requires auctions whenever mutually exclusive applications for initial licenses are filed, Section 309(j)(6)(E) provides that "[nothing in this subsection shall] be construed to relieve the Commission of the *obligation in the public interest* to continue to use engineering solutions, negotiation, threshold qualifications, service regulations, and other means in order to avoid mutual exclusivity *in application and licensing proceedings.*"[237] Thus, in Section 309(j)(6)(E), Congress recognized that the Commission can determine

[236] Similarly, we disagree with parties who assert that under *Fresno Mobile Radio v. FCC,* 165 F.3d 965 (D.C. Cir. 1999), the grant of the 1.9 GHz spectrum must be considered an "initial license" subject to auction under Section 309(j). *See Verizon White Paper at 10-11 and CTIA Ex Parte* (December 4, 2003) at 8-9. In *Fresno*, a group of incumbent licensees challenged the Commission's decision to auction newly established geographic-area SMR licenses in the upper 200 channels of the SMR band, arguing that, to the extent the new licenses did not cover a new service, new territory or previously unused spectrum, the Commission should have treated the SMR authorizations as modifications of the incumbents' existing licenses and not as auctionable "initial licenses" within the meaning of Section 309(j)(1). The court disagreed, upholding the Commission's determination that it could classify a new license as an "initial" one, even if the initial and preexisting licenses have such overlap, "if it is the first awarded for a particular frequency under a new licensing scheme, that is, one involving a different set of rights and obligations for the licensee." *Fresno*, 165 F.3d at 970. As explained above, we do not consider the authorizations that Nextel will hold as a result of the restructuring process to differ significantly enough—in terms of rights and responsibilities—from Nextel's existing authorizations so as to warrant treatment as the issuance of an initial license rather than as a modification of license. Moreover, even if we were to classify the 1.9 GHz authorization as a matter of initial licensing, we have not authorized the filing of mutually exclusive applications; none are, in fact, on file; and, as discussed in ¶ 73, *infra,* we have the authority—and obligation—to impose threshold qualifications that preclude the filing of such mutually exclusive applications if we determine that the public interest requires such an approach.

[237] 47 U.S.C. §309(j)(6)(E) *(emphasis added).* The legislative history of the Balanced Budget Act of 1997 also makes clear that Congress did not want the Commission to interpret its expanded auction authority in a way that would reduce its Section 309(j)(6) (E) obligation: "[T]he conferees emphasize that, notwithstanding its expanded auction authority, the Commission must still ensure that its determinations regarding mutual exclusivity are consistent with the Commission's obligations under section 309(j)(6)(E). The conferees are particularly concerned that the Commission might interpret its expanded competitive bidding authority in a manner that minimizes its obligations under section 309(j)(6)(E), thus overlooking engineering solutions, negotiations, or other tools that avoid mutual exclusivity." H.R. Conf. Rep. No. 105-217, 105th Cong., 1st Sess., at 572 (1997). *See also* Commission's Rules Regarding Multiple Address Systems, *Report and Order*, 15 FCC Rcd11956, 11962-63 (2000) ("Section 309 (j)(6) (E) has been construed to give the Commission broad authority to create or avoid mutual exclusivity in licensing, based on the Commission's assessment of the public interest," *citing DirectTV, Inc. v. FCC*, 110 F.3d 816, 828 (D.C. Cir. 1997)). *Cf. Benkelman Telephone Co. v. FCC*, 220 F.3d 601, 605-606 (D.C. (continued….)

that its public interest obligation warrants action that avoids mutual exclusivity, and that this obligation extends to "application and licensing proceedings" (which include license modifications), not just initial licensing matters. Other provisions of the Act confirm our conclusion that the auction requirements of Section 309(j), with their statutory limitations and qualifications that recognize the existence of potentially higher public uses for spectrum, do not preclude our furtherance of the public interest by adopting a band restructuring approach that avoids mutual exclusivity, promotes public safety, and provides Nextel access to substitute spectrum with which it may continue the development of its services.[238]

74. We also note that, as an alternative licensing approach toward the same end, we could have exercised our authority to grant rights to the ten megahertz of spectrum to Nextel as an initial license, without subjecting the spectrum to competitive bidding procedures. The auction requirement of Section 309(j)(1) applies only when the Commission has accepted mutually exclusive applications for an initial license. As with a license modification approach, under an initial licensing scenario, eligibility for the 1.9 GHz spectrum would have to be limited to Nextel for the restructuring plan to address satisfactorily the public interest imperatives that we have identified. That eligibility restriction would be justified in the initial licensing context on the same public interest grounds that we have discussed above in connection with our authority to modify licenses under Section 316.[239]

75. Our authority to require a cash payment from Nextel in the future if needed to prevent a windfall that otherwise might flow from its new rights to use the 1.9 GHz spectrum derives from Sections 4(i) and 303(r) of the Act.[240] Consistent with the public interest and Nextel's own proposal, Nextel has agreed to assume financial responsibility for reconfiguring the 800 MHz band. As explained below, however, we cannot be certain what Nextel's ultimate costs of fulfilling that obligation will be.[241] If those

(Continued from previous page)

Cir. 2000) (Section 309(j)(6)(E) neither requires the Commission to avoid mutual exclusivity, nor to create it; the touchstone is what best serves the public interest).

[238] *See* 47 U.S.C. § 151 (listing as one of Act's central purposes "promoting safety of life and property through the use of wire and radio communication"). *See also* 47 U.S.C. §§ 303(c) (instructing the Commission to assign frequencies to individual stations as the public convenience, interest or necessity requires), 309(j)(6)(C) (providing 309(j) should not be construed to diminish the authority of the Commission to regulate or reclaim spectrum licenses); 309(j)(7) (prohibiting Commission from basing the decision whether to auction spectrum on a desire for federal revenue); 309(j)(2)(A) (setting out auctions exemption for public safety radio service licenses, thus recognizing that auctions may not always serve the public interest in connection with public safety licensing), and 309(j)(6)(G) (providing that Section 309(j) shall not be construed to prevent the Commission from awarding licenses to persons who make significant contributions to the development of new telecommunications services or technologies).

[239] The Supreme Court upheld the Commission's authority to limit eligibility to apply for a license where the Commission was able to demonstrate that doing so furthered the public interest. *See United States v. Storer Broadcasting Company*, 351 U.S. 192, 202 (1956). *See also* 47 U.S.C. § 309 (j)(3), which directs that "in specifying eligibility [,] . . . the Commission shall include safeguards to protect the public interest in the use of the spectrum and shall seek to promote the purposes specified in section 1 of this Act."

[240] Section 4(i) of the Act provides that "[t]he Commission may perform any and all acts, make such rules and regulations, and issue such orders, not inconsistent with this Act, as may be necessary in the execution of its functions." 47 U.S.C § 154. Section 303(r) provides that "the Commission . . . as public convenience, interest, or necessity requires shall [m]ake such rules and regulations and prescribe such restrictions and conditions, not inconsistent with law, as may be necessary to carry out the provisions of this Act…" 47 USC § 303 (r). *See United States v. Storer Broadcasting*, 351 U.S. 192, 202 (1956) (finding that these provisions "grant general rulemaking power not inconsistent with the Act or law").

[241] *See* ¶ 179 *infra*.

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reconfiguration costs are unexpectedly high, then Nextel nevertheless will be obligated to incur them. The cash payment mechanism we adopt here addresses the converse possibility that reconfiguration costs will be relatively low. In that situation, the terms of the spectrum exchange with Nextel will reflect those savings, maintaining an equitable exchange. In this way, savings in reconfiguration expenses will be realized as a public benefit (*i.e.*, a payment to the U.S. Treasury), rather than providing Nextel an unwarranted windfall from the license modification.

76. The situation here is analogous in key regards to that addressed in the *Mtel* case,[242] where the court upheld the Commission's authority under Section 4(i) to impose a payment requirement on a licensee holding a pioneer's preference license that the Commission had originally awarded without a payment requirement. Specifically, the court upheld the Commission's authority to require payment under Section 4(i) to "ensure the achievement of the Commission's statutory responsibility to grant a license only where the grant would serve the public interest, convenience and necessity [pursuant to Section 309(a)]."[243] The court "accord[ed] substantial deference to the Commission's judgment regarding how the public interest is best served" and cited with approval specific public interest concerns that the Commission Order suggested that the payment requirement would satisfy, including elimination of the possibility of unjust enrichment and "predation by a deep-pocketed Mtel."[244] Similar to the payment requirement that was upheld in *Mtel*, in this *Report and Order* we impose a payment requirement pursuant to Section 4(i) and Section 303(r) to ensure that we fulfill our statutory responsibility to modify a license only where the grant would promote the public interest, convenience and necessity. Here, the public interest rationale is at least as compelling as in *Mtel*. In this case, requiring a payment allows us to address the interference problems in the 800 MHz band and provide public safety agencies with additional spectrum rights in a way that places Nextel in a comparable position to that which it now occupies. While addressing public safety concerns is a priority of the highest order, it is in the public interest to do so in a way that does not result in a windfall for Nextel. The anti-windfall payment addresses uncertainty about the exact amount of relocation costs for the 800 MHz band and the 1.9 GHz band. The plan obliges Nextel to pay the costs in the 800 MHz band and its share of the costs in the 1.9 GHz band, no matter how low or high they are. For example, if the costs are at the low end of Nextel's estimates,[245] we find that it is in the public interest that the savings benefit the public, rather than Nextel. And similar to the *Mtel* case, the windfall payment also addresses concerns that assigning Nextel spectrum rights in another band as part of this comprehensive solution is unfair because Nextel is receiving free spectrum while its competitors must bid for spectrum at auction.[246] For the reasons discussed elsewhere in this *Report and Order*, reducing the amount of 1.9 GHz spectrum granted to Nextel is not a reasonable way of protecting against such a windfall.[247] By contrast, the alternative approach of requiring a payment from Nextel to maintain an exchange commensurate with the value of the spectrum it is receiving furthers the public interest objectives of the Communications Act and is consistent with the policy Congress articulated in Section 309(j) of "recover[ing] for the public of a portion of the value of the public spectrum resource made available for commercial use and avoidance of

[242] *Mtel v. FCC*, 77 F.3d 1399 (D.C. Cir. 1996).

[243] *Id.* at 1406.

[244] *Id.*

[245] *See* ¶ 299 *infra.*

[246] *See* ¶ 214 *infra*.

[247] *See* ¶¶ 236-238 *infra*.

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unjust enrichment through the methods employed to award uses of that resource."[248]

77. Some parties in this proceeding have addressed the intersection of the Commission's authority under the Communications Act and the Commission's responsibilities under other federal statutes. In particular, we received several *ex parte* presentations[249] addressing the question of whether the spectrum management plan and license modifications that we approve above violate appropriations statutes including the Anti-Deficiency Act (ADA),[250] the Miscellaneous Receipts Act (MRA)[251] and 18 U.S.C. § 641.[252] The Comptroller General has agreed at the request of a U.S. Senator to review the appropriations issues that parties have raised.[253]

78. In light of the substantial importance of these issues, we have carefully reviewed the arguments raised in the various presentations and conducted our own, independent analysis of the various legal constraints under which the Commission operates. After this deliberate consideration, we have determined that our statutory obligation to ensure the public safety through our administration of spectrum justifies this order even in the face of the opposition of certain participants in this proceeding. Having reviewed these parties' arguments, we conclude, as discussed below, that appropriations law does not bar the course we pursue in this order. Indeed, we conclude that we would be remiss in our obligations to the public safety community—and indeed to the public at large—if we did not adopt the plan in the form discussed below.[254]

79. The ADA prohibits any "officer or employee of the United States Government or of the District of Columbia government" from "involv[ing] either government in a contract or obligation for the payment of money before an appropriation is made unless authorized by law."[255] The object of this provision is to prevent executive officers from involving the government in expenditures or liabilities beyond those contemplated and authorized by the lawmaking power.[256] The first government-wide ADA

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[248] 47 USC § 309 (j)(3)(C). Since an auction of 1.9 GHz licenses is incompatible with the approach adopted herein for solving the 800 MHz band interference problems that compromise the public safety, we have fashioned an alternative that is consistent with our competitive bidding authority and otherwise within our statutory authority.

[249] *See* Letter, dated June 28, 2004, from William Barr, Verizon to Michael Powell, Chairman, Federal Communications Commission (Verizon Wireless June 28 *Ex Parte)*; Letter dated June 29, 2004, from Walter Dellinger to Michael Powell, Chairman, Federal Communications Commission; Letter, dated July 1, 2004, from Richard Thornburgh to Michael Powell, Chairman, Federal Communications Commission.

[250] The Anti-Deficiency Act, 31 U.S.C. § 1341(a)(1)(B).

[251] The Miscellaneous Receipts Act, 31 U.S.C. § 3302(b).

[252] Section 641 of Title 18 concerns the embezzlement and theft of public money, property or records and imposes criminal liability on "whoever . . . without authority, sells, conveys, or disposes of anything of value of the United States or of any department or agency thereof." Our actions today are authorized and clearly do not implicate this provision.

[253] *See* Verizon Wireless June 28 *Ex Parte* at 6.

[254] *See* ¶¶ 151-158, *infra*.

[255] 31 U.S.C. § 1341(a)(1)(B).

[256] 21 Atty.Gen. Op. 248 (1895).

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was passed in 1870.[257] The MRA provides that a government official "receiving money for the Government from any source shall deposit the money in the Treasury as soon as practicable without deduction for any charge or claim."[258] Congress passed the statute in 1849 to address its concern that some executive branch officers, such as customs officers, were failing to deposit all the money they collected in the course of their duties into the treasury, making deductions for their expenses and salaries as they saw fit.[259] Neither of these statutes has ever been found applicable to the exercise of the Commission's spectrum management responsibilities.

80. Opponents who have raised challenges under appropriations law have essentially claimed that we are selling spectrum to Nextel in a private sale and using the proceeds to address the public safety interference problems in the 800 MHz band. In fact, what the Commission is doing is proceeding, under its broad section 316 license modification authority, to restructure the 800 MHz band in order to serve significant public interest concerns. In doing so, we set forth a spectrum management plan that provides additional spectrum for public safety and leaves Nextel and the other licensees in a comparable position to where they were before the band restructuring. Courts have repeatedly upheld our authority to implement a new spectrum management plan by modifying licenses when it is in the public interest to do so and to allocate the relocation costs associated with license modifications among the affected licenses.[260] And, as noted at ¶ 69 *supra,* neither the *Ashbacker* doctrine nor Section 309(j) poses a barrier to the implementation of our public safety rebanding plan.

81. The appropriations laws do not limit the Commission's power to accomplish rebanding for public safety or to recognize and facilitate Nextel's role in that rebanding. Critically, radio spectrum is not appropriated by Congress and it cannot be obligated, expended, or deposited in the Treasury under those laws. Radio spectrum is a public resource of the United States that Congress has authorized and directed the Commission to manage in the public interest. Indeed, the Commission's most basic spectrum-management power is to assign spectrum to achieve public interest benefits *other than* monetary recovery. Until the enactment of Section 309(j) in Omnibus Budget Reconciliation Act of 1993,[261] the Commission never obtained cash payments for spectrum. Through spectrum allocation and license assignments, it accomplished public interest objectives such as encouraging the provision of particular types of service, fostering new technologies, or promoting services for underserved customers.[262] Even after the

[257] Act of July 12, 1870,ch. 251, § 7, 16 Stat. 251.

[258] 31 U.S.C. § 3302(b).

[259] *See Scheduled Airlines Traffic Offices, Inc. v. Department of Defense*, 87 F.3d 1356, 1360 (1996).

[260] *See* ¶¶ 64-67 *supra.*

[261] Pub. L. No. 103-66, § 6002, 107 Stat. 312, 387-397.

[262] *See, e.g.,* Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies, *First Report and Order and Third Notice of Proposed* Rulemaking, 7 FCC Rcd. 6886 (1993) (reallocating 220 MHz spectrum for emerging technologies); Amendment of Part 90 of the Commission's Rules to Create the Emergency Medical Radio Service, *Report and Order,* 71 Rad. Reg. 2d 1305 (1993) (assigning frequencies to improve the communications capabilities of entities providing life support activities); Basic Exchange Telecommunications Radio Service *Report and Order,* 3 FCC Rcd 214 (1988) (establishing a rural radio service designed to make basic telephone service more accessible to household and businesses); and Educational Television, *Report and Order*, 39 FCC 846 (1963) (establishing Instructional Television Fixed Service (ITFS) for the transmission of instructional material to schools). *See also* 303(g) ("[T]he Commission … as public convenience, interest, or necessity requires shall … [s]tudy new uses for radio, provide for experimental uses of frequencies, and generally encourage the larger and more effective uses of radio in the public interest.")

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Commission was given auction authority, section 309(j)(7) prohibits the Commission from basing the decision whether to auction spectrum on a desire for federal revenue.[263] Even when the Commission does use the auction mechanism, moreover, monetary recovery is just one of several factors the Commission must consider in establishing bidding qualifications and license conditions.[264]

82. Allocating spectrum to establish a long-term solution to the public safety interference problem and support the associated rebanding is a valid use of spectrum in the public interest. As already noted, the Commission is *required* under Sections 1 and 303 of the Act to use its spectrum assignment powers to promote public safety. And as discussed at ¶ 63 *supra,* the Auction Reform Act of 2002 specifically identified the interference problem in the 800 MHz band as one that the Commission might resolve by allocating spectrum from outside the 800 MHz band.

83. We also conclude that the anti-windfall payment from Nextel directly to the United States Treasury does not raise appropriations laws issues. As discussed in ¶ 76 *supra,* the D.C. Circuit upheld in the *Mtel* case the Commission's authority to require payment under Section 4(i) to "ensure the achievement of the Commission's statutory authority to grant a license only where the grant would serve the public interest, convenience and necessity" (*citations omitted).* Here, the anti-windfall payment is a valid regulatory requirement that serves the public interest because it addresses uncertainty about the exact amount of relocation costs for the 800 MHz and 1.9 GHz bands and obligates Nextel to pay the relocation costs in the 800 MHz band and its share of the costs in the 1.9 GHz band. If the relocation costs are at the low end of the projected range, the anti-windfall payment would ensure that the savings would benefit the public, rather than Nextel.

84. Thus, we conclude that the situation here differs from the facts in a 1963 Comptroller General decision on which Verizon heavily relies in opposing the plan we adopt today. In the 1963 decision, which was overruled in 1972, the Comptroller General reviewed an arrangement in which a non-profit organization raised funds to finance a teacher training program and zoo guidebook by installing a coin-operated audio tour system on government property; the Comptroller General concluded that the arrangement violated both the ADA and the MRA.[265] Specifically, the Comptroller General found that Congressional authorization was needed for such an arrangement because the applicable public contracts statute provided that the use of government property by outside parties "shall be for money only."[266] Thus, the Comptroller General concluded that the grant of the concession to the non-profit organization would be permissible "only for a solely monetary consideration; if, on the other hand, a monetary consideration were provided, the money would be required to be deposited in the Treasury and would not be available for the proposed uses [for teacher training and a zoo guidebook] unless appropriated therefore by the Congress."[267] Here, the Commission's action does not involve a concession or privilege subject to the government contracts statute in the zoo case, nor does it involve a "contract or other obligation for the payment of money" pursuant to the ADA.[268] Furthermore, even if the ADA were otherwise implicated, Sections 1, 4(i), 301, 303, 309(j), and 316 of the Communications Act provide the Commission with the authority necessary to adopt the public safety rebanding plan. Accordingly, today's spectrum management

[263] *See* 47 U.S.C. 309(j)(7).

[264] *See* 47 U.S.C. 309(j)(3).

[265] *To the Sec'y, Smithsonian Inst.,* 42 Comp. Gen. 650 (1963), *overruled*, 51 Comp. Gen. 506 (1972).

[266] *Id.* at 652-653 (*citations omitted).*

[267] *Id.* at 653.

[268] *See* 31 U.S.C. 1341.

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plan is "authorized by law" under the ADA.[269]

85. With respect to the MRA, the Communications Act does not require the Commission to auction the 1.9 GHz spectrum. Rather, as discussed *supra* at note 237, section 309(j)(6)(E) gives the Commission broad authority to create or avoid mutual exclusivity in licensing, based on the Commission's assessment of the public interest. The MRA does not nullify the discretion that Congress gave to the Commission and preserved in Section 309(j).[270] Here, the principle that funds received for the government should be deposited in the Treasury is fully satisfied, because any cash payment that may be required to protect against a windfall in favor of Nextel will be made to the Treasury, and there are no other government receipts.

86. The Commission has determined that the public interest requires the dedication of new spectrum to addressing the 800 MHz interference problem, and the 1.9 GHz spectrum is uniquely suited to that purpose. Those are public interest judgments for the Commission to make, and they are not changed by the possibility of a greater dollar recovery for the government from auctioning the 1.9 GHz spectrum. Given the vital public safety interest served by this *Report and Order*, moreover, we believe that it is essential to act promptly in this matter. Nonetheless, we recognize that parties have raised novel issues regarding appropriations law and that the Comptroller General is reviewing those issues. Should the Comptroller General unambiguously conclude that our order violates the appropriations statutes, we will address—either on our own motion or on that of moving parties—whether it is appropriate to stay the effect of some aspects of today's order pending a final decision by the court of appeals on any application for review.

87. Furthermore, we will ensure that the public is protected against potential claims by Nextel relating to any 800 MHz reconfiguration costs that it chooses to incur. Specifically, as a condition precedent to commencing operations with the 1.9 GHz band pursuant to any of its licenses modified pursuant to this *Report and* Order, Nextel shall file with the Commission an acknowledgement acceptable to the Commission. The acknowledgement shall state that, by accepting the license modification under the terms of the Order, Nextel acknowledges that it has studied the law and the facts and has made its own estimate of the risks that implementation of the Order may be delayed by judicial review and the Order may, in fact, be declared invalid. Nextel shall further acknowledge that the Commission has not participated in its assessment and is not privy to it, and does not in any way warrant any of the premises upon which Nextel's assessment may be based. Nextel shall acknowledge that it has accepted the risk of delay and invalidity and that, therefore, it cannot recover its costs or any damages associated with implementation or non-implementation of the Order from the Commission or any governmental entity.

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[269] *See PLC Construction Services, Inc. v. United States* 96 Fed. Appx. 672 (April 7, 2004) (U.S. Bureau of Reclamation did not violate ADA even though contract obligated Bureau to pay more than $33 million for construction project before Congress appropriated the funds because Bureau was separately authorized to enter into contracts under other provisions providing for the reclamation and irrigation of lands by the federal government); *cf. Association of Civilian Technicians v. Federal Labor Relations Authority*, 269 F.3d 1112 (D.C. Cir. 2001) (court vacated finding by Federal Labor Relations Authority that collective bargaining agreement that would reimburse employees for out-of-pocket losses resulting from agency cancellation of previously approved leave would violate the Anti-Deficiency Act and remanded the decision for the Authority to consider whether the disputed provisions are "authorized by the collective bargaining law").

[270] *Cf. Brazos v. U.S.*, 49 Fed. Cl. 398, 411 (Fed. Cl. 2001) (pre-existing contracts – not the MRA – govern whether the Rural Utilities Service (RUS) should assess a $16.5 million penalty against an electric utility for prepayment of a promissory note; the MRA merely required the RUS to deposit prepayment funds with Treasury once they were received).

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B. Interference Abatement

88. Two basic approaches to interference abatement have emerged from the extensive record in this proceeding:

- Application of a variety of technical techniques including those in the *Best Practices Guide* as well those contained in Motorola's *Technical Toolbox*[271] and the 800 MHz User's Coalition Balanced Approach filing.[272]

- Reconfiguration of the 800 MHz band to segregate non-cellular systems from systems using cellular architecture, *i.e.* ESMR and cellular systems.

We do not find these two approaches mutually exclusive; indeed, our ultimate conclusion is that achieving satisfactory interference abatement will require both band reconfiguration and application of Enhanced Best Practices. Moreover, we believe Enhanced Best Practices will play a vital role in protecting the integrity of public safety communications during the transition period to a new 800 MHz band plan and after reconfiguration is complete. Our decisions today on how to best abate unacceptable interference rest on the record as well as on analyses of the nature of interference being encountered and the conditions under which a non-cellular 800 MHz licensee should be able to claim entitlement to interference protection.

1. Types of Interference

89. The predominant types of interference encountered by public safety and other 800 MHz non-cellular systems are intermodulation interference and OOBE interference.[273] Some parties claim that most of the interference is of the intermodulation type; others contend that the division between intermodulation

[271] Motorola described its *Technical Toolbox* in a series of *ex parte* letters to the Commission. *See*, *e.g.*, Motorola May 6 *Ex Parte*, Letter, dated May 30, 2003, from Mary E. Brooner, Motorola, to Marlene H. Dortch, Federal Communications Commission, WT Docket No. 02-55 (attaching May 29, 2003 presentation to the Office of Engineering and Technology) (Motorola May 30 *Ex Parte*); Letter, dated June 20, 2003, from Steve B. Sharkey, Director, Spectrum and Standards Strategy, Motorola, Inc. to James D. Schlichting, Esq., Federal Communications Commission, WT Docket No. 02-55 (Motorola June 20 *Ex Parte*).

[272] Collectively, Enhanced Best Practices. *See* ¶ 16 *supra.*

[273] Various parties have divided OOBE into more specific categories such as adjacent channel interference, sideband noise, and phase noise. *See*, *e.g.,* Cingular Comments at 7; Ameren Reply Comments at 4. Except where the context requires otherwise, we will subsume all of these categories under OOBE. Some interference encountered by public safety mobiles or portables is caused by what commenting parties have variously characterized as receiver "overload," "desensing," or gain compression. Motorola defines both overload and desensing as, "[a]n informal term often used to describe a scenario where a receiver is functioning other than expected, presumably due to excessive signal power at the receiver RF input port." Motorola July 18 *Ex Parte* at 3. Gain compression occurs when a nearby undesired signal or signals are so exceptionally strong that they exceed the amplification capability of the first active devices in the radio receiver, such that the gain of these active devices begins to decrease with increasing levels of undesired signal(s). It is often defined by the 1 dB compression point—the point at which undesired strong signals reduce the gain of an active device by 1 dB. In some instances of these modes of interference, other circuits in the radio are implicated, such as automatic gain control (AGC) circuits.

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interference and OOBE interference is approximately equal.[274] This disparity in opinion may be due to the difficulty of identifying the exact interference mode under field conditions with limited measurement apparatus and the fact that interfering channels may or may not be simultaneously active at a given time.[275]

90. *OOBE Interference.* No radio transmitter can confine its emissions to an assigned channel; some signals invariably "spill over" into adjacent spectrum, i.e., all transmitters create some degree of OOBE. The Commission's rules specify the maximum permissible OOBE of single ESMR and cellular transmitters. However, there is no Commission rule governing the maximum OOBE that a multiple-channel cell can radiate. Moreover, cell OOBE increases cumulatively as a function of the number of channels active in a given cell or in nearby cells, *e.g.,* a public safety receiver could receive cumulative OOBE from an ESMR cell and a nearby cellular cell. Filters on ESMR and cellular transmitters are effective in reducing OOBE. However, as with all such filters, they are less effective on frequencies close to the transmitter frequency; *e.g.,* a filter may not be as effective in significantly reducing OOBE interference to a public safety receiver attempting to receive a signal on a channel immediately adjacent to the channel being used by a nearby ESMR or cellular cell.

91. *Intermodulation Interference.* This kind of interference occurs in 800 MHz receivers when signals in use at a given cell—or a nearby cell—have a given, readily calculable, mathematical relationship[276] and are strong in an area in which a public safety mobile or portable unit is attempting to communicate.[277] When strong signals with the appropriate mathematical relationship are presented to the public safety receiver, they cause the active elements in the first stages of the receiver to operate in a non-linear manner.[278] The incoming undesired signals mix in the receiver and produce a third frequency—an intermodulation product—which can either correspond or fall near the frequency on which the user of the radio is attempting to communicate.[279] If the resultant new signal generated in the first stages of the receiver is sufficiently strong, it can effectively block the incoming signal, rendering the radio unusable at

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[274] *See, e.g.,* New York State Comments at 7, 9 (adjacent channel interference is primary cause); Fort Lauderdale Comments at 5 (signal overload is the primary problem); Motorola Comments at 18 (5th order intermodulation interference is the most common type of interference).

[275] Recently, Motorola recommended a measurement technique that allows a more refined analysis of the source of interference. However, even with use of this technique, Motorola's own field tests showed that it was not always possible to characterize interference. *See* Motorola June 20 *Ex Parte* at 8.

[276] Intermodulation products are categorized according to "order" and can result from the interaction of two or more frequencies. Thus, in the case of two-frequency (F1 and F2), third-order, intermodulation, the intermodulation products (P) within the 800 MHz band are calculated by: $P_{intermod.} = 2*F1-F2$ and $P_{intermod.} = 2*F2 - F1$. The fifth order, two frequency intermodulation products within the 800 MHz band are calculated by: $P_{intermod.} = 3*F1 - 2*F2$ and $P_{intermod.} = 3*F2 - 2*F1$. Intermodulation products can also be generated by interaction of three or more transmitters, for example, some third-order, three frequency (F1, F2 and F3) intermodulation products falling in the 800 MHz band can be calculated by $P_{intermod.} = F1+F2 - F3$ and $P_{intermod.} = F2-F1+F3$. In general, within the 800 MHz band, fifth order and higher intermodulation products are less significant than third-order products. The greater the number of frequencies involved, the greater the number of intermodulation products generated.

[277] *See* Nextel Comments at 19.

[278] *Id*. The first stage of a receiver is usually an amplifier. *See also Best Practices Guide* at 9.

[279] *See* Nextel Comments at 19.

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that location.[280] The concept of mixing occurring in non-linear devices is sometimes analogized to color mixture. Thus, if a receiver were presented with a strong "blue" ESMR signal and a strong "yellow" cellular signal, the two colors could mix in the first stage of the receiver and form an interfering "green" signal that fell on a public safety frequency. The "mixing" concept is important to the understanding of intermodulation interference because it explains how two or more signals, widely separated (in frequency) from a public safety channel can still generate interference. It is significant here, because locating public safety channels in the lower portion of the band—as far as possible from the ESMR and cellular channels—would provide significant relief from interference on the public safety channels. However, it still leaves open the possibility that ESMR and cellular channels, separated from public safety channels by as much as ten megahertz, could mix in the first stage of the public safety radio and form an intermodulation product—that could fall within the channel the public safety radio is tuned to. Under this scenario, if the two ESMR and cellular signals are strong enough, and the radio does not have good intermodulation rejection capability, interference could still result.

2. Entitlement to Interference Protection

92. In order to implement technical and procedural rules for interference abatement, we must first determine the criteria by which licensees will be entitled to interference protection. At the core of this determination is how to define exactly what constitutes "unacceptable interference" to public safety and other non-cellular 800 MHz systems. With an objective standard for unacceptable interference established, all 800 MHz licensees would have certainty regarding their respective rights and obligations. As a result, licensees will be able to readily identify in what circumstances they can reasonably expect to operate free from unacceptable interference. We emphasize, however, that our determination on what constitutes "unacceptable interference" applies solely to this proceeding.

a. Introduction

93. Historically, the Commission has imposed limits on the area in which land mobile communications systems with given characteristics—effective radiated power (ERP), frequency, antenna height, geographical separation, *etc*.—can expect substantially interference-free operation from other systems. For instance, in some bands, our Rules define these areas geographically, *e.g.,* a public safety system in certain bands can expect interference protection because our Rules prohibit co-channel stations within seventy-miles of the protected station.[281] In other bands, public safety has a "protected contour" that defines the area in which interference protection from other co-channel or adjacent channel systems can be expected, *e.g.* a 37 dBµV/m contour (VHF) or a 39 dBµV/m contour (UHF).[282] Under either protection scheme—distance separation or protected contours—the signal level at which the public safety

[280] *See* Island SMR Comments, Exhibit A at 10. However, receiver components are not the only source of intermodulation products. A junction of dissimilar metals, when presented with strong signals, can generate intermodulation products. For example, some parties have identified corroded bolts on base station towers as a source of intermodulation products. If a base station combiner allows signals from the final amplifier of one transmitter to enter the final amplifier of another transmitter, the two signals can mix, due to non-linearities in the final amplifiers, and the resultant intermodulation product is radiated from the cell antenna. *See ex parte* communication, dated May 27, 2003, from RACOM, Inc. and I.E. Communications to Michael J. Wilhelm, Esq., Federal Communications Commission. It also has been suggested that ferrite used in base station isolators has nonlinear properties that support generation of intermodulation products. *See, e.g.,* Motorola June 20 *Ex Parte* at 1.

[281] *See* 47 C.F.R. § 90.621(b).

[282] *See* 47 C.F.R. § 90.187(b)(2)(iii).

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system no longer can expect interference protection is well above the typical receiver noise floor.[283]

94. Consequently, when frequencies are assigned based on distance separations or protected contours, the area in which a licensee may operate is limited by the potential of interference from nearby systems, *e.g.* the potential for interference defines the area within which a public safety signal is intelligible, not merely by the strength of the public safety signal above the receiver noise floor. Given this fact, we believe that it would be inappropriate, as a matter of responsible spectrum management, to afford public safety systems the noise-limited coverage that some proponents have recommended.[284] For example, were we to do so for a given public safety system in the 800 MHz band, it would not only restrict the availability of public safety spectrum in adjoining areas but also would make it virtually impossible for CMRS systems to use channels that contributed the slightest amount of noise to a public safety receiver in the far fringes of its noise-limited coverage area. Such an outcome would result in inefficient utilization of CMRS spectrum. Moreover, the substantial set of measures we are adopting here will provide public safety systems with strong protections against interference, rendering this particular measure unnecessary.

95. We also conclude we should adopt an interference protection standard in the 800 MHz band based on measured, rather than predicted signal strength. While one approach would be to define the coverage area of public safety system by a predicted signal contour, signal level prediction is an inexact science and 800 MHz radio signal propagation can be affected by multiple factors such as buildings and other obstructions, reflection of signals from nearby man-made surfaces, terrain, and foliage. Moreover, system designers frequently predict signal strengths in terms of statistical probability, *e.g.,* the charts and algorithms used for coverage determinations predict the distance from a transmitter at which a given level of signal will be equaled or exceeded at fifty percent of the locations fifty percent of the time.[285] Thus, while signal strength predictions are useful for obtaining an overall picture of system coverage, we believe they are of limited utility in predicting the strength of an 800 MHz public safety signal in a localized and relatively small area, which is exactly the type of area in which interference may be encountered from an ESMR or cellular system. Consequently, we conclude that we need to use a basis other than distance separations or predicted signal contours in establishing the threshold determination of entitlement to interference protection.

b. Interference Protection Standard

96. In their August 7, 2003 *ex parte* filing, the Consensus Parties proposed a bright-line test for determining non-cellular 800 MHz licensees' entitlement to interference protection.[286] The recommended test procedure relies on measured—rather then predicted—minimum median signal strength levels, which, if met or exceeded, would entitle a licensee to interference protection.[287] Moreover, the proposal

[283] The "noise floor" is the cumulative value of noise generated internally in the receiver and environmental noise, such as that created by automobile ignition systems, high voltage electrical transmission lines and a host of other "incidental radiators." *See* 47 C.F.R. § 15.3.

[284] Some commenting parties suggested the Commission adopt a "zero tolerance" policy whereby any radio system interfering with a public safety signal in the 800 MHz band would immediately have to cease operation until interference-free operation of the public safety system was assured. *See* City of New York Comments at 5; IACP Comments at 4; City of New York Comments to Supplemental Comments of the Consensus Parties at 8.

[285] *See, e.g.,* 47 C.F.R. § 73.699, Figures 9, 10 and 10b.

[286] Consensus Parties Aug. 7 *Ex Parte* at 45-50 and Appendix F at 2, § 1.2.

[287] *Id.* Appendix F at 3, § 2.1.1.

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contemplated providing full interference protection only to non-cellular 800 MHz systems that use receivers meeting minimum performance standards.[288]

97. The proposal defines interference in terms of a parameter known as the carrier[289] to interference plus noise ratio [C/(I+N)] of a receiver. The proposal recommended 20 dB as the minimum acceptable C/(I+N) ratio for voice systems;[290] and suggested that the equipment manufacturer supply the "information value" for non-voice public safety communications systems.[291]

98. The Consensus Parties' proposal requires that a public safety or other non-cellular radio in the band segment be presented with a signal from the desired station that is greater than or equal to a specified minimum before the licensee of the desired station may claim entitlement to interference abatement.[292] As proposed in their filing, the threshold desired signal power in the case of portable units in the 806-816 MHz/851-861 MHz band segment is –101 dBm, or greater, as measured at the radio frequency (R.F.) input to the portable radio's receiver.[293] The corresponding value for mobile units is –104 dBm or greater.[294] A specific measurement technique was proposed for determination of the threshold signal powers.[295]

99. The Consensus Parties proposed that full interference protection would be provided only for systems using receivers that satisfy TIA Class A specifications.[296] Receivers not conforming to these

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[288] *Id.* Appendix F at 8, § 4.1.1a.

[289] "Carrier" in the sense used here, equates with "desired signal;" *i.e.* the signal from the public safety, CII or other non-cellular base station.

[290] Consensus Parties Aug. 7 *Ex Parte* Appendix F at 2, § 1.2.1.

[291] *Id.* Appendix F at 2, § 1.2.2.

[292] The median received power level for interference protection in the Guard Band at 816-817/861-862 MHz that Nextel later proposed to be designated for non-ESMR operations increases as a function of frequency. *See* ¶¶ 157-158 & Figure 1 *infra*.

[293] Consensus Parties Aug. 7 *Ex Parte* Appendix F at 3, § 2.1.1a. This level is the power in decibels above one-milliwatt at the R.F. input terminals of a receiver. The Consensus Parties originally proposed a measured desired signal power of -98 dBm, but lowered these values in response to parties who expressed concern that this level was too stringent and that the resultant area of interference free operation would be smaller than the area in which many public safety systems expect reliable coverage. *See* Comments of Motorola to Supplemental Comments of the Consensus Parties at 11; Comments of NY OIT to Supplemental Comments of the Consensus Parties at 12-14; Comments of San Diego to Supplemental Comments of the Consensus Parties at 7; Comments of Xcel to Supplemental Comments of the Consensus Parties at 6-7; Comments of Con-Ed to Supplemental Comments of the Consensus Parties at 6; Comments of Entergy Reply to Supplemental Comments of the Consensus Parties at 7-8; Reply Comments of NY OIT to Supplemental Comments of the Consensus Parties at 9-10; Reply Comments of San Diego to Supplemental Comments of the Consensus Parties at 7-8; Reply Comments of Xcel to Supplemental Comments of the Consensus Parties at 5-6.

[294] *Id.*

[295] *Id.,* Appendix F at 9-10, § 5.0. The Consensus Parties made this amendment in response to one commenting party which argued that the Commission should not set a minimum received power level for interference protection unless and until an agreed-upon procedure for measuring the power level had been established. *See* Comments of New York OIT to Supplemental Comments of the Consensus Parties at 13; Reply Comments of NY OIT to Supplemental Comments of the Consensus Parties at 10-11.

[296] *See* Consensus Parties Aug 7 *Ex Parte*, Appendix F at 8, § 4.1.1. Class A receivers are those intended for (continued….)

specifications would be protected only to some higher desired signal threshold power level.[297] Several parties supported the Consensus Parties in this regard;[298] while others disagreed, pointing out that some of the TIA standard parameters, for example, operating temperature range of the radio are irrelevant to 800 MHz interference and therefore that the Commission should not require compliance with the entire standard but, instead, should simply adopt minimum intermodulation rejection ratios for receivers.[299]

100. On June 16, 2004, Nextel filed a revised band plan for the 816-817 MHz/861-862 MHz band segment proposing that this additional 2 MHz be designated for non-ESMR use rather than for ESMR, as had been proposed in the August 2003 *ex parte* filing. In that band plan, Nextel proposes that the minimum received signal power threshold necessary for interference protection in the 816-817 MHz/861-862 MHz band segment increase as a function of increasing frequency.[300]

101. As discussed in greater detail below, we conclude, based on the record in this proceeding, that a readily identifiable objective standard should be established to determine what constitutes unacceptable interference, and which systems are entitled to protection from such interference.[301] We also believe that both unacceptable interference and the scope of protection afforded to eligible systems should be subject to objective measurement criteria. In this connection, we note that almost all participants in this proceeding agree that the *status quo*—addressing interference to public safety systems on an *ad hoc* basis and reactive fashion—is no longer workable in the 800 MHz band. We agree, and find that certain interference definition and measurement procedures contained in the record allow us to establish a reasonable standard for determining when public safety and other non-cellular systems can expect to operate free from unacceptable interference.[302] Specifically, we believe that the operational parameters

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an urban environment; Class B receivers are suitable only for rural environments.

[297] *Id.* Appendix F at 8, § 4.1.1b. The amount of the increase above the levels described above would be determined by the amount of desired signal power necessary to restore the receiver in question to the same C/(I+N) ratio as a Class A receiver in the same environment. We note that Motorola has reported that approximately 93 percent of its recent portable receiver inventory meets Class A standards. *See* Motorola November 3 *Ex Parte* at 5, Table 3. Motorola further reported that eighty-five percent of their 2003 year-to-date shipments of mobile radios met Class A standards. *Id.* The most significant difference between the two classes of receivers lies in their intermodulation rejection performance. Class A portable receivers must have at least a 70 dB intermodulation rejection ratio (Class A mobiles must achieve at least 75 dB of intermodulation rejections); Class B portable receivers must have at least a 50 dB intermodulation rejection ratio (Class B mobile receivers must have at least a 70 dB intermodulation rejection ratio). *See* TIA/EIA -603-A, August 2001 at 124. *See also* TIA/EIA TSB102.CAAB, August 1994, at 6 and 7. TIA is an American National Standard Institute-accredited standards development organization and provides technical expertise to the telecommunications industry in a wide range of areas, including system performance, interference abatement, compatibility and interoperability. *See http://www.tiaonline.org/about/overview.cfm.*

[298] *See* Comments of Alliant to Supplemental Comments of the Consensus Parties at 1; Comments of Ameren to Supplemental Comments of the Consensus Parties at 14.

[299] *See* Ameren Reply Comments at 4; UTC Reply Comments at 19; Comments of Preferred to Consensus Parties Reply Comments at 11; Comments of UTC to Supplemental Comments of the Consensus Parties at 15.

[300] *See* ¶¶ 157-158 and Figure 1 *infra*.

[301] *See* ¶ 105-107 *infra*.

[302] This stems from the questions raised in the *NPRM* seeking comment on whether to abate interference by requiring increased public safety signals or by reducing CMRS signals. *See NPRM,* 17 FCC Rcd at 4914 ¶¶ 76-77.

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and system characteristics identified by the Consensus Parties are relevant factors in establishing such a standard. However, in determining the final values we drew not only from the Consensus Parties' proposal but also from proposals submitted by equipment manufacturers, industry associations, 800 MHz licensees, as well as our own technical expertise. We further believe that adoption of the unacceptable interference definition and associated measurement procedures is in furtherance of our goal to employ sound spectrum management principles in resolving the 800 MHz interference problem. In addition, we rely, in part, on the methodology derived by the Telecommunications Industries Association TR-8 Subcommittee.[303] Based on this analysis, we believe that the measures we adopt here will meet our goal of ensuring that 800 MHz communications critical to the safety of life and property will not be impaired by unacceptable interference.

102. The Consensus Parties recommended that the proposed procedures for defining unacceptable interference and establishing licensees' entitlement to be protected against such interference should not be put into place until reconfiguration of the 800 MHz band had been completed. We disagree. Indeed, it appears to us that establishing an interference abatement entitlement standard must be the very first step in attacking the problem of unacceptable interference to public safety, CII and other non-cellular 800 MHz systems.[304] In short, we cannot afford the luxury of awaiting completion of band reconfiguration—and putting critical public safety communications at continued significant risk in the interim—before we determine the conditions under which licensees are entitled to interference protection. Accordingly, our rules for interference protection entitlement and the assignment of responsibility for the abatement of unacceptable interference will become effective sixty days after publication of this *Report and Order* in the Federal Register.

103. We are persuaded by the record that our goals in this proceeding are best met by our bright-line test for interference protection entitlement, coupled with a standardized technical means of determining that entitlement and assigning the task of abating unacceptable interference to the parties best capable of doing so. This approach is, we believe, far preferable—for all concerned—to our attempting to micro manage the technology utilized by the ESMR and cellular industries. Thus, by eschewing imposition of across-the-board new technical standards on the industry, we avoid imposing that unnecessary expense and afford the ESMR and cellular licensees optimum flexibility to design and operate their systems in a manner that will optimize service to subscribers and avoid unacceptable interference to other users of the 800 MHz band. Thus, although we have discussed herein the technical means disclosed in the record to avoid unacceptable interference—especially those that come within the definition of Enhanced Best Practices—we reject as unnecessary, the recommendations of some parties for mandatory restrictions on all ESMR and cellular systems with respect to such parameters as maximum cell ERP,[305] combiner technology,[306] and specific antenna pattern characteristics.[307]

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[303] *See* ¶ 108, *infra*. *See also* Consensus Parties Aug. 7 *Ex Parte* at 48. The TIA TR-8 subcommittee is responsible for mobile and personal private radio standards. *See* http://www.tiaonline.org.

[304] *See* Consensus Parties Aug. 7 *Ex Parte* at Attachment 1.

[305] *See* Motient Comments at 4; Cascade Radio Comments at 2; Supreme Radio Comments at 7; Florida Comments at 8; Comments of Border Area Coalition to Supplemental Comments of the Consensus Parties at 12, 18; Comments of Pinnacle to Supplemental Comments of the Consensus Parties at 9; Comments of UTC to Supplemental Comments of the Consensus Parties at 15; Reply Comments of San Diego to Supplemental Comments of the Consensus Parties at 7.

[306] Alliant Energy Comments at 1; UTC Comments at 19; Entergy Reply Comments at 2; Pinnacle Reply Comments at 3-4.

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104. We also decline to adopt the recommendation of the Consensus Parties that we establish more strict OOBE limits for base station transmitters in the 861-895 MHz band.[308] Instead, we agree with parties such as the Rural Cellular Association, which point out that, in many instances, the additional filtering needed to achieve the Consensus Parties' proposed OOBE standards would add cost and complexity—but no benefit—to those cells in a system in which, because of their location, or otherwise, unacceptable OOBE interference would not occur.[309] In short, although we recognize the efficacy of such technical changes, we are reticent to impose them on every cell of every system in the country; particularly if only a handful of cells in a system might require them. In the final analysis, it is the question of whether unacceptable interference exists or not that is controlling here; not the specific means by which licensees abate it. The technical filings made in this proceeding convince us that licensees are the best stewards of interference abatement technology and are best capable of determining when and to what degree that technology must be applied. However, we reserve the discretion to revisit this issue promptly and impose more specific technical requirements on carriers should our decisions to adopt an objective interference standard and place strict responsibility on carriers to fix any unacceptable interference prove inadequate.

(i) Signal Strength Threshold for Interference Protection

105. In the rules we adopt today, we specify that public safety, CII, and other non-cellular 800 MHz systems must receive at least a minimum measured input signal power of -101 dBm for portable (*i.e.,* hand-held) units and -104 dBm for vehicular mobile units in order to be eligible for protection from interference in the 806-816.35 MHz/851-861.35 MHz band segment.[310] As an initial matter, we note that these signal strengths are quite low. For instance, a signal strength of -98 dBm is the threshold average radiation sensitivity for a Class A "Project 25"[311] portable receiver with an external antenna.[312] A signal strength of -101 dBm is about one-half that of a signal strength of -98 dBm, and a signal strength of -104 dBm is about one-quarter that of a signal strength of -98 dBm. Some non-cellular 800 MHz licensees contend that they have designed systems to work with a signal strength less then -98 dBm, and we wish, at the margin, to protect such systems providing they provide, at a minimum, a median -101/-104 dBm

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[307] With regard to antenna designs, we note that the Commission's Spectrum Policy Task Force (SPTF) recommended that we consider "[p]romoting the use of advanced antenna technology and system design techniques that would enhance the uniformity of transmitted signal strength levels through a service area." *See* SPTF Report, ET Docket No. 02-135, November 2002, at 32.

[308] Consensus Parties Aug. 7 *Ex Parte,* Appendix F at 9 § 4.1.2.

[309] *See* Reply Comments of Rural Cellular to Supplemental Comments of the Consensus Parties at 2.

[310] Note that the signal powers are specified in decibels below one milliwatt and thus are negative numbers. Therefore, for example, a –90 dBm signal is stronger than a –100 dBm signal. For our discussion of 816-816.35 MHz/861-861.35 MHz band segment, see ¶¶ 157-158 *infra.*

[311] "Project 25" was an APCO initiative that resulted in a digital standard which was substantially incorporated into the ANSI/TIA/EIA 102 suite of standards. The TIA standard has been adopted as the mandatory standard for public safety radios operating on narrowband interoperability voice and data channels in the 700 MHz public safety band.

[312] *See* TIA/EIA-102.CAAB, November 2002, § 3.1.14. Manufacturers' sensitivity specifications indicate that many Class B receivers meet this limit. The average radiation sensitivity of a receiver is the power received by a halfwave dipole measured into a 50 Ω load when substituted for a receiver that is receiving a signal at the reference sensitivity. *See* TIA-102.CAAA-A, November, 2002 §2.1.14.1.

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received signal power.[313] However, we do not agree with parties who aver that their systems operate satisfactorily with signal strengths at or below -120 dBm and should be protected to that low level.[314] In light of the fact that the reference sensitivity of 800 MHz receivers is typically on the order of -116 to -119 dBm.[315] We find that mandatory protection of systems to a level below -104 dBm would impose an excessive burden on ESMR and cellular telephone carriers to protect an extremely weak signal. We note that such signal levels are so weak that normal statistical variation, especially at the periphery of service areas, would result in limited service reliability even in the absence of interference or high levels of ambient noise. Nevertheless, ESMR and cellular telephone licensees must respond to complaints of interference even at these low signal levels; and, when possible, voluntarily assist the affected licensee if to do so does not cause the ESMR or cellular telephone licensee undue cost or capacity limitations.

106. In sum, to provide clarity and transparency to all involved parties, we specify that the public safety or other 800 MHz non-cellular signal will be entitled to protection only if the median power of the received signal is greater than or equal to -101 dBm (portable) or -104 dBm (mobile),[316] in the 806-816 MHz/851-861 MHz band segment. In the band segment 816-817 MHz/861-862 MHz, measured median signal powers for interference abatement increases as a function of frequency, as described in paragraphs 157-158 and Figure 1, *infra.*

107. In defining the term interference within the specific context of "unacceptable interference" as defined for purposes of this proceeding only and as used herein, we examined the filings in the record, standard technical publications and manufacturers' specification sheets. Our analysis closely tracks that of the Consensus Parties and we define unacceptable interference as any impairment to the desired signal that causes the C/(I+N) ratio of a voice radio receiver to drop below 20 dB. However, because the technical parameters necessary for acceptable performance by non-voice systems vary significantly by system, we will use the value(s) reasonably designated by the manufacturer of the equipment.[317] We recognize that a manufacturer specification may vary from manufacturer to manufacturer and could well change over time as particular equipment evolves.[318]

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[313] *See* Comments of San Diego to Supplemental Comments of the Consensus Parties at 7; Comments of Con-Ed to Supplemental Comments of the Consensus Parties at 6-7; Reply Comments of N.Y. OIT to Supplemental Comments of the Consensus Parties at 10; Reply Comments of San Diego Reply to Supplemental Comments of the Consensus Parties at 7.

[314] *See* Comments of Palomar Comm. to Supplemental Comments of the Consensus Parties at 7-8; Comments of Consumers Energy to Supplemental Comments of the Consensus Parties at 18; Reply Comments of Xcel to Supplemental Comments of the Consensus Parties at 5; Peak Relay, February 6, 2004 *ex parte* filing.

[315] *See* TIA-102.CAAB-A September 2002, § 3.1.4. (minimum reference sensitivity -116 dBm) *See also* Typical Performance Specifications for Motorola Astro XTS 5000 transceiver. http://www.motorola.com/cgiss/docs/xts5000_service.pdf (reference sensitivity of 0.25 microvolts = -119 dBm).

[316] Although the Consensus Parties' filings are not clear on the subject, we assume the threshold to be used (-101 or -104 dBm) will be determined by the kind of radio that was in use when interference was encountered. Thus, if the interference complaint originated from a party using a hand-held portable radio, the -101 dBm criterion would apply. However, if the party encountering interference was using a mobile unit, the -104 dBm criterion would apply.

[317] *See* Consensus Parties Aug 7 *Ex Parte*, Appendix F at 2, § 1.2.2.

[318] We note that manufacturers of non-voice equipment generally rely on bit error rate (BER) to specify acceptable system performance, rather than the C/(I+N) ratio used for voice systems. We therefore expect that most manufacturers will specify a BER for non-voice systems.

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(ii) Signal Measurement Techniques

108. As an initial matter, all parties involved in a determination of unacceptable interference are free to agree among themselves on how interference protection threshold levels are to be measured. For example, in many cases, it may be possible to measure the desired signal directly because it is not masked by noise or interference to the degree that direct measurement is unreliable. In other instances, it may be possible to conduct a direct measurement reliably if nearby ESMR or cellular telephone transmitters are turned off briefly. However, whenever it is not possible to perform reliable measurements of desired signal received power directly; or in the event there are disputes between or among the parties involved in an interference complaint, the following protocol for indirect measurement of the desired signal power may be used. These measurement procedures are based on the recommendations of the Consensus Parties with a few minor changes.[319] Consistent with existing practice, the Office of Engineering and Technology is hereby delegated authority to make changes to this protocol as needed.[320]

(a) *Area to be measured*. The area of measurement shall be no less than 91.44 meters x 91.44 meters (300 feet x 300 feet). Local obstructions may determine the size, as well as how large the reported affected area is. If the affected area is quite large, a location of reported problems shall be selected that is large enough to be consistent with coverage predictions and our dBu contour limitations.

(b) *Data collection*. A measurement route shall be defined through the area to be measured that distributes data collection points relatively uniformly across the area being tested. A constant velocity along the route shall be maintained to prevent oversampling in any given location. The sampling rate shall be high enough to ensure multiple samples per wavelength.

(c) *Use of filters*. A lowpass or bandpass filter shall be inserted between the test receiver and its antenna to allow differentiation between receiver-generated IM and OOBE noise by attenuating potential IM contributors from the CMRS portion of the band. The filter's loss on the desired frequency shall be included in all calibrations.

(d) *First test procedure*. With all potentially-interfering channels and the desired signal transmitting constantly, gather "continuous" data over a route that covers the measurement area defined in (a) above, using the data-collection requirements in (b) above. Use this data to determine the median C+I+N. Modulate the desired channel with a test signal to verify whether or not the target receiver unmutes. For digital receivers this occurs at a C/(I+N) of approximately 5 dB. For analog radios adjust the manual squelch setting to cause the receiver to unmute at a C/(I+N) of 5 dB.

(e) *First test threshold.* If the median C+I+N is greater than or equal to 2 dB above the median target value and the receiver was unmuted, then the first threshold test is passed and the public safety/CII system is eligible for interference mitigation. If the median C+I+N is not greater than or equal to 2 dB above the median target value, conduct the second test procedure below to establish eligibility for interference mitigation.

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[319] *See* Consensus Parties Aug 7 *Ex Parte*, at Appendix F, §§ 5.0-5.8.

[320] Revision of Parts 2 and 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure (U-NII) devices in the 5 GHz band, FCC 03-287, ET Docket No. 03-122 ¶ 39 (released Nov. 18, 2003).

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(f) *Second eligibility test*. Repeat (d) with the desired signal not transmitting. At this point the test receiver is measuring only I+N. This test should be run as soon as possible to be sure conditions are similar to the initial test. If the test receiver has automatic frequency control, disable it so it remains on the test frequency and is not pulled toward one of the potential interference contributors. Use this data to determine the median I+N. Since the value of N should be a constant (the thermal noise of the receiver) all else will be interference (I). If OOBE noise is present it will be captured in this data as I.

(g) *Second test threshold*. Determine the median C based on the median C+I+N and I+N. If the calculated median C is close to the target value, repeat (f) to ensure that I+N has not changed.

c. Minimum Receiver Performance Criteria

109. In order for non-cellular 800 MHz licensees to be entitled to full protection against unacceptable interference, they must use mobile and portable voice radios with performance that equals or exceeds the minimum performance standards described *infra:*

- Voice units intended for mobile use: 75 dB intermodulation rejection ratio; 75 dB adjacent channel rejection ratio; -116 dBm reference sensitivity.
- Voice units intended for portable use: 70 dB intermodulation rejection ratio; 70 dB adjacent channel rejection ratio; -116 dBm reference sensitivity.

110. We derived the foregoing values from manufacturers' technical filings contained in the record,[321] standard reference works and manufacturers' specification sheets for voice equipment. The data appear to represent the state of the art in affordable public safety and CII radios.[322] We also evaluated the Consensus Parties' recommendation that we require public safety licensees to use receivers which meet TIA Class A standards in order to receive full protection against unacceptable interference.[323] We decline, however, to adopt the Class A standards on a wholesale basis because: (a) we wish to avoid incorporating technical specifications contained in these standards unless they relate directly to rejection of signals that interfere with 800 MHz public safety communications; and (b) the TIA-102 standard for digital transceivers applies to radios operating with 12.5 kHz bandwidth and thus is inapplicable to radios operating with 25 kHz bandwidth, as is common in the 800 MHz band. Thus, although we did rely, in part, on the TIA-102 standard, we did so only with those portions of the standard that affect

[321] *See* Motorola Comments at 21; Motorola November 3 *Ex Parte* at 4.

[322] As with most technical equipment, such radios' performance is bounded by cost and other considerations. For example, the intermodulation rejection ratio of a portable radio is directly tied to the amount of power that the radios' battery can supply. Thus, although a portable radio with an intermodulation rejection ratio better than that specified *supra* could be manufactured; it would either have a battery so heavy that it would not be practical to carry the radio on the person of a public safety official; or, if the battery were light enough to be carried, its amp-hour capacity would not be sufficient for the radio to operate through an entire eight-hour, or more, shift. *See* Motorola Comments at 20-21; Public Safety 800 MHz Interference, FCC Briefing September 19, 2002 attached to Letter, dated September 20, 2002, from Steve B. Sharkey, Director, Spectrum and Standards Strategy, Motorola, Inc. to Marlene H. Dortch, Secretary, Federal Communications Commission at 13 (Motorola September 20 *Ex Parte*).

[323] Supplemental Comments of the Consensus Parties, Appendix F at F-7-8, § 4.1.1.

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intermodulation rejection, adjacent channel selectivity, and receiver sensitivity.[324]

111. In setting our criteria for voice receiver performance, we were mindful of the comments of parties which observed that the TIA intermodulation interference testing protocols may not simulate real-world conditions.[325] Thus, although the standards specify that intermodulation interference rejection should be tested with the desired signal at the reference sensitivity of the receiver,[326] under actual operating conditions the desired signal is usually considerably above the reference sensitivity of the receiver. Therefore, we recommend, but do not require, that TIA and other standards-setting organizations revisit current testing procedures in light of the interference environment in which 800 MHz receivers must currently operate.

112. We note that Motorola data show that approximately seventy-four percent of the receivers that it has shipped to public safety agencies over the past decade meet Class A intermodulation rejection specifications and that this percentage is even higher for receivers shipped in 2003.[327] Accordingly, we believe that public safety agencies predominantly already employ receivers which satisfy the criteria above.[328] However, we are not restricting entitlement to unacceptable interference protection only to radios that meet the standards described *supra.* We recognize that some users, particularly public safety agencies, may be using older radios that do not conform to the standards. Accordingly, we are specifying that 800 MHz licensees asserting an entitlement to interference protection, but which employ receivers that fail to satisfy the criteria above will be afforded interference protection only at higher power levels than -104 dBm (for mobiles), -101 dBm for portables.[329] For example, if a radio meeting the above criteria provided a 20 dB C/(I+N) ratio when presented with a -104 dBm signal, but a non-compliant radio delivered only a 15 dB C/(I+N) ratio when presented with a -104 dBm signal in the same environment, then the interference entitlement for the licensee using the non-compliant radio will be based on receipt of a -99 dBm measured signal power instead of -104 dBm. The net result would be that the licensee with the non-compliant radio would have less interference protection because, to claim entitlement to protection, the licensee would have to show that, in the area in which interference was encountered, the licensee's system would have to provide a 5 dB higher received power level, *i.e.* -104 dBm – (-99 dBm) = 5 dB.

113. Finally, we note Motorola's announcement of prototype receivers with switchable attenuators.[330] In brief, the Motorola prototype senses the signal strength of the incoming desired signal

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[324] Based in part on an absence of evidence in the record suggesting there are issues regarding minimum receiver performance criteria for non-voice equipment, we find it unnecessary at this time to specify any such criteria.

[325] *See* CTIA Reply Comments at 9-10; Supplemental Comments of the Consensus Parties, Appendix F at F-7, Item 4.1; Comments of CTIA to Supplemental Comments of the Consensus Parties at 10; Comment of Motorola to Supplemental Comments of the Consensus Parties at 20-21.

[326] *See* TIA- TSB102.CAAA at 2.1.9.2 and TIA/EIA-603-A at 2.1.9.2.

[327] *See* Motorola November 3 *Ex Parte* at 4-5.

[328] We also note that, in some important respects, there is no difference between Class A and B receiver specifications. For example, the recommended delivered audio quality ("DAQ") for both is 3.4, and that DAQ requires a ratio of C/(I+N) of approximately 20 dB for analog receivers and 17.7 dB for digital receivers. *See* Table A-1, Annex A of TSB-88A.

[329] *See* Supplemental Comments of the Consensus Parties, Appendix F at F-8, § 4.1.1b.

[330] *See* Motorola May 6 *Ex Parte.*

and determines when the signal is sufficiently strong that it can tolerate a given amount of attenuation, *e.g.* 10 dB, without compromising the intelligibility of the incoming communication.[331] At that point, attenuation is automatically introduced between the radio's antenna and the first active device in the input chain (the "R.F. preamplifier" or "low noise amplifier") of the receiver.[332] With the signal so attenuated, a significant improvement is realized in the effective intermodulation rejection ratio of the receiver.[333] Although the information submitted to date is encouraging, it is inconclusive as to the degree of overall interference protection the use of such receivers would provide in a typical system. The attenuator circuitry does not address OOBE interference and is able to abate intermodulation interference only in areas in which the desired signal is strong enough to activate the attenuator.

114. Motorola stated that it could incorporate switchable attenuators in new products without a significant cost penalty; that it could retrofit switchable attenuators in certain of its earlier radios; and that the attenuation circuitry is not proprietary.[334] However, it has not provided diagrams of the circuitry and no other manufacturer has come forward to endorse use of such radios, much less commit to producing them. Nonetheless, we believe that the potential for improved intermodulation interference rejection through use of switchable attenuators is sufficiently promising that we will continue to monitor manufacturers' development of radios with improved intermodulation rejection ratio—whether by use of switchable attenuators or otherwise—and, if the facts so indicate, will consider reviewing our rules governing intermodulation rejection standards for 800 MHz public safety receivers. We note the statement by Motorola that more interference resistant receivers can be produced at little or no additional cost.[335] With respect to these receivers and other 800 MHz public safety equipment, we strongly encourage the industry as a whole not to seek excessive profits when offering suitable equipment to public safety agencies. In so doing, equipment manufacturers can make a significant contribution to providing first responders with the affordable communications equipment necessary to meet their Homeland Security obligations.

3. Overall Approach to Interference Abatement

a. Role of Enhanced Best Practices

115. As an initial matter, we recognize that some unacceptable interference can originate from multiple sources, e.g., two or more cells, (ESMR, cellular telephone, or both) each contributing to OOBE or intermodulation interference. In such cases, all involved ESMR and/or cellular telephone licensees are jointly and severally responsible for abating the interference, no matter how small their contribution to the problem. In this regard, we believe that adopting rules and policies expressly imposing such responsibilities on such licensees operating in the 800 MHz spectrum is consistent with the mandate in Section 1 of the Act to enhance the safety of life and property.[336] In addition, we emphasize that a reactive

[331] *Id* at 5.

[332] *Id.*

[333] *Id.* at 7, Figure 1.

[334] *See* Letter, dated June 20, 2003, from Steve B. Sharkey, Director, Spectrum and Standards Strategy, Motorola, Inc. to James Schlichting, Deputy Chief, Office of Engineering and Technology, Federal Communications Commission at 7-8 (Motorola June 20 *Ex Parte*).

[335] *Id.*

[336] 47 U.S.C § 151. *See also* 4.9 GHz Band Transferred from Federal Government Use, WT Docket No. 00-32, *Memorandum Opinion and Order and Third Report and Order*, 18 FCC Rcd 9152 (2003) (allocating (continued….)

approach to interference abatement is per se undesirable because of the concomitant adverse impact on public safety, CII and other 800 MHz communications. Thus, we encourage all 800 MHz licensees, in designing new systems or modifying existing systems, to anticipate and avoid potential interference before it occurs. This encouragement extends to designers of non-cellular 800 MHz systems as well; inasmuch as providing a more robust desired signal contributes significantly to interference abatement. To facilitate system designs that take the relevant interference environment into account, we are adopting rules that require mutual prior notification, on request, of changes or additions to ESMR, cellular telephone, public safety and CII 800 MHz systems; [337] and are encouraging other voluntary and cooperative interference abatement solutions, such as "channel swaps."

116. As noted earlier, the majority of the comments in this proceeding support abating harmful interference to public safety systems operating in the 800 MHz band by one of two methods: relying exclusively on Best Practices[338] or by reconfiguring the 800 MHz band. Following publication of the *Best Practices Guide* in 2000, and throughout this proceeding, the Commission has given careful thought to whether Enhanced Best Practices, alone, would suffice to reduce unacceptable interference to the extent necessary to provide reliable 800 MHz public safety communications. In particular, we have carefully analyzed the filings by the Balanced Approach parties which urge adoption of a rule that would essentially codify many of the *Best Practice Guide* remedies and which would contain additional requirements—primarily procedural—to be followed when interference is encountered.[339]

117. We recognize that the development of the technical measures described in the *Best Practices Guide*, and subsequent related documents such as the Motorola *Technical Toolbox* represent an enormous amount of work and an almost unprecedented level of cooperation within the 800 MHz user community. We commend both the effort involved in developing these measures and the cooperative spirit they represent. We encourage continued research into interference abatement measures so that Enhanced Best Practices can become even more effective as a tool for remedying unacceptable interference. In so saying, however, we note that the voluntary use of Best Practices to date has abated many, but by no means all, instances of interference to public safety communications.

118. Voluntary Best Practices have often proven effective in abating interference on a case-by-case basis and will continue to be valuable—in the form of Enhanced Best Practices—even after band reconfiguration. Although there are several interference abatement strategies subsumed under the Enhanced Best Practices rubric, they fall into three basic categories: (1) changing the technical parameters of ESMR and/or cellular cell sites; (2) improving the equipment, including portable and mobile units, of the licensee encountering interference; and (3) establishing interference abatement procedures such as, prior notification of cell activation or modification. Details on these three categories of Enhanced Best Practices and the advantages and disadvantages thereof are contained in Appendix D *infra.* Enhanced Best

(Continued from previous page)
spectrum for public safety in furtherance of Commission's Section 1 obligation to promote safety of life and property); E911 Accuracy Standards Imposed on TIER III Carriers for Locating Wireless Subscribers Under Rule Section 20.18(H), WT Docket No. 02-377, *Order*, FCC 03-297 (2003) (denying a petition for forbearance from certain E911 requirements because of the strong connection between such requirements and the Commission's obligation to promote safety of life).

[337] *See* ¶¶ 124-127 *infra*.

[338] "Best Practices" as used herein refers to the recommendations for voluntary interference abatement contained in the *Best Practices Guide*. *See* n. 40 *supra.*

[339] *See, e.g.,* Letter, dated May 29, 2003, from Jill Lyon, Esq., Vice President and General Counsel, UTC to Marlene H. Dortch, Secretary, Federal Communications Commission.

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Practices procedures formalize the cooperative efforts that some ESMR and cellular telephone licensees have undertaken to promptly identify and abate unacceptable interference. In furtherance of such efforts we are adopting rules today that require 800 MHz licensees to share technical data on request;[340] and that set specific schedules for the identification, notification, assessment and abatement of unacceptable interference.[341]

119. We note, however, that, as with almost any engineering solution, there are technical tradeoffs associated with most Enhanced Best Practices. For example, abating unacceptable interference using Enhanced Best Practices can sometimes be done only at the expense of affecting the coverage and subscriber capacity of ESMR and cellular systems, *e.g.,* Enhanced Best Practices that rely on restricting ESMR or cellular channel use or making significant reductions in cell ERP. Proposals advancing the use of Enhanced Best Practices—however defined—as the sole remedy for interference abatement have a significant drawback that makes them problematic as a long-term solution: they incur high transactional costs for all parties and would have to continuously be applied to an increasing number of interference incidents that are inevitable as use of the 800 MHz band intensifies.[342] Several parties also note that most of the remedies described in the *Best Practices Guide* are fundamentally reactive because interference must first be encountered before abatement efforts commence.[343] We regard this as another serious drawback. It would be scant consolation for a public safety officer subjected to a life-threatening communications failure to know that he or she could report the problem so that technical fixes could eventually be applied to fix it—or not.

120. The record supports our conclusions about the high transactional costs of employing case-by-case remedies alone to abate harmful interference to public safety systems in the 800 MHz band. Nextel, one of the few parties that submitted comments detailing the costs of implementing Best Practices techniques, asserts that it employs between ten to fifteen full-time employees devoted to coordinating the company's interference abatement measures nationwide and employs over twenty additional technicians to resolve each interference problem.[344] Nextel further asserts that it spends at least $10,000 investigating and temporarily mitigating interference at a single site and that this cost can increase by as much as $25,000 if additional equipment is required.[345] Moreover, according to Nextel, implementing these measures can take from six to ten weeks with no guarantee that the particular technique being implemented will cure the interference problem.[346] We further note that the record shows that it is not only CMRS licensees that incur interference mitigation costs. For example, both Anne Arundel County and Denver state that they have spent significant amounts of money and employee time attempting to mitigate

[340] *See* ¶ 124 *infra.*

[341] *See* ¶¶ 132-141 *infra.*

[342] This is due to the increased use of this band by public safety licensees as well as the increased use necessitated by the expanding subscribership of ESMR and cellular systems.

[343] *See* Comments of APCO at 9-10; IACP *et. al.* Comments 4-5; Nextel Reply Comments at 58; Reply Comments of Consensus Parties to Supplemental Comments of Consensus Parties at 13.

[344] *See* Letter, dated December 19, 2003, from Regina M. Keeny, Counsel to Nextel to Michael J. Wilhelm, Esq., Federal Communications Commission at 12.

[345] *Id.* at 10-11.

[346] *Id.* at 10.

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interference on a case-by-case basis.[347]

121. Against this backdrop, we are concerned that the inevitable increase in the number of potential and actual interference situations that will arise, in the 800 MHz band, as currently configured, could strain the effectiveness of the mitigation techniques and increase their cost, possibly rendering interference abatement ineffective and unaffordable. Thus, while we do not question the short-term efficacy of Enhanced Best Practices, we conclude that licensees in the 800 MHz band would be better served by a long-term solution that minimizes this burden. Indeed, in the 700 MHz Guard Band proceeding, the Commission recognized early on the necessity of spectrally separating incompatible technologies in order to avoid the incidence of interference to non-cellular public safety from cellular operations.[348] In drafting up its 700 MHz band plan, the Commission essentially recognized the significance of grouping technically compatible public safety systems in close spectrum proximity and that spectrally separating incompatible systems such as through the use of guard bands required direct regulatory intervention. The Commission further adopted a package of technical rules and interference mitigation procedures to ensure that Guard Band operations would not cause interference to adjacent public safety operations. The Commission's experience in 700 MHz provides ample evidence that combining a forward looking band plan with a customized package of interference avoidance techniques can be successful. Further, the record in this proceeding supports that reconfiguration of the 800 MHz band, while expensive in the short-term, will, over time, minimize the transaction costs incurred by 800 MHz licensees by reducing reliance on Enhanced Best Practices.[349] Thus, although Enhanced Best Practices must remain the remedy of first resort until band reconfiguration is complete—and will remain necessary for otherwise intransigent cases of unacceptable interference, their high transactional cost indicates that it would be unwise to rely on Enhanced Best Practices as the exclusive remedy for interference abatement over the long term.

122. Again we emphasize that Enhanced Best Practices remain powerful parts of the interference abatement arsenal. We agree with the Consensus Parties that all feasible remedies—including band reconfiguration and Enhanced Best Practices[350]—must be applied to the problem if our goal is to be reached. Therefore, we expect 800 MHz ESMR and cellular telephone licensees will continue to use Enhanced Best Practices to abate harmful interference until the completion of band reconfiguration. We do recognize that instances of residual harmful interference will crop up even after band reconfiguration but are confident that ESMR and cellular licensees can apply Enhanced Best Practices to resolve these cases. But, in our judgment, in the final analysis, the best long term solution requires a restructuring of the 800 MHz band to substantially reduce the need for case-by-case interference management.

123. In this connection, we recognize that some interference incidents may not be effectively

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[347] *Id.* at 12. Denver contends that it has spent in excess of $130,000 to mitigate interference and Anne Arundel County estimates these costs to be "hundreds of thousands of dollars." *See* Letter, dated November 3, 2003 from Alan Tilles, Esq., Counsel to the City and County of Denver to John Muleta, Esq., Chief, Wireless Telecommunications Bureau, Federal Communications Commission. *See also* Application for Review in WT Docket 02-100, filed August 6, 2003, by Anne Arundel County at 6.

[348] *See* ¶ 41 *supra*.

[349] *See* Letter, dated May 16, 2003, from Robert Foosaner, Senior Vice President and Chief Regulatory Officer to Nextel Marlene Dortch, Secretary, Federal Communications Commission at 14-15; Sun Fire Group Study at 11-13; Denver SOW at 1-2; Letter, dated December 19, 2003, from Regina M. Keeny, Counsel to Nextel to Michael J. Wilhelm, Esq., Federal Communications Commission at 10-11.

[350] *See* Supplemental Comments of the Consensus Parties at 39.

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addressed through use of Enhanced Best Practices. As a result some alternative redress may be needed prior to the completion of reconfiguration of the 800 MHz band. Given that channel swapping is essentially band reconfiguration on a micro scale, we anticipate looking favorably upon proposals mirroring the band plan set forth in this *Report and Order*. Conversely, we anticipate being less inclined to approve proposals that deviate from the band plan. We also delegate to the Chief of the Wireless Telecommunications Bureau the authority to grant whatever waivers are necessary to implement channel swap proposals.

b. Interference Abatement Rules and Procedures

(i) Mutual Notification Requirements Applicable to 800 MHz Licensees

124. We are adopting rules requiring ESMR and cellular telephone licensees to furnish to those public safety and CII agencies who request it, prior notice of at least ten business days before new cells are constructed or existing cells are modified.[351] Public safety and CII agencies which receive this information have the reciprocal obligation to inform ESMR and cellular telephone licensees whenever the public safety or CII licensee changes its system parameters. We take these steps in general agreement with those parties who believe that prior notice has a prophylactic effect on interference avoidance. Thus, if the characteristics of a proposed new cell are known in advance, it is possible to analyze the cell's potential for interference and make any necessary revisions to cell parameters before the cell is activated. For example, an ESMR or cellular telephone licensee could furnish the public safety or CII licensee or its representative, *e.g.* a frequency coordinator, the proposed parameters of a new cell sufficiently far in advance to allow these parties to analyze the cell's potential for interference and suggest any necessary changes that should be made before the cell is activated. This exchange of information can be performed in any manner agreeable to all parties involved. We decide to limit this notification entitlement to only public safety and CII licensees; and then only if they request ESMR and cellular telephone licensees to furnish them the information on a regular basis. We decline the alternative—requiring ESMR and cellular licensees to furnish the information whether requested or not—in the interest of avoiding the burden of producing and receiving unnecessary paperwork, and in fulfillment of our obligations under the Paperwork Reduction Act.[352] We do not require notification of other non-cellular 800 MHz licensees in consideration of the fact that their communications are unlikely to be of a mission-critical nature and because of the burden that could be imposed on the ESMR and cellular telephone carriers were it necessary to furnish information to large numbers of licensees, especially in urban areas. However, we do endorse, but do not require, ESMR and cellular telephone licensees furnishing notification information to any 800 MHz licensee requesting it; *e.g.,* because of frequent instances of interference. Finally, we impose a reciprocal obligation on public safety and CII licensees to provide notification of their facilities, and any modifications thereto, to ESMR and cellular telephone licensees requesting same.

125. The 800 MHz Users Coalition argues we should require prior coordination—rather than just notification—using the standards contained in TIA TSB-88A; but they have not stated precisely how TSB-88A would be useful in effecting prior coordination of cell sites.[353] We note that TSB-88A was the result of studies of the impact of spectrum refarming and digital modulation on the frequency coordination

[351] We will not require ESMR or cellular telephone licensees to furnish prior notice information to non-public safety or non-CII licensees although we encourage the exchange of such information when specifically requested by a non-public safety or non-CII licensee.

[352] *See* Appendix B *infra.*

[353] *See* 800 MHz Users Coalition May 29, 2003 *Ex Parte* at 6.

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of land mobile radio systems and deals primarily with potential co-channel and adjacent channel interference.[354] However, in the case of 800 MHz public safety systems, co-channel interference has not been identified as a significant problem. Although adjacent channel interference can be a factor—particularly in the interleaved 800 MHz channels—the interference mechanisms at work in most instances of 800 MHz public safety systems differ from those covered in TSB-88A. Moreover, although TSB-88A makes a passing reference to "noise generated by non-wireline cell sites"[355] in its discussion of "Environmental RF Noise"[356] the document is primarily directed to interference between high-site systems. Accordingly, although we believe that some parts of TSB-88A might be useful in 800 MHz interference analysis, *e.g.* the document's discussion of coverage reliability;[357] we do not think it wholly applicable to the environment in which 800 MHz public safety systems operate. We are aware of no agreed-upon coordination standards that address the OOBE and intermodulation interference that occurs in the immediate vicinity of cell sites; and thus are not mandating prior coordination of cell sites. However, we believe that notification of cell site parameters will allow some inferences to be drawn, on a case by case basis, relative to the cell's potential for generating unacceptable interference.

126. The parameters most relevant to prior notification of a cell are its location, the effective radiated power, the antenna height, and the channels in use.[358] Accordingly, we believe that non-cellular 800 MHz licensees should have such information available on request from ESMR and cellular telephone licensees and so require. We impose a similar requirement on public safety licensees (*i.e.*, to, upon request, provide their operating parameters to ESMR and cellular telephone licensees operating within the public safety systems' coverage areas.). We are aware that some ESMR and cellular telephone licensees regard their operating parameters as proprietary and encourage such licensees to use non-disclosure agreement whereby third parties will not be given access to such information. Failing that, the affected parties may seek a protective order from the Commission.[359] We also encourage, but do not require, that the matter be submitted to arbitration, mediation, or other alternative dispute resolution mechanism.

127. We stress that the prior notification provided to the public safety licensee is for informational purposes only: we are not affording public safety or CII licensees the right to accept or reject the activation of a proposed cell or to unilaterally require changes in its operating parameters. The principal purposes of notification are to: (a) allow a public safety or CII licensee to advise the ESMR or cellular telephone licensee whether it believes a proposed cell will generate unacceptable interference; (b) permit ESMR or cellular telephone licensees to make voluntary changes in cell parameters when a public safety or CII licensee alerts them to possible interference; and (c) rapidly identify the source if interference is encountered when the cell is activated. Thus, at the very least, the knowledge that a new ESMR or

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[354] *See* TSB-88A, June 1999 at vii (Introduction). The TIA document does not contemplate interference from low site ESMR and cellular telephone systems of the kind discussed herein. For example, intermodulation interference is discussed only in the context of base station receivers, not mobile or portable receivers. *See id.* at § 5.4.2-5.4.4.

[355] TSB-88A, June 1999 at 36 ¶ 5.1.

[356] *Id.*

[357] *Id* at 86.

[358] *See, e.g.*, Project 39, Interference to Public Safety 800 MHz Radio Systems, *Interim Report to the FCC,* December 24, 2001 at 12-21. *See also Best Practices Guide* at 7-8; Motorola Comments at 20.

[359] *See* Digital Output Protection Technology and Recording Method Certifications, *Order*, MM Docket 04-68, DA 04-716 (rel. Mar 17, 2004). *See also* 47 C.F.R §§ 0.457, 0.459.

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cellular telephone cell was going to be activated on a given date would allow a public safety or CII representative to attribute interference to that cell if new interference were encountered where it had not existed before.

(ii) Responsibility for Mitigation Pre- and Post- Band Reconfiguration

128. The Consensus Parties envisioned that their unacceptable interference threshold provisions would go into effect only after band reconfiguration was complete. However, the severity of interference currently being encountered is such that we cannot responsibly let it go unaddressed in the interim. Given the demonstrated utility of Enhanced Best Practices, and the extensive other resources—technical, financial and otherwise—available to ESMR and cellular licensees, they currently are capable of eliminating unacceptable interference pending completion of band reconfiguration, albeit at the occasional expense of subscriber capacity limitations or the need to fund improvements to non-cellular systems. Although many ESMR and cellular licensees have been commendably cooperative in bearing the responsibility for identifying and promptly curing interference at their own expense; we believe it prudent to codify this previously voluntary effort into strict responsibility. Under that policy, any ESMR or cellular telephone licensee that causes, or contributes to, unacceptable interference to a non-cellular licensee is responsible for abating it promptly at its own expense. In so assigning responsibility, we place it on the party or parties best qualified and situated to take the actions necessary to ensure that first responders—both public safety and CII personnel—have communications channels free of unacceptable interference and which thus are suitable for mission-critical operations including rapid response to major attacks that threaten Homeland Security. Accordingly, as of the effective date of this *Report & Order*, ESMR and cellular carriers are strictly responsible for abating unacceptable interference as defined *supra*.[360]

129. We carefully considered alternatives to strict responsibility, including those discussed in the *NPRM* but found them either insufficiently effective or overly burdensome on the ESMR and cellular telephone industries. For example, we considered the comments of parties which advocated across-the-board limits on such cell parameters as maximum power flux density in the immediate vicinity of the cell, reduced effective radiated power, antenna vertical pattern restrictions, limits on the cumulative OOBE from cell transmitters and the like.[361] However, we recognized that such limits would impose heavy burdens on ESMR and cellular telephone licensees, and that the restrictions would require modifications of cells that had little, if any, potential for generating unacceptable interference. Therefore, in lieu of adopting what could be draconian rules, we are affording ESMR and cellular telephone licensees the discretion to make any necessary changes to their own systems—or changes to non-cellular systems affected by unacceptable interference—as may be necessary to eliminate unacceptable interference.[362]

130. We assign strict responsibility for eliminating unacceptable interference when an ESMR

[360] In imposing strict responsibility for the abatement of unacceptable interference we are doing no more than formalizing the interference-abatement responsibilities underlying the Commission's initial approval of cellular-architecture systems operating in the 800 MHz band. *See* Fleet Call, Inc., Waiver Request at 32-33. There the Commission noted that Fleet Call's statement about interference potential "firmly guides our consideration of Fleet Call's proposal." *Id.*

[361] *See* n. 305 and n. 306 *supra.*

[362] We decline to specify what remedies may be necessary in a particular circumstance, but observe that they could include responsibility for furnishing affected non-cellular systems with additional base stations or more interference-resistant mobile and portable radios.

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or cellular telephone signal is solely implicated in an interference incident. In circumstances in which two or more ESMR or cellular telephone signals are implicated, strict responsibility must be reflected in the sources' joint and several responsibility for interference abatement. We say this in the knowledge that the interfering licensees are in the best position to determine their relative contributions to interference problems and to agree upon what specific measures must be undertaken by each licensee in order for interference abatement efforts to be effective. We wish it understood, however, that such responsibility does not attach merely because a licensee's cell is in the immediate vicinity of the locus of interference. Thus, we will not assign joint and several responsibility to ESMR and cellular telephone licensees that can demonstrate that their signals are not involved in a given interference case.[363] However, in so saying, we emphasize that we have discounted claims, made earlier in this proceeding, categorically denying that licensees in the cellular telephone bands cause interference to 800 MHz public safety systems.[364] There is strong evidence to the contrary.[365] We will, therefore, require all involved parties, ESMR and cellular telephone licensees alike—and each of them severally—to respond to every complaint of interference to a non-cellular 800 MHz system with full cooperation and utmost diligence to abate objectionable interference in the shortest practicable time.

131. In sum, rather than impose stringent, across-the-board emission limits at this time, we are adopting rules that require ESMR and cellular telephone licensees to act only when and where it is evident that unacceptable interference is or will be caused to non-cellular 800 MHz systems, thereby affording such licensees a high degree of technical flexibility and minimizing the cost of interference avoidance.[366] However, we will not extend the same level of flexibility to the procedures, and associated time limits, necessary to ensure that ESMR and cellular telephone licensees respond to complaints of interference to public safety/CII systems. Although some ESMR and cellular telephone licensees have been commendably cooperative in abating interference; the record shows that this has not always been the case.[367] Thus, we assign ESMR and cellular telephone licensees strict responsibility for effectively curing actual or potential unacceptable interference to 800 MHz public safety/CII systems in the shortest practicable time.[368] To a degree, this approach will test the wisdom of our forbearing system-wide stringent regulation of the technical aspects of ESMR and cellular telephone systems pending an assessment of whether licensees can successfully abate interference under the less stringent regulatory regime we establish today.

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[363] *See* 47 C.F.R. §§ 22.971(b)(2) and 90.673(b)(2) in Appendix C *infra.*

[364] *See, e.g.,* Verizon Comments at 2; Southern LINC Comments at 11; and Cingular Comments at 2-3. Some parties argued that reports of interference were anecdotal in nature, and for that reason, did not represent a true evaluation of the problem. *See* Cinergy Comments at 7-9.

[365] *See, e.g.,* Anne Arundel County *ex parte* letter dated July 29, 2003 at 2 (indicating that, in addition to Nextel, both Cingular and Verizon contribute to interference). *See also* Denver June 10 *Ex Parte* at 1 (stating that field measurements and analysis implicate AT&T Wireless as a source of interference).

[366] *See* 47 C.F.R. §§ 22.972 and 90.674 in Appendix C *infra.*

[367] *See e.g.,* City of Portland, Oregon Comments at 3 (describing difficulty in securing Nextel's cooperation in resolving interference); Department of Information Technology, Fairfax County, Virginia Comments (indicating that Nextel causes interference but has implemented no mitigation measures); Attachment to Letter, dated September 17, 2003, from Alan H. Tilles, Counsel for City and County of Denver to Marlene H. Dortch, Secretary, Federal Communications Commission at 4 (stating that AT&T has taken no steps to mitigate ongoing interference).

[368] *See* 47 C.F.R. §§ 22.972(c) and 90.674(c) in Appendix C *infra.*

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(iii) Interference Resolution Procedures

132. We agree with those commenting parties that urged adoption of standardized procedures for reporting 800 MHz interference, identifying its source and implementing a solution.[369] We believe the effectiveness of such procedures is optimized if they are associated with specific compliance deadlines and the industry's use of a common method of disseminating interference complaint information and related communications.

133. *Initial Notification.* We will require licensees operating cellular-architecture systems in or adjacent to the 800 MHz band (ESMR, Cellular A Band and Cellular B Band) to establish, within thirty days of the effective date of this *Report and Order*, a common electronic means of receiving initial notification of interference complaints from non-cellular 800 MHz licensees. Although we do not specify the means to be used, we do require that it be a single, common point (for example, a single, nationwide email address or web page) so that an affected entity need not provide multiple notices to different ESMR or cellular telephone licensees.[370] We concur with the commenting parties who believe that, at a minimum, the initial interference complaint should include:

- the specific geographical location where the interference occurs, and the time or times at which the interference occurred or is occurring;
- a description of the scope and severity of the interference;
- the source of the interference if known;
- the relevant FCC licensing information of the party suffering the interference; and
- a single point of contact for the party suffering the interference.[371]

134. The notification system shall be established on a strict "need-to-know" basis: the general public will not be able to access the system; only parties to a given interference complaint will have access to information concerning that complaint; and parties using the system will be required to agree to non-disclosure provisions. The Commission's Enforcement Bureau, however, will have unrestricted access to all information in the system and will not be bound by any non-disclosure provisions.

135. The Consensus Parties, in their proposed "Policies and Procedures for Post-Realignment Interference Mitigation,"[372] recommended that we require any ESMR or cellular telephone licensee within

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[369] *See, e.g.,* Supplemental Comments of the Consensus Parties, Appendix F at F-5-6; Comments of Alltel, *et al.* to Supplemental Comments of the Consensus Parties, Appendix A at A-2-3; Comments of Consumers Energy to Supplemental Comments of the Consensus Parties, Appendix A at A-2-3; McDermott, Will and Emery *ex parte* presentation dated March 12, 2003, (McDermott, Will and Emery March 12 *Ex Parte*), Appendix A at A-2-3; 800 MHz User Coalition May 29 *Ex Parte*, Appendix A.

[370] We note that Nextel currently has such a mechanism in place. Parties claiming that Nextel systems are causing interference to their systems can email public safety@Nextel.com. *See* Attachment to Nextel October 22, 2003 *Ex Parte* at 3.

[371] *See* Comments of Cinergy to Supplemental Comments of Consensus Parties, Appendix A at A-2-3; Comments of Consumers Energy to Supplemental Comments of Consensus Parties, Appendix A at A-2-3; 800 MHz Users Coalition June 11, 2003 *Ex Parte* at 4.

[372] *See* Supplemental Comments of the Consensus Parties at Appendix F.

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a 5,000 foot radius of an interference site to respond to an interference complaint within a maximum of two days. Other parties recommended similar distances and response times.[373] We believe the 5,000 foot radius is reasonable for purposes of identifying those parties that must respond to an interference complaint;[374] but note that we will not absolve parties with cell sites outside that radius from the responsibility for eliminating unacceptable interference if it is demonstrated that they are the source thereof.

136. We are less sanguine about the recommendation that a response to an interference complaint could be delayed for up to two days.[375] An unresolved incident of unacceptable interference impairs the ability of the affected public safety or CII licensee to respond to an emergency, large or small. Given the ease of communicating interference complaints electronically, and the fact that many, if not most, ESMR and cellular telephone licensees have technical staff available or on call on an around-the-clock basis in the normal course of business, we believe that a response must come in a matter of hours, not days. We thus conclude that it is not unduly burdensome to require a response to complaints from public safety or CII licensees with all possible speed, and under no circumstances, in more than twenty-four hours. In the case of other non-cellular 800 MHz licensees, (*i.e.,* B/ILT and non-cellular SMR licensees), the maximum response time shall be forty-eight hours, acknowledging that, for the most part, communications on these latter systems are not safety-related.

137. *Interference Analysis.* We will require licensees receiving an initial notification of interference to perform a timely analysis and identification of the interference, including, whenever necessary, an immediate on-site visit if they have cellular architecture equipment operating within 5,000 feet of the interference incident. Licensees must complete this analysis and initiate corrective action within forty-eight hours of the initial complaint if the licensee is a public safety or CII licensee. In the case of other non-cellular 800 MHz licensees, the time to complete the analysis and initiate corrective action shall be ninety-six hours. In both cases the time period may be extended if the affected licensee reasonably agrees, in writing (including e-mail or other electronic means which creates a record), to a longer period.

138. We disagree with those parties that suggest that the analysis or on-site visit could safely be delayed for up to five working days of the date of the original complaint.[376] We assume that an ESMR or cellular telephone operator would not allow a failure in a critical element of its network to remain uncorrected for five working days, and thus believe that forty-eight hours (ninety-six hours in the case of other than public safety and CII systems) is a generous allowance for ESMR or cellular telephone carriers to determine (including making any necessary site visits), whether their operations are interfering with public safety, CII or other 800 MHz communications. In focusing on the obligations of ESMR and

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[373] *Id.* at F 5-6; Comments of Alltel, *et. al* to Supplemental Comments of the Consensus Parties, Appendix A at A-2; McDermott, Will and Emery March 12 *Ex Parte*, Appendix A at A-2, item B.2; 800 MHz User Coalition May 29 *Ex Parte*, Appendix A at 5.

[374] *See e.g.,* Motorola *ex parte* presentation dated October 30, 2002 (Using data taken in the Chicago area, Motorola demonstrates that—beyond 5,000 feet—the signal strength from ESMR base stations would be insufficient to cause intermodulation interference to a radio with 70 dB intermodulation rejection ninety-percent of the time).

[375] *See e.g.,* Supplemental Comments of the Consensus Parties at Appendix F, § 3.2; 800 MHz User Coalition June 11, 2003 *Ex Parte* at 5.

[376] *See* Supplemental Comments of the Consensus Parties at Appendix F at F 6; Comments of Alltel, *et. al.* to Supplemental Comments of the Consensus Parties, Appendix A at A-3; McDermott, Will and Emery March 12 *Ex Parte,* Appendix A at A-3, item 3; 800 MHz User Coalition May 29 *Ex Parte* presentation, Appendix A at 5.

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cellular telephone licensees we do not mean to imply that similar obligations do not attach to public safety, CII and other non-cellular 800 MHz licensees. They are bound by the good-faith obligation to exhibit the utmost cooperation with the ESMR and cellular telephone representatives, including, without limitation, the obligation to timely meet appointments and provide whatever technical assistance is appropriate under the circumstances.

139. *Mitigation Steps.* Although we leave the means whereby interference is abated to the discretion of the involved ESMR and cellular telephone licensees, we couple this discretion with an obligation on such licensees to provide all test equipment (and technical personnel skilled in the operation of such equipment) necessary to determine the most appropriate means of timely eliminating the interference. The record contains considerable guidance concerning techniques that parties can apply to the problem, including those described in the *Best Practices Guide*, the separately issued Motorola *Technical Appendix* thereto,[377] and the recently described measurement protocol for ascertaining the exact interference mechanisms involved in a given complaint.[378] We expect parties to resolve interference in the shortest practicable time; however, should all short-term measures prove inadequate, we recognize that parties sometime cannot readily or rapidly implement other remedial measures—for example, "channel swaps" or the installation of new or modified base stations.[379] In such cases, we believe a rule of reason should apply and that the licensee affected by interference, while not compromising safety, should make all necessary concessions to accepting the interference until the implementation of longer-term remedies.[380] However, we will consider the failure to timely implement an interference abating remedy—whether it be near term or long term—as evidence of bad faith and will deal with it accordingly.

140. We also provide public safety licensees a "safety valve" for use when the continued presence of interference constitutes a clear and imminent danger to life or property.[381] Under such circumstances, we will require the interference source(s) to immediately discontinue operation, pending the identification and application of corrective measures. The request for this action: (a) must be made by affidavit or statement under penalty of perjury,[382] from an officer or executive of the affected public safety

[377] *See generally* Appendix D *infra.*

[378] *See* Motorola April 11, 2003, *ex parte* presentation to Federal Communications Commission Office of Engineering and Technology at 15-17.

[379] In cases in which intractable interference problems have not yielded to other technical remedies, Nextel and public safety licensees have entered into agreements for "channel swaps," whereby Nextel moves its 800 MHz ESMR operations to the public safety licensees' channels and the public safety licensee relocates its operations to Nextel's ESMR frequencies. Under these agreements, Nextel would pay all or most of the expense associated with equipment retuning or replacement. The Commission has granted several applications implementing channel swaps in Anne Arundel County, Maryland. *See, e.g.,* Application for Modification of License of Station KNJU756, File No. 476003. The Commission is also reviewing another such agreements between Nextel and the City of Denver. We also have been informed that the city and county of San Diego, California are considering similar agreements. *See generally,* Denver SOW and San Diego *Ex Parte*. As yet, insufficient information exists on the results of channel swaps to allow us to assess their efficacy. However, we believe that the swaps will provide a test bed for band reconfiguration, to the extent they yield valuable information on process; *i.e.,* the time required to negotiate the agreements; the determination and apportionment of costs and responsibilities, the time required to make the necessary technical changes, and the disruption, if any, of public safety services.

[380] Should disputes arise in connection with such matters, parties are encouraged to resolve them using arbitration, mediation or other alternative dispute mechanisms.

[381] We stress that we only provide this "safety valve" to public safety licensees.

[382] *See* 47 C.F.R. § 1.16.

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licensee; (b) shall completely describe the basis of the claim of clear and imminent danger; (c) must be stated to be on personal knowledge or on belief after due diligence; (d) may not be made by a contractor or other third party; and (e) will not be effective until approved by an official of the Commission's Wireless Telecommunications Bureau or other authorized Commission official. The public safety party must serve the statement on the ESMR and/or cellular telephone licensee by hand-delivery or receipted fax and transmit a copy by fastest available means to the Washington, D.C., office of the Wireless Telecommunications Bureau.[383] If the Wireless Telecommunications Bureau determines that the claim of imminent and present danger is valid, it will immediately refer the matter to the Enforcement Bureau for appropriate action. Any party alleging intentional or negligent misrepresentation or omission in such an affidavit or statement made under penalty of perjury may submit documentation thereof to the Commission's Enforcement Bureau; whereupon the Enforcement Bureau may institute an enforcement action which could result in, without limitation, forfeitures and license revocation. Such Commission action would be in addition to, and not to the exclusion of, other remedies available under local, state or federal law.

141. Finally, we note that we will monitor interference complaint data on an ongoing basis to ensure the interference abatement objectives addressed in this proceeding will continue to be accomplished both before and after band reconfiguration. We emphasize that our responsibility to ensure that 800 MHz non-cellular licensees do not suffer from unacceptable interference from CMRS carriers will be complaint-driven, and we urge affected licensees to carefully monitor their systems and promptly report any incidents of unacceptable interference to the relevant CMRS carrier(s).[384] To the extent that our experience reveals that the interference abatement procedures we adopt today require refinement to ensure high-quality 800 MHz public safety or CII service, we will do so as necessary.

C. Band Reconfiguration

142. As noted in the Introduction to this *Report & Order,* the root of the instant problem lies in fundamentally incompatible mix of two types of communications systems in the 800 MHz band: cellular-architecture multi-cell systems—used by cellular telephone and ESMR licensees—and high site systems—used by public safety, private wireless and non-cellular SMR licensees. For the reasons discussed below,[385] we believe reconfiguring the 800 MHz band to separate these incompatible technologies, supplemented, when necessary with, Enhanced Best Practices provides the best long-term solution to the problem of interference in the 800 MHz band.[386]

1. Technical Issues Addressed by Band Reconfiguration

143. Segregating ESMR systems from non-cellular systems by placing them in opposite segments of the 800 MHz band will make it possible for ESMR and cellular telephone licensees to avoid some intermodulation interference. However, in some instances, consolidating ESMR channels into a single band segment may not—in and of itself—sufficiently reduce unacceptable intermodulation

[383] The Washington, D.C. office of the Wireless Telecommunication Bureau is: 445 12th Street SW, Washington, D.C. 20554. Complaints should be addressed to the Public Safety and Critical Infrastructure Division.

[384] We recommend, but do not require, that the affected parties keep records of interference complaints and the resolution thereof; and make such records available to the Commission on request.

[385] *See* ¶¶ 143-146 *infra*.

[386] We take these steps pursuant to our authority under Sections 316, 303, 301 and 154(i) of the Act. *See* ¶¶ 62-87 *supra* for our legal authority to address this issue.

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interference. The Radio Frequency (R.F.) carriers of systems in a consolidated ESMR band segment (and at least a portion of the R.F. carriers in cellular telephone systems), would still fall within the passband of all current public safety portable and mobile receivers. Thus, even in a reconfigured 800 MHz band, ESMR channels, or ESMR and cellular telephone channels could still, when combined in the receiver, generate intermodulation products. Therefore, as we discuss below, we believe that abatement of unacceptable intermodulation interference will require more than segregating cellular architecture systems from non-cellular systems.[387] Thus, for example, ESMR licensees will have to make careful choice of channel selection such that two or more channels at a cell do not produce an intermodulation product falling on a public safety or CII channel.

144. Consolidating ESMR systems into one continuous segment in the upper portion of the 800 MHz band will provide ESMR licensees with greater flexibility in selecting channel pairs. The spacing between ESMR channels determines where intermodulation products will fall in the band. With closely spaced ESMR channels, the intermodulation products fall into—or just below—the upper portion of the ESMR segment of the reconfigured band. As the cell channel spacing increases, the intermodulation products become further removed from the ESMR band segment, extending further down into the non-cellular channels—including channels used by public safety systems. In the reconfigured band, a careful ESMR channel choice could reduce the potential for intermodulation interference generated between the ESMR channels in a given cell. Given careful coordination among licensees, it will also be possible, in some instances, to avoid intermodulation products formed by a combination of ESMR channels and cellular telephone channels. However, considerably more care is required when two licensees are involved. Close-spacing of channels is often not an option in that circumstance;[388] however, it still may be possible to avoid channel combinations that result in intermodulation products falling on specific frequencies used by public safety/CII systems. This latter solution may be more difficult to implement when cellular telephone systems use dynamic channel allocation whereby the channels in a given cell can change frequently, *e.g.*, on an hourly basis, in response to traffic loads. Moreover, some cellular telephone systems may make more use of technology, such as CDMA, in which wider bandwidth carriers produce IM products with a wider bandwidth thus potentially affecting more frequencies.

145. We believe that a reconfigured 800 MHz band will permit future public safety radios to be more interference resistant. Because there currently are public safety channels scattered throughout the 800 MHz band, from the bottom of the General Category band segment at 806 MHz/851 MHz to the top of the NPSPAC channels at 824 MHz/869 MHz, the device called, variously, the "preselector" or "input filter" of the public safety radio must be sufficiently wide to cover the complete 851-869 MHz range, including the current ESMR channels which fall at 861-866 MHz. Narrowing the range of Public Safety frequencies allows equipment manufacturers to utilize narrower filters that will attenuate potentially interfering signals higher in the band.[389]

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[387] *See* ¶ 144 *infra*.

[388] For example, the Consensus Parties propose relocating all ESMR channels to the 862-869 MHz band segment while all cellular telephone channels would remain in the adjacent 869-894 MHz band segment. Thus ESMR and cellular telephone channels could be closely spaced only in the upper portion of the ESMR band segment, which corresponds to the lower portion of the cellular telephone band segment.

[389] In a sense, the preselector or input filter is the "front door" of the radio which currently must be open wide enough that potentially interfering ESMR signals can enter unimpeded. However, when the 800 MHz band is reconfigured, the "front door" need be opened only widely enough to admit signals from 851-862 MHz. With the door not open as wide, signals above 862 MHz—including ESMR and cellular telephone signals—would have a difficult time squeezing through and causing interference.

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146. In sum, while band reconfiguration, in conjunction with careful engineering of cell sites, will reduce intermodulation interference between ESMR channels *inter sese*, it is apparent that particular care will have to be exercised when both ESMR and cellular telephone channels are implicated. In the long term, however, band reconfiguration will result in a net reduction in both unacceptable OOBE and intermodulation interference for the following reasons:

- Nextel will completely relinquish rights to all of the interleaved channels, relieving OOBE interference to licensees operating non-cellular systems on the interleaved portion of the band.[390]

- Nextel will relocate its systems operating on General Category channels to the upper portion of the 800 MHz band, therefore relieving OOBE interference that these systems currently can cause to non-cellular systems operating on channels immediately above the General Category channels.[391]

- Reconfiguring the 800 MHz band to separate cellular systems from non-cellular systems will substantially reduce interference to public safety created by OOBE by allowing ESMR licensees to replace current base station transmitter duplexers with new duplexers that will "roll-off" RF energy immediately below 862 MHz.[392]

- Consolidation of Nextel channels in the upper portion of the band will give ESMR operators and cellular telephone licensees greater flexibility to make a judicious choice of channel selection and channel spacing, thereby either confining potential ESMR intermodulation interference to a smaller portion of the non-cellular segment of the band, or limiting intermodulation products that fall on given CII or public safety channels.[393]

- We anticipate that, after band reconfiguration, equipment manufacturers will design public safety radios to cover only the portion of the 800 MHz band below 817/862 MHz because no public safety system will be operating in the ESMR spectrum above 817 MHz/862 MHz.[394] Thus, with public safety radios no longer required to cover the entire 800 MHz band, the first R.F. amplifier ("preselector") of the public safety radio can be designed to attenuate the potentially interfering ESMR and cellular telephone signals originating from systems that operate above 817 MHz/862 MHz.

147. Although reconfiguration of the 800 MHz band will eliminate the interference-prone interleaving of ESMR and public safety systems in the 800 MHz band, it will require changing the operating frequencies of many 800 MHz public safety, CII and other non-cellular licensees. This will be done incrementally in the fifty-five Regional Planning areas in the United States. In general, more modern

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[390] *See* Supplemental Comments of the Consensus Parties at 14.

[391] *Id.*

[392] *Id.* at Appendix F, F-8 § 4.1.2.

[393] *See* Attachment to Letter, dated September 17, 2002 [sic], filed September 22, 2003 from Alan S. Tilles, Esq. Counsel to the City and County of Denver to Marlene H. Dortch, Secretary, Federal Communications Commission at 7.

[394] We expect that most public safety systems will operate below 814/859 MHz, but public safety systems will have the option of operating in the Expansion Band or Guard Band segments between 814-817/859-862 MHz should they elect to do so.

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800 MHz systems can be changed in frequency with only minor changes, most of which can be implemented in software.[395] Older systems may require part changes, and, in some instances, replacement of entire transmitters and receivers. The overall band reconfiguration process will also require spectrum "green space;" for example, Nextel systems in the General Category band segment would be moved temporarily into Nextel spectrum at 900 MHz, thereby "clearing" the General Category band segment. Next, the current NPSPAC channels would be moved into the cleared space at 806-809 MHz/851-854 MHz. Nextel has accomplished band reconfiguration before, albeit on a smaller scale, when it cleared the Upper 200 channels of incumbent users. Based on data derived from inspection of sixteen public safety systems of varying complexity, Nextel has estimated the total cost of band reconfiguration at $850 million and has pledged to pay up to that amount. There is some disagreement over Nextel's estimates; but no real basis of choosing among competing band reconfiguration proposals on the basis of price: Nextel is the only party to this proceeding that has made a firm commitment to absorb the cost of band reconfiguration, including reconfiguration of its own systems, a factor not included in the $850 million estimate.[396]

148. We are sensitive to the concerns of those parties, including some public safety agencies whose systems do not now receive interference from ESMR and cellular telephone cells, who assert that reconfiguring the 800 MHz band could unnecessarily disrupt their communications while their operating frequencies are changed, or that their new channels would not be comparable to their original channels.[397] We are committed to ensuring that band reconfiguration will not result in degradation of existing service. We believe the rules we adopt today will ensure both continuity of service and "comparable facilities." With respect to the latter, we note that the rules we adopt today track rules the Commission has successfully used to accomplish previous band reconfigurations.[398]

2. New 800 MHz Band Plan

a. Band Plan Overview

149. In evaluating the various band reconfiguration plans submitted in this proceeding, we sought to identify, in each plan, five principal components that we deemed essential to the final "Commission Band Plan":

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[395] On July 30, 2003, the Consensus Parties conducted a live demonstration of base station and portable retuning using both Motorola and Kenwood equipment. The retuning was accomplished within a brief period without the need to change any system components. The "down-time" of the equipment was minimal. In one instance, the technicians demonstrated use of a portable base station that was substituted, temporarily, for the equipment being retuned. In the latter demonstration, the only "down-time" was the few seconds required to disconnect and reconnect the system antennas. The Consensus Parties do not claim, nor do we believe, that all systems could be retuned with equal facility; however the demonstration suggests that retuning time need not be a concern when modern equipment is involved.

[396] The Consensus Plan envisions that Nextel would fund the reconfiguration of its own systems separately. *See* Attachment to Letter, dated March 14, 2004, from Regina M. Keeney, Esq., Counsel to Nextel to Marlene H. Dortch, Secretary Federal Communications Commission.

[397] Some such concerns were directed to the Nextel *White Paper* proposal in which B/ILT and non-cellular SMR facilities all were to be relocated to the 700 MHz Guard Band and the 900 MHz land mobile band. That proposal was superseded by the band plan proposed by the Consensus Parties, which retains incumbents in the 800 MHz band, excepting those electing a "2 for 1" proposal whereby they would obtain double their existing spectrum if they relocated from 800 MHz to 900 MHz. *See* Supplemental Comments of the Consensus Parties at 13.

[398] *See, e.g.,* 47 C.F.R. § 90.699(d).

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- The extent to which a plan would abate unacceptable interference to non-cellular systems operating in the 800 MHz band.
- The extent to which incumbents would be treated most fairly, including the degree of disruption associated with channel changes, the ability to provide relocated incumbents with truly comparable spectrum and minimum interruption of critical public safety and CII communications. These factors weighed heavily in our rejection of proposed band plans that contemplated using the Upper 700 MHz spectrum for public safety systems.[399]
- A configuration of 800 MHz cellular-architecture channels that would make intermodulation interference less likely—a factor that argued in favor of plans that placed ESMR spectrum in a contiguous block.[400]
- A configuration that would allow effective filters to attenuate signals that fell in the portion of the reconfigured band used by public safety and CII systems.[401]
- The amount of additional 800 MHz spectrum in which public safety would have a right to operate.[402]

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[399] The proposal to use the Upper 700 MHz band for public safety was advanced by, among others, AT&T Wireless, Cingular, Alltel, Southern LINC and CTIA. *See* AT&T Wireless Comments at 7-14; Cingular and Alltel Comments at 16-19; CTIA Comments at 9-10; Alltel, *et al.* Reply Comments at 15-18; CTIA Reply Comments at 4-7; Southern LINC Reply Comments at 14-25. We find these plans inferior to most of the other band plans submitted. As an initial matter, the 700 MHz spectrum is unusable in most parts of the country because it is encumbered by television stations—a condition likely to persist for several years. In addition, some of these commenting parties envisioned that, when public safety is moved to the Upper 700 MHz band, the 800 MHz spectrum vacated by public safety licensees could be auctioned to pay for relocation costs. *See* Cingular and Alltel Comments at 17-18; CTIA Reply Comments at 7. However, no party advancing this proposal has provided either estimates of the cost of relocating the 800 MHz public safety licensees or the revenue that might be obtained from auctioning vacated 800 MHz spectrum. Thus, the economic feasibility of implementing these plans is highly problematic.

[400] For instance, Nextel states that once it vacates the interleaved spectrum and consolidates its systems in the 816-824 MHz /861-869 MHz band segment, it will be better able to control the spread of intermodulation products from its cell sites. *See* Nextel Reply Comments, Appendix II at 3; Comments of Nextel to Consensus Parties Reply Comments, Appendix I at 3. By limiting the span between the highest and lowest frequency at any given cell site, Nextel indicates that it will be able to avoid producing third-order intermodulation products that fall on portions of the band occupied by public safety systems. Because an instance of two-tone third-order intermodulation interference is defined by the relationship $F_{INTERMOD} = 2*F_1 - F_2$, limiting the difference between the highest and lowest frequency at a cell site correspondingly limits the range over which third-order intermodulation products will fall. *See* Motorola Comments at 18-19.

[401] *See* Supplemental Comments of the Consensus Parties at 43 and Appendix F at F-8, item 4.1.2. Nextel believes that reconfiguring the 800 MHz band to separate cellular systems from non-cellular systems will substantially reduce interference to public safety created by OOBE. Nextel states that if the 800 MHz band is reconfigured, it can replace current base station transmitter duplexers with new duplexers that will "roll-off" RF energy immediately below 861 MHz. *See* Comments of Nextel to Consensus Parties Reply Comments, Appendix I at 1-2.

[402] The Consensus Plan offers additional spectrum rights to public safety by giving it exclusive access to channels below 816/861 MHz that are either vacated by Nextel or by licensees who relocate above 816MHz/861 MHz as described in ¶¶ 152, 158 *infra.* This exclusive access will last for a five-year period after the completion of band reconfiguration. *See* Consensus Parties Reply Comments at 25. By contrast, Motorola and Preferred proposed plans which provide no additional spectrum rights for public safety after band reconfiguration. *See* (continued….)

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150. Although the thrust of our analysis was centered on the 800 MHz band, we also took into account the technical and economic fallout that a given 800 MHz band plan would have on other bands such as the Upper 700 MHz band, the 700 MHz Guard Band, the 700 MHz Public Safety Band, the 900 MHz band, and bands in the 1.5 GHz to 2.1 GHz region; all of which, in one fashion or another, came into play in the overall band reconfiguration proposals evaluated.

151. Of the various plans considered, the Consensus Plan offered benefits in each of the foregoing categories discussed in ¶ 149 *supra* and pointed us to the development of a Commission Band Plan consistent with our goals in this proceeding:

- abating harmful interference currently being encountered by 800 MHz public safety systems;
- minimizing disruption to existing services;
- responsibly managing the spectrum involved—constituting portions of the 700 MHz, 800 MHz, 900 MHz and 1.9 GHz bands[403]; and
- providing additional spectrum rights for public safety.

Consequently, we are adopting the following plan for the 800 MHz band.

(Continued from previous page)
Motorola Reply Comments at 8; Comments of Preferred to the Consensus Parties Reply Comments at 17. NAM and M/A COM propose plans whereby public safety will likely lose spectrum rights in markets where public safety currently operates systems in the General Category (Ch 1-150). For instance, under NAM's original plan, public safety receives only 0.25 x 0.25 MHz of spectrum rights to relocate systems from the General Category. Therefore, under that plan, public safety would lose spectrum rights in any market where it currently occupies more then ten channels in the General Category. M/A COM's proposal offers no spectrum rights for relocating public safety systems from the General Category. Therefore, under M/A COM's proposal, public safety would lose spectrum rights in markets where public safety occupies any spectrum in the General Category. *See NPRM,* 17 FCC Rcd at 4885 ¶ 22; M/A COM comments at 10. UTC proposed a plan which appears to substantially reduce the amount of spectrum public safety would have access to after band reconfiguration. UTC would allow licensees in the "lower 80" SMR channels to exchange rights with public safety licensees in the NPSPAC band. Under UTC's plan, however, public safety would exchange 3 x 3 MHz of contiguous NPSPAC spectrum rights for rights to 2 x 2 MHz non-contiguous spectrum in the interleaved portion of the band. *See* UTC Comments at 26-28.

The OH MARCS, DC OCTO and the original Nextel White Paper plans offer public safety rights to more spectrum after band reconfiguration than the Consensus Plan. *See* OH MARCS Comments at 5-9; DC OCTO Comments at 6-11 and *NPRM* at 4886-87 ¶¶ 23-25. Nonetheless, the OH MARCS's plan is inferior from an interference mitigation standpoint because it would leave NPSPAC systems immediately adjacent to cellular telephone A-band systems. The DC OCTO plan and the original Nextel White Paper proposals are inferior because of their excessive cost and disruption. Thus, the DC OCTO plan would require almost every non-cellular licensee to relocate within the 800 MHz band. The original Nextel White Paper proposal would require moving all B/ILT and Non-cellular SMR systems out of the 800 MHz band into the 700 MHz and 900 MHz bands.

[403] *See NPRM,* 17 FCC Rcd 4887 ¶ 26. With regard to our management of the 1.9 GHz band, we note that we are rededicating five megahertz of spectrum from UPCS—a service for which no equipment has been verified by the Commission—to land mobile communications, thus making more efficient use of the spectrum by bringing new service to the public and rededicating five megahertz of spectrum to land mobile use from "reserve" MSS spectrum, thus providing the opportunity for initiation of a service that may be more immediately and widely used by the public.

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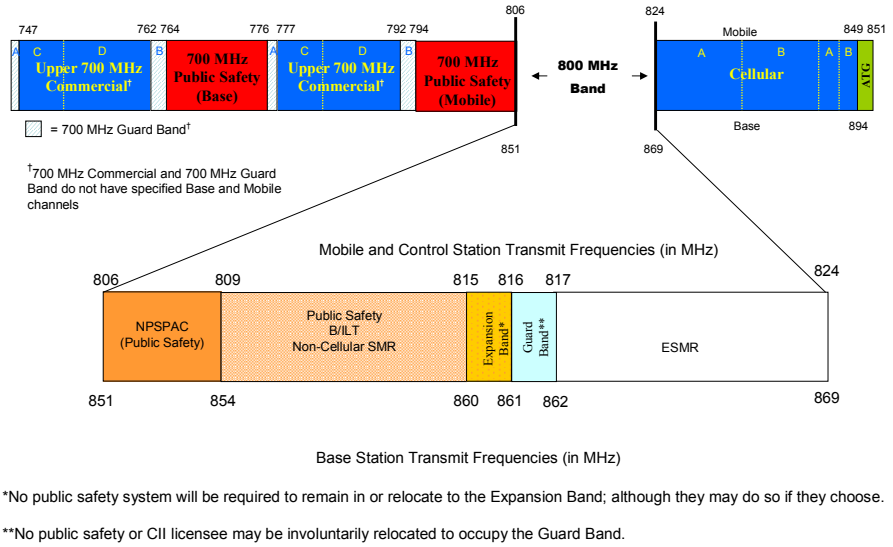
New 800 MHz Band Plan[404]



*No public safety system will be required to remain in or relocate to the Expansion Band; although they may do so if they choose.

**No public safety or CII licensee may be involuntarily relocated to occupy the Guard Band.

<u>Non-Cellular Portion</u> (806-817 MHz/851-862 MHz)

- <u>NPSPAC:</u> Only NPSPAC systems will eligible to operate in the 806-809 MHz/851-854 MHz band segment (Channels 1-230, 25 kHz channels spaced every 12.5 kHz).

- <u>Interleaved:</u> The interleaved portion of the band at 809-815 MHz/854-860 MHz (Channels 231-470 spaced every 25 kHz) will consist of public safety, B/ILT and SMR channels interleaved. Public safety and CII agencies will have exclusive access to the 809-809.75 MHz/854-854.75 MHz band segment (Channels 231-260 spaced every 25 kHz) and the channels vacated by Nextel below 815 MHz/860 MHz.[405]

- <u>Expansion Band:</u> The Expansion Band at 815-816 MHz/860-861 MHz (Channels 471-510 spaced every 25 kHz) will consist of B/ILT and SMR channels interleaved.[406] The Expansion Band may also be used to house non-Nextel ESMR systems, as discussed *infra*.[407] No public safety system will be required to remain in or relocate to the Expansion Band; although they

[404] As with the current 800 MHz band plan, adjustments will be necessary in the areas bordering Canada and Mexico to provide for an equitable distribution of channels with those countries. *See* ¶¶ 175-176 *infra*.

[405] *See* ¶¶ 152-153 *infra.*

[406] We believe that, under most circumstances, the Expansion Band offers B/ILT, CII and non-cellular SMR licensees equivalent capacity and quality of service as defined in 47 C.F.R. § 90.699(d).

[407] *See* ¶ 162 *infra.*

may elect to do so.[408]

- Guard Band: The Guard Band at 816-817 MHz/861-862 MHz (Channels 511-550 spaced every 25 kHz) will consist of forty channels available to any 800 MHz licensee. Any licensee operating below 817 MHz/862 MHz may elect to relocate to the Guard Band. The Guard Band may also be used to house non-Nextel ESMR systems, as discussed *infra.*[409] No 800 MHz licensee may be involuntarily relocated into the Guard Band. Licensees in the Guard Band will receive less interference protection then licensees operating in lower portions of the non-cellular portion of the band as discussed *infra.*[410]

Cellular Portion: **(ESMR systems at 817-824 MHz/862-869 MHz)**

152. As we discuss *infra*, we decline to adopt those portions of the Consensus Plan that contemplate relinquishment of Nextel's 900 MHz spectrum rights.[411] With regard to the "running average" of 2.5 megahertz of spectrum rights that Nextel is surrendering in the interleaved segment of the 800 MHz band, we restrict eligibility for this spectrum to public safety licensees for three years from the effective date of this *Report and Order* and to public safety/CII licensees for an additional two years from that date.[412] We make an identical provision for channels vacated by licensees that voluntarily relocate to the 816-817 MHz/861-862 MHz band segment. We believe providing these windows of limited eligibility meets our spectrum management goals by accommodating the generally slow budgetary process of public safety agencies and the express needs of CII licensees, before making the spectrum generally available to other 800 MHz non-cellular licensees, *i.e.* B/ILT and non-cellular SMR licensees.[413]

153. Furthermore, in order to relocate NPSPAC systems to the bottom portion of the band, the Consensus Plan calls for clearing only the 806-809 MHz/851-854 MHz portion of the General Category (Channels 1-120 prior to band reconfiguration). We will require, however, that all non-public safety or non-CII licensees operating in the General Category (Channels 1-150 prior to band reconfiguration) relocate to the Guard Band, Expansion Band or interleaved portion of the band. The thirty remaining General Category channels available after the NPSPAC band is relocated will be available only to public safety licensees for three years from the effective date of this *Report and Order* and to public safety/CII

[408] *See* ¶ 154-155 *infra.*

[409] *See* ¶ 162 *infra.*

[410] *See* ¶ 158 and Figure 1 *infra.*

[411] *See* ¶ 207 *infra*.

[412] This time period is a modification of the Consensus Parties' original proposal to only allow public safety access to this spectrum for a five-year period. *See* Supplemental Comments of the Consensus Parties at 12. Our modification comes in response to the comments of CII parties who found this too restrictive. *See, e.g.,* Comments of Alliant Energy to Supplemental Comments of the Consensus Parties at 4, and Comments of Amaren to Supplemental Comments of the Consensus Parties at 10-11. If Nextel does not surrender its rights to operate on this spectrum, Nextel channels would remain adjacent to public safety channels potentially causing adjacent channel OOBE interference, one of the major types of interference we are seeking to abate in this proceeding.

[413] *See* "Public Safety and Sound Spectrum Management Go Hand in Hand," Keynote Address by Federal Communications Commission Commissioner Kathleen Q. Abernathy to the National Forum on Public Safety Spectrum Management, February 10, 2004. We make these modifications under the authority granted us by Sections 4, 301, 303 and 316 of the Act, 47 U.S.C. §§ 316, 303, 301, and 154(i). We set forth a detailed description of our legal authority in ¶¶ 62-87 *supra.*

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licensees for an additional two years from that date.[414] Therefore—regardless of how much spectrum Nextel occupies in any given region—public safety and then CII licensees will have nationwide access to thirty channels or 1.5 megahertz of spectrum immediately adjacent to the relocated NPSPAC band.

b. Expansion Band

154. We establish an "Expansion Band" in the 815-816 MHz/860-861 MHz segment of the 800 MHz band to provide public safety licensees spectral separation from the cellular portion of the band. Although occupants of the Expansion Band will receive full interference protection, we note the Consensus Parties comments indicating that those licensees who operate in the 2 x 2 MHz segment of the band immediately adjacent to the cellular portion of the band should employ "campus-type" or other interference-resistant type systems.[415] Therefore, we believe it prudent to allow all public safety licensees the option to relocate from this portion of the band and no public safety licensee will be forced to relocate to this portion of the band. Nonetheless, any public safety licensee who willingly chooses to remain or relocate to the Expansion Band may do so.

155. The establishment of the Expansion Band required us to revise the chart in our rules that specifies channels for public safety use in the 800 MHz band.[416] Specifically, twelve channels currently designated for public safety use are located within the newly created Expansion Band. Because we are allowing public safety licensees to relocate out of the Expansion Band, we needed to find a new "home" for these twelve public safety channels. Therefore, we "exchanged" these twelve public safety channels for twelve SMR channels located below the Expansion Band. As a result of this exchange, all public safety channels will now be located below the Expansion Band. In order to ensure that non-cellular SMR licensees lose no spectrum in this "exchange," licensees from this category will now have access to the former twelve public safety channels located in the Expansion Band.[417]

156. The current chart designating public safety channels, lists the channel in groups with channels separated by one megahertz[418] as a concession to the fact that the combiners used in a trunked system to combine the output of multiple transmitters into a single antenna can introduce excessive loss if used with channels that are too closely spaced.[419] In modern systems, however, combiners suffer negligible loss even when the input channels are spaced as little as 250 kHz apart;[420] thus in the revised table, we

[414] *See* 47 C.F.R. § 90.615 in Appendix C *infra.*

[415] *See* Consensus Parties Reply Comments at 9.

[416] *See* 47 C.F.R. § 90.617(a), Table 1 in Appendix C, *infra.*

[417] Because we "exchanged" all public safety channels in the Expansion Band with SMR channels, the Expansion Band will consist of a mix of B/ILT and SMR channels. Nonetheless, we will allow public safety licensees to remain in the Expansion Band if they so choose. In addition, any public safety licensee who chooses to relocate to the Expansion Band may do so through inter-category sharing. *See* 47 C.F.R. §§ 90.621(e) and 90.677 in Appendix C *infra.*

[418] *See* 47 C.F.R. § 90.617(a), Table 1.

[419] "Loss" in this context refers to the attenuation of the transmitter carrier when it passes through the combiner. The loss is dissipated in the form of heat and the net result is that the ERP—and hence the coverage—of a system can be reduced significantly if the combiner introduces excessive loss.

[420] *See* Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year 2010; Establishment of Rules (continued….)

separate grouped public safety channels by 500 kHz.[421] Since the new twelve public safety channels were pulled from the SMR pool, there will be non-cellular SMR licensees operating on these channels. Therefore, we hereby grandfather those non-cellular SMR licensees that are operating on the new public safety channels for an indefinite period, and we will permit the filing of modification applications by these grandfathered licensees.[422] These grandfathered licensees will operate on a strict non-interference basis, subject to pre-coordination of any new of modified operations.[423]

c. Guard Band

157. We establish a "Guard Band" in the 816-817 MHz/861-862 MHz segment of the 800 MHz band to guarantee public safety licensees an additional one megahertz spectral separation from the cellular portion of the band. Nextel will vacate the Guard Band. No licensee—including public safety and CII—will be involuntarily relocated to the Guard Band. We will grandfather all non-Nextel CMRS licensees who currently operate within the Guard Band. These grandfathered licensees will be permitted to continue operating on current frequencies, with currently authorized facilities, on a strict non-interference basis, subject to pre-coordination of any new of modified operations.[424] However, we will not accept new non-public safety applications on any of the twelve new 800 MHz public safety frequencies.

158. Once Nextel has vacated the Guard Band any 800 MHz band licensee currently operating below 816 MHz/861 MHz may apply for channels there. Any channel below 816 MHz/861 MHz vacated by a licensee relocating to the Guard Band will be available only to public safety licensees for three years from the effective date of this *Report and Order* and to public safety/CII licensees for an additional two years from that date. Licensees who voluntarily relocate to the Guard Band after Nextel has vacated will be required to tolerate increasing levels of interference from cellular-architecture systems as a function of increasing frequency.[425] The minimum median received power level required for interference protection (-104 dBm for mobile units or -101 dBm for portable units) will increase as shown in Figure 1, below. The channels these licensees vacate in the spectrum below 816 MHz/861 MHz will be available to public

(Continued from previous page)
and Requirements for Priority Access Service, WT Docket No. 96-86, *Third Memorandum Opinion and Order and Third Report and Order,* 15 FCC Rcd 19844, 19857 (2000).

[421] *See* 47 C.F.R. § 90.617(a), Table 1 in Appendix C, *infra.*

[422] We believe that there is little risk of interference to public safety from these grandfathered non-cellular SMR incumbents. These incumbents will be prohibited from operating cellular systems in the non-cellular portion of the 800 MHz band. *See* 47 C.F.R. § 90.614 in Appendix C, *infra.* Further, any grandfathered site-based B/ILT or non-cellular SMR licensee who chooses to modify its license on one of these new public safety channels will be required to obtain frequency coordination and receive concurrence from a certified public safety coordinator. *See* 47 C.F.R. §§ 90.175(c) and (e). EA-based non-cellular SMR licensees who are grandfathered on these new public safety channels and choose not to relocate—while not subject to frequency coordination—will nonetheless be limited to operating within the EA of their license. *See* 47 C.F.R. § 90.683(a).

[423] *See* 47 C.F.R. § 90.617(j) in Appendix C *infra.*

[424] *Id.*

[425] The Guard Band would serve a purpose similar to the guard band channels developed to protect public safety systems from interference from commercial systems in the 700 MHz band. Cellular operations are prohibited in the 700 MHz guard band channels (746-747 MHz, 776-777 MHz, 762-764 MHz, and 792-794 MHz) to provide a buffer between public safety and commercial spectrum allocations. *See* 47 C.F.R. § 27.2(b).

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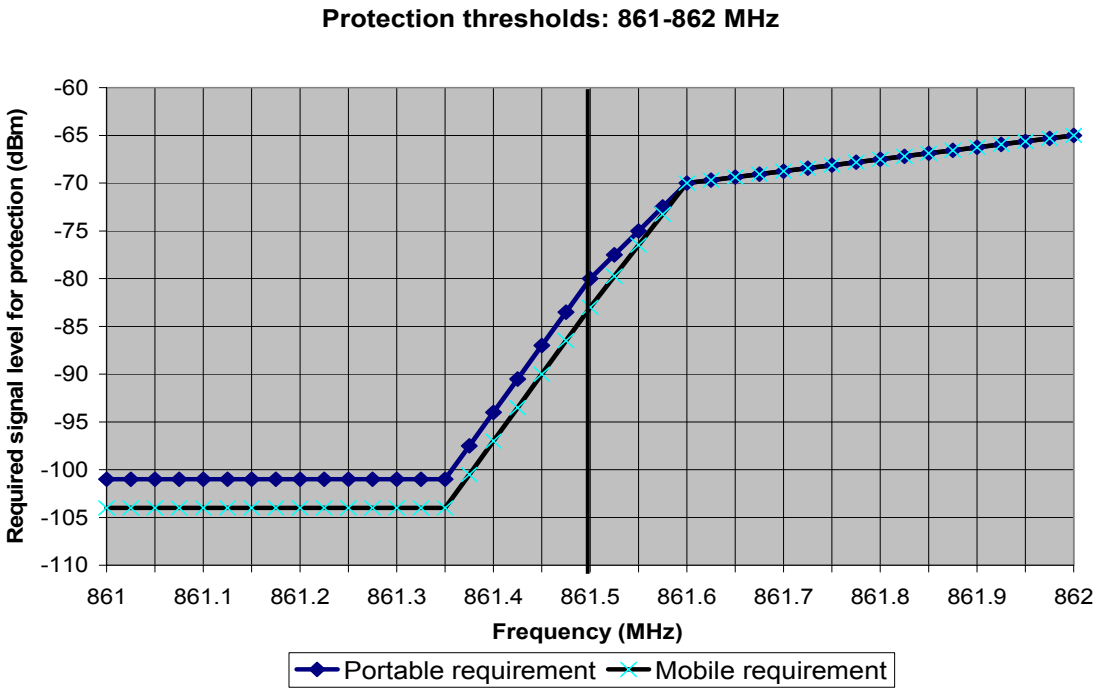
safety licensees for five years and to CII licensees during years four and five of the five-year period.[426]

FIGURE 1: Required Received Signal Levels for Interference Protection



d. Relocating ESMR Operations in 800 MHz Band

159. We recognize that there are CMRS licensees other than Nextel using iDEN or iDEN-like ESMR technology in the 800 MHz band. For example, Southern LINC, a Nextel competitor, operates ESMR systems using Motorola iDEN technology in Georgia, Mississippi, Alabama and Florida.[427] Airtell Wireless, LLC, and Nevada Wireless, LLC, operate an iDEN derivative, the Harmony system, on the interleaved channels in areas of Montana and Nevada, and represent that they will be constructing Harmony systems in other markets.[428] Preferred Communications, Inc. holds spectrum rights in various areas of the continental United States and has extensive 800 MHz band spectrum rights in the Commonwealth of Puerto Rico and the U.S. Virgin Islands.[429] Some of these parties operating cellular-architecture systems in the 800 MHz band note that their systems have already created interference to public safety systems.[430]

160. The Consensus Parties did not discuss these other CMRS cellular-architecture systems,

[426] *See* 47 C.F.R. § 90.617(h) in Appendix C *infra.*

[427] *See* Southern LINC Comments at 4.

[428] *See* Letter, dated November 7, 2003, from Elizabeth Sachs, counsel for Airtell Wireless and Nevada Wireless to Marlene H. Dortch, Secretary, Federal Communications Commission.

[429] *See* Comments of Preferred to the Consensus Parties Reply Comments at 8.

[430] *Id.*

supra, but did propose that the Commission should grandfather Southern LINC's operations in the 809-821 MHz/854-866 MHz block while relocating Southern LINC's systems that currently operate in the 806-809 MHz/851-854 MHz block to the upper portion of the non-cellular segment as close as possible to the ESMR segment.[431] The Consensus Parties proposed allowing Southern LINC to operate its cellularized systems in the non-cellularized portion of the band without a waiver but with a requirement to notify all affected licensees before implementing low-site cells.[432] Under the Consensus Plan, Southern LINC would be required to pre-coordinate such operations to prevent unacceptable interference to non-cellular licensees and would be responsible for eliminating any interference.[433] The Consensus Parties did not discuss other ESMR licensees such as those mentioned *supra.* For its part, Southern LINC contends that it should be relocated to the ESMR segment, without loss of channels, where it would share spectrum with Nextel.[434]

161. We find the Consensus Parties' proposal for relocation of Southern LINC's facilities[435] too incomplete—to the extent it does not address other similarly situated licensees—and too limited. With respect to the proposal to grandfather Southern LINC's existing operations, we note that there is no evidence that these operations currently cause interference to other 800 MHz band licensees.[436] However, we can foresee that Southern LINC, in order to meet increasing subscriber demands, may desire to deploy "low site" cells which could be a source of interference to public safety and other non-cellular licensees. The interference potential is heightened because many of Southern LINC's channels are immediately adjacent to channels used by non-cellular licensees in the interleaved portion of the band. As a general proposition, ESMR systems operating in the 817-824 MHz/862-869 MHz segment of the band are less likely to cause interference than ESMR systems operating in the interleaved portion of the band. We therefore believe that the overall interference environment at 800 MHz would improve were we to allow licensees such as Southern LINC to relocate their systems to the ESMR portion of the band where they have less potential for interference to public safety and other non-cellular 800 MHz band licensees. Confining licensees such as Southern LINC to operation below 817 MHz/862 MHz is not optimal from an interference protection standpoint and could adversely affect such licensees' ability to provide adequate service to its subscribers in the future.

(i) Relocation Options

162. In order to provide an incentive for ESMR licensees to relocate their systems, we are affording them the flexibility of three options:

- Relocate all of their systems in a market into the ESMR portion of the band where they will share spectrum with Nextel; or

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[431] *See* Supplemental Comments of Consensus Parties at 44-46.

[432] *Id.*

[433] *Id*. at 45-46. Thus, for example, Southern LINC would be strictly responsible, financially and otherwise, for immediately abating any unacceptable interference; or would have to discontinue operation on the offending frequency or frequencies. *Id*. at 46.

[434] *See* Letter, dated April 5, 2004, from Christine M. Gill, Counsel for Southern LINC to Michael K. Powell, Chairman, Federal Communications Commission.

[435] *See* ¶ 160 *supra.*

[436] It attributes the lack of interference to the fact it currently operates few high-channel-density low-elevation sites. *See* Southern Comments at 6. *See also* Motorola Comments at 14, n. 24.

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- Relocate their systems as close as possible to the ESMR portion of the band but remain in the non-cellular portion of the band, *i.e.* in order of preference: (a) the 816-817 MHz/861-862 MHz Guard Band;[437] (b) the 815-816 MHz/860-861 MHz Expansion Band;[438] and (c) channels below 815 MHz/860 MHz if necessary. These licensees will operate on a strict non-interference basis, subject to pre-coordination of any new or modified operations;[439] or

- Remain on their current channels in the non-cellular portion of the band on a strict non-interference basis, subject to pre-coordination of any new or modified operations.[440]

163. If non-Nextel ESMR licensees elect to relocate to the ESMR portion of the band, their EA licenses will transfer on a channel-by-channel basis, such that they have exclusive, incumbent-free, use of the new channels in the EA.[441] We recognize, however, that many of these non-Nextel ESMR licensees employ a patchwork of EA-based and site-based licenses. Therefore, we will give these licensees the option to relocate their site-based licenses along with their EA-licenses to the ESMR portion of the band. In order to transfer a site-based channel into the ESMR segment, a licensee must: (a) currently hold an EA license in the relevant market; and (b) be using the site-based license as part of a cellular-architecture system in that market as of the date of publication of this *Report and Order* in the Federal Register. Furthermore, to create a more uniform licensing scheme, the transferred site-based license will be converted to an EA-wide, incumbent-free license in the ESMR portion of the band. If non-Nextel ESMR licensees elect not to relocate to the ESMR portion of the band, but volunteer to relocate to the Guard Band or must be relocated to the Expansion Band or to the spectrum immediately below, when necessary, they must be provided comparable facilities, in the case of their site-based licenses; and, in the case of EA licenses, exclusive use of their new channels in the EA.[442]

(ii) Expanded ESMR Spectrum

164. We are aware that, in some markets, there may be insufficient spectrum in the 816-824 MHz/861-869 band segment to accommodate both incumbent ESMR licensees already operating there and new ESMR entrants migrating from the lower channels. This is particularly true of certain markets in which both Southern LINC and Nextel currently are offering service. In those markets, Southern LINC holds a large number of licenses in the interleaved portion of the band, and also holds licenses for some General Category channels. Consequently, there are an inadequate number of channels in the 816-824 MHz/861-869 MHz band segment to replicate the existing channel capacity of both Southern LINC and Nextel. We note recent *ex parte* filings in which Southern LINC and Nextel recite a preliminary agreement in which they propose that the 816-824 MHz/861-869 MHz ESMR segment be widened by five megahertz, such that the lower band edge would start at 813.5 MHz/858.5 MHz.[443] With the ESMR

[437] *See* ¶¶ 157-158 *supra.*

[438] *See* ¶¶ 154-156 *supra.*

[439] *See* 47 C.F.R. § 90.617(j) in Appendix C *infra.*

[440] *Id.* These operators, however, would be subject to possible frequency moves as necessary in order to implement reconfiguration of the 800 MHz band.

[441] These non-Nextel ESMR licensees must state their option in the realignment schedule that the Transition Administrator will transmit to the Commission. *See* ¶ 201 *infra*.

[442] *See* ¶ 201 *infra.*

[443] *See* Letter, dated June 30, 2004, from James B. Goldstein, Esq., Senior Attorney, Nextel Communications, Inc. to Michael Wilhelm, Deputy Chief - Legal, Public Safety and Critical Infrastructure (continued….)

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portion of the band so widened, Southern LINC and Nextel would engage in a channel exchange that would result in the configuration of channels shown in Appendix G, which also includes a map of the area in which the ESMR portion of the band would be increased, and the list of counties within the area shown on the map.

165. We note from the *ex parte* filings that the Southern LINC and Nextel agreement is not final and that the parties have not been able to agree on a final apportionment of channels in the Atlanta, Georgia market. Because of the preliminary nature of the agreement, we need not address it further here, but encourage the parties to come to an agreement that is equitable for all licensees involved.

166. Although we do not rule on the acceptability of the provisions contained in the preliminary agreement, the filings inform us that the distribution of cellular-architecture and non-cellular systems in the area shown in Appendix G is atypical. Moreover, we believe that we should change the band plan for that region now, before band reconfiguration commences, so that the overall band reconfiguration process takes the revised band plan into account. Accordingly, on our own motion, we define the ESMR band in the area shown in Appendix G as the band segment 813.5 - 824 MHz/858.5-869 MHz. The Expansion Band in this area shall extend from 812.5-813.5 MHz/857.5-858.5 MHz. All licensees operating in the band segment 806-813.5 MHz/851-858.5 MHz shall be afforded the same protection against unacceptable interference as specified in ¶¶ 96-141, *supra.*

167. Moreover, because Southern LINC's recent *ex parte* submission indicates that it intends to exercise the option of relocating into the ESMR portion of the band, we will give Nextel and Southern LINC the opportunity to finalize their agreement and recommend a channel distribution that equitably reflects the interests of all 800 MHz licensees in the area shown in Appendix G. That agreement shall be completed and submitted to the Commission for review no later than thirty days following the publication of this *Report and Order* in the Federal Register. The agreement must include mutual non-disclosure provisions and a clear delineation of the costs to be borne by each party. It shall also include a proposed band reconfiguration schedule consistent with the obligations we have imposed on Nextel in this *Report and Order.* The agreement also shall contain an engineering analysis demonstrating that the channel plan can be implemented consistent with public safety and B/ILT licensees retaining the spectrum necessary to accommodate them. We delegate to the Chief of the Wireless Telecommunications Bureau, the authority to review the agreement, and to resolve any disputed matters submitted to the Commission for *de novo* review.

168. In the event the parties fail to reach agreement by the date specified *supra*, they shall submit their differences to the Transition Administrator who will attempt to facilitate a final agreement. If the disputed matters are not resolved within thirty days, the Transition Administrator will submit the entire record to the Commission for *de novo* review. Parties are hereby put on notice that disputed matters concerning ESMR channels in any area of the country, including the area shown in Appendix G may be resolved by the Commission making a *pro rata* distribution of ESMR channels.[444] In the case of the area

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Division, Wireless Telecommunications Bureau, Federal Communications Commission. *See also* Letter, dated June 30, 2004, from Christine M. Gill, Esq., Counsel to Southern LINC to Michael Wilhelm, Esq., Federal Communications Commission.

[444] When the ESMR spectrum is not adequate to accommodate all eligible licensees that wish to relocate to the ESMR block, and parties are unable to agree, we may apportion the ESMR block as a function of the relative spectrum rights each licensee holds in a given EA. For example, in a hypothetical market, outside the area shown in Appendix G, in which licensee "A" currently has rights to 150 channels and licensee "B" has rights to 250 channels, the 320 channels in the ESMR block would be apportioned by giving licensee "A" access to 128 channels (40%) and licensee "B" access to 192 channels (60%).

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shown in Appendix G, a *pro rata* apportionment could reduce the current number of channels available to Nextel. However, we observe that Nextel has additional spectrum at 900 MHz which can be used to offset the shortfall and is receiving spectrum at 1.9 GHz. With respect to Southern LINC, we observe that its relocation to the ESMR block would provide Southern LINC with clear, contiguous spectrum arguably of greater value and capacity than the spectrum it now occupies. This would occur because, in some instances, Southern LINC would receive clear spectrum, in exchange for site-based channels which cannot currently be used in the entire EA because of the need to protect incumbents.

169. Finally, because we are extending the ESMR band to 813.5 MHz/858.5 MHz in the counties listed in Appendix G, some coordination between licensees will be necessary at the edge of these counties. Specifically, ESMR licensee operating within these counties will be required to maintain minimum co-channel spacing distances to incumbent non-cellular licensees operating just outside these counties.[445] In addition, there may be instances where a non-cellular licensee operating just outside these counties may need to relocate above 813.5 MHz/858.5 MHz in order to complete band reconfiguration. In these instances, the EMSR licensees operating within the counties listed in Appendix G will make all necessary accommodations in order to provide the non-cellular licensee with the minimum required co-channel spacing on the new channel.[446]

e. Permitting Additional Non-ESMR Cellular Architecture Systems in the 800 MHz Band

170. Some CII parties, such as utilities, contend that excluding cellular systems from the non-cellular portion of the 800 MHz band (806-817 MHz/851-862 MHz) will impose a hardship on CII licensees whose communications needs require a transition of their systems to cellular architecture.[447] We wish to proceed cautiously in this area out of concern over replicating the unacceptable interference problem we are attacking through band reconfiguration; but we also wish to avoid unnecessarily constraining the use of innovative technology in the process. The record suggests that CII cellular systems, with well-designed network architecture, can operate without causing unacceptable interference so long as they avoid the high-density cell operations that have been a frequent source of interference to date. We reach this finding in part because we do not anticipate that such CII or public safety systems will require high density, high user-capacity systems such as those used by CMRS licensees. The "non-CMRS" nature of these systems would suggest that they would not grow to have such high user demand that extensive deployment of low site cells would be required.[448]

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[445] *See* 47 C.F.R. § 90.621.

[446] We note that co-channel spacing may be reduced through short-spacing agreements. *See* 47 C.F.R. § 90.621(b)(5).

[447] *See* Comments of Cinergy to Supplemental Comments of Consensus Parties at 19; Comments of AMTA to Supplemental Comments of Consensus Parties at 4; Comments of Baltimore to Supplemental Comments of Consensus Parties at 7; Comments of Entergy to Supplemental Comments of Consensus Parties at 29; Comments of Scott C. Macintyre to Supplemental Comments of Consensus Parties at 1; Reply Comments of Cinergy to Supplemental Comments of Consensus Parties at 28; Reply Comments of Con-Ed to Supplemental Comments of Consensus Parties at 10; letter, dated May 6, 2004, from Shirley Fujimoto, Council for Entergy Corporation, Consumers Energy and Cinergy Corporation, to John Muleta Chief, Wireless Telecommunications Bureau, Federal Communications Commission (Entergy, Consumers and Cinergy May 6 *Ex Parte*).

[448] We note that, because we are affording CII licensees a special status because of their safety-related communications, we believe it would be anomalous to allow CII licensees to convert their systems to CMRS operation in which communications seldom are safety-related. Accordingly, we limit our definition of CII to those (continued….)

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171. In this regard, the Consensus Parties offer a definition for the type of "high-density cellular" system they believe should be prohibited from operating in the non-cellular portion of the 800 MHz band.[449] The Consensus Parties would define a "high-density cellular" system as any system with (1) five or more overlapping interactive sites featuring hand-off capability; (2) any one of such sites having an antenna height of less than 100 feet above ground level with an antenna height above average terrain (HAAT) of less than 500 feet; (3) and any one of such sites having more than twenty paired frequencies.[450]

172. Several CII licensees, however, believe that the Consensus Parties definition is overly broad and would unduly limit the operation of many non-CMRS systems that pose little or no likelihood of harmful interference to other licensees in the 800 MHz band.[451] For instance, these CII licensees contend that the Consensus Parties definition would prohibit systems where any of these characteristics are present even though no individual site exhibits all of these characteristics.[452] Therefore, these CII licensees suggest applying the Consensus Parties definition on a site-by-site basis rather then on a system-wide basis.[453] We agree. The Consensus Parties were unclear about whether their definition should be applied system-wide or on a site-by-site basis. We believe that only sites which exhibit all of the characteristics described by the Consensus Parties would likely cause interference to other licensees in the 800 MHz band. Therefore, we will permit licensees to operate cellular-architecture systems in the non-cellular portion of the band without need for waiver so long as those systems are not high-density cellular systems under the following definition of "800 MHz cellular system": [454]

- a system having more than five overlapping interactive sites featuring hand-off capability; and
- any one of such sites has an antenna height of less than 100 feet above ground level with an antenna height above average terrain (HAAT) of less than 500 feet and more than twenty paired frequencies.[455]

173. If a licensee does wish to operate an 800 MHz cellular system, it will be required to obtain waivers for any and all sites that meet the second of our two criteria. In that case, a CII or public safety system licensee may avail itself of the Commission's waiver process pursuant to the waiver criteria set out

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entities who operate radios systems for private internal use. *See* n. 11*supra*. Any licensee who converts to CMRS will fall outside our definition of CII and no longer be eligible for any of the benefits we extend to CII licensees

[449] *See* Reply Comments of Consensus Parties to Supplemental Comments of Consensus Parties at 28.

[450] *Id.*

[451] *See* Entergy, Consumers and Cinergy May 6 *Ex Parte* at 1.

[452] *Id.* at 1.

[453] *Id.*

[454] We emphasize that this definition of "800 MHz cellular system" applies only for this purpose in the 800 MHz band, and is not intended as a basis for making cellular/non-cellular distinctions for other purposes.

[455] We recognize that this definition encompasses operations where the overlapping interactive sites comprise only a portion of the overall communications "system" of a licensee. The licensee needs to obtain a waiver, however, only with respect to particular sites in the overlapping site clusters that satisfy the second criterion.

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in Section 1.925 of the Commission's Rules.[456] Any such request shall contain both a persuasive showing of need and a demonstration of non-interference. Any waiver granted, will contain a continuing non-interference condition.[457] As stated above, cellular-architecture systems that do not come within the foregoing "800 MHz cellular" definition may be operated without need for a rule waiver; nonetheless, they must not cause unacceptable interference to 800 MHz "high-site" non-cellular systems. Our reason for requiring waivers for sites in high-density cellular systems is, in one respect, a means to ensure that system designers "do their interference abatement homework" before seeking Commission authorization for a facility in the non-cellular portion of the band. Moreover, proceeding only pursuant to waiver will allow us to more carefully gauge the effect that such high-density cellular technology in the non-cellular portion of the 800 MHz band would have. We can then revisit the matter at a later date before serious harm is done if new systems proliferate and cause unacceptable interference. Most importantly, were we to decide, here, to allow unrestricted, high density cellular operation in the non-cellular portion of the band, we would undo four years of intensive study and terminate this proceeding by virtually issuing an invitation for a high-density, multi-cell operator to construct interference-generating systems in incompatible spectrum and potentially put our first responders at risk and threaten their ability to adequately address Homeland Security threats. We will monitor this cellular restriction carefully and revisit it if necessary. As with any of our rules, waivers are available to accommodate special circumstances. However, there would be a high burden to surmount for any party seeking a waiver for CMRS operation.

174. As stated above, our definition of "800 MHz cellular system" should not be interpreted to allow cellular-configuration systems that do not come within the cellular definition to cause unacceptable interference or to relieve them from the cost and other responsibility for promptly abating unacceptable interference in the 800 MHz band should it occur. Rather, our cellular definition in the 800 MHz band context serves only as a demarcation between systems that can operate in the non-cellular portion of the 800 MHz band without a waiver and those that require a waiver.

3. Border Regions

175. Several parties note, and we concur, that no feasible band plan suggested in this proceeding comports with the current arrangement the United States has with Canada or with the protocols it has with Mexico for use of the 800 MHz band in the border areas. The existing border band plans, contained in Section 90.619 of our rules have evolved from periodic negotiations with these countries and have been adjusted from time to time. The border band plans are not consistent along the border; there are different distributions of channels in given border regions, primarily because of demographic considerations. The Consensus Parties were the only party to file a band plan for the border area; and several commenting parties, including Industry Canada—pointed out that the border area plan proposed by the Consensus Parties' had multiple flaws, including:

- *Mutual Aid Channels.* The border area plan fails to maintain channels designated by international agreements for mutual aid with Canada and Mexico.[458] The Consensus Parties

[456] 47 C.F.R. § 1.925.

[457] Any cellular architecture system operating in the non-cellular portion of the band, whether authorized by waiver or otherwise, must strictly comply with the provisions of Section 90.673 as adopted in this *Report and Order.*

[458] *See* Comments of King County RCB to Supplemental Comments of the Consensus Parties at 4; Comments of MI DIT to Supplemental Comments of the Consensus Parties at 5; Comments of NY OIT to Supplemental Comments of the Consensus Parties at 6-8; Reply Comments of NY OIT to Supplemental Comments of the Consensus Parties at 5-6. Current international agreements designate five channels in the NPSPAC portion of the band (821-824/866-869 MHz) for public safety mutual aid between the U.S. and Canada and Mexico. These (continued….)

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suggest relocating these channels to the lower portion of the 800 MHz band.[459] The Consensus Parties, however, fail to explain how users in Mexico or Canada would be compensated for retuning or replacement of equipment needed to operate on the new mutual aid channels.

- *Maintaining Spectrum for Various Pools.* The Consensus Parties' border area plan fails to maintain comparable spectrum for various 800 MHz band pools (public safety, B/ILT, SMR).[460] For instance—in certain regions—public safety loses channels after band reconfiguration while ESMR licensees gain channels after band reconfiguration.[461]

- *Public Safety Spectrum in Mexico Border Area.* Many of the channels in the Consensus Parties' border plan, designated for public safety use in the Mexico Border Region—after band reconfiguration—may be unusable because of short-spacings to co-channel incumbents outside of the border area.[462] For instance—due to co-channel spacing requirements—incumbent non-border licensees may "block" numerous channels designated for public safety use in San Diego, CA and Tucson, AZ.[463]

- *U.S. Operations on Canada/Mexico Primary Channels.* The Consensus Parties' border area plan is silent on relocation of U.S NPSPAC systems currently operating on Canada or Mexico primary channels.[464]

(Continued from previous page)
five channels are intended to facilitate interoperability between Canadian, Mexican and U.S. public safety licensees. The mutual aid channels are 821.0125/866.0125 MHz (calling), 821.5125/866.5125 MHz, 822.0125/867.0125 MHz 822.5125/867.5125 MHz and 823.0125/868.0125 MHz. *See U.S –Mexico Agreement,* Appendix C at Section 1 and *1990 U.S.-Canada Agreement* at Section 2.1c.

[459] *See* Supplemental Comments of the Consensus Parties, Appendix G-4.

[460] *See* Comments of American Elec. to Supplemental Comments of the Consensus Parties at 15-16; Comments of Boeing to Supplemental Comments of the Consensus Parties at 5-8; Comments of Border Area Coalition to Supplemental Comments of the Consensus Parties at 6-8; Comments of Consumers to Supplemental Comments of the Consensus Parties at 11-12; Comments of NY OIT to Supplemental Comments of the Consensus Parties at 4-6; Comments of Pinnacle to Supplemental Comments of the Consensus Parties at 6; Reply Comments of Boeing Reply to Supplemental Comments of the Consensus Parties at 9; Reply Comments of Central ME Power to Supplemental Comments of the Consensus Parties at 2-3; Reply Comments of Consumers Energy to Supplemental Comments of the Consensus Parties at 5-6; Reply Comments of NY OIT to Supplemental Comments of the Consensus Parties at 4-5; Reply Comments of San Diego Reply to Supplemental Comments of the Consensus Parties at 2-5.

[461] *See* Comments of American Elec. to Supplemental Comments of the Consensus Parties at 16; Comments of Border Area Coalition to Supplemental Comments of the Consensus Parties, Exhibit B at 3; Comments of Pinnacle to Supplemental Comments of the Consensus Parties at 6; Comments of NY OIT to Supplemental Comments of the Consensus Parties at 6.

[462] *See* Comments of Border Area Coalition to Supplemental Comments of the Consensus Parties, Exhibit A at 1-2, Exhibit B at 1-2, 7-8; Comments of San Diego to Supplemental Comments of the Consensus Parties at 2-4. Co-channel stations are generally required to maintain a fixed distance separation of 70 miles (113 km). *See* 47 C.F.R § 90.621(b).

[463] *Id.*

[464] *See* Comments of Snohomish County ERS to Supplemental Comments of the Consensus Parties at 2-3.

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- *Channel Spacing.* The Consensus Parties' border area plan would reduce the span of frequencies available to B/ILT and non-cellular SMR licensees thus greatly reducing the span of frequencies which can be combined into a trunked system.[465]

- *Exacerbating the "Double Border."* Border area licensees currently need to coordinate both with licensees outside the U.S (Mexico/Canada) and U.S licensees in the non-border area. The Consensus Parties' reconfiguration plan exacerbates this problem due to the extensive channel relocations involved in band reconfiguration.[466]

- *Canada/Mexico NPSPAC Licensees.* The Consensus Parties make no mention of whether their reconfiguration proposal will negatively affect NPSPAC operations in Canada and Mexico.[467] Under the Consensus Parties band plan, after band reconfiguration, ESMR operations on the U.S. side of the border would operate on the same channels as NPSPAC operations in Canada and Mexico.

- *iDEN Arrangement.* The border area plan will affect a current agreement between the U.S. and Canada to reserve certain channels in the 800 MHz band for iDEN digital networks.[468]

176. We note that our agreements with Mexico and Canada establish a distance beyond which U.S licensees need not consider border stations when selecting channels. The distance is 140 km (87 mi.) and 110 km (68.4 mi.) from the border for Canada and Mexico, respectively.[469] Depending on how the border band plans develop, there is the possibility of a "double border." The second border would be created if the overall U.S. band plan differs from a band plan for the border regions. For example, the overall U.S. band plan may assign a given channel for public safety use, *e.g.* Channel 88 and the border band plan may assign the same channel for ESMR use. In this example, the strict responsibility regime we establish today requires the ESMR Channel 88 licensee to protect the non-cellular 800 MHz system against unacceptable interference. In instances in which a border band plan results in different uses of a given channel for non-cellular systems, *e.g.* a U.S. SMR system operating in the Mexican border area and a public safety channel operating beyond the 110 km line, *supra,* our current coordination procedures would come into play and the two users would be protected against mutual unacceptable interference by required distance spacings.[470] The details of the border band plans will be determined in our ongoing discussions with the Mexican and Canadian governments. One principal goal of these discussions will be to ensure that the capability for cross-border mutual aid communications is maintained. Thereafter, we will address any "double border" issues. Until border agreements are reached, however, 800 MHz licenses in the border area will be conditioned on compliance with international agreements. We further note that Nextel will bear the financial responsibility for the completion of any system modifications necessitated by

[465] *See* Comments of Border Area Coalition to Supplemental Comments of the Consensus Parties, Exhibit D at 2-3; Comments of Consumers Energy to Supplemental Comments of the Consensus Parties at 9.

[466] *See* Comments of Boeing to Supplemental Comments of the Consensus Parties at 10-11; Comments of Border Area Coalition to Supplemental Comments of the Consensus Parties, Appendix D at 3; Comments of Pinnacle to Supplemental Comments of the Consensus Parties at 3-4; Reply Comments of Boeing to Supplemental Comments of the Consensus Parties at 8-9.

[467] *See* Comments of Industry Canada to Supplemental Comments of the Consensus Parties at 7.

[468] *Id* at 6.

[469] *See, e.g.,* 47 C.F.R. § 90.619 in Appendix C *infra*.

[470] *Id.*

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any future international agreements.[471]

4. Cost Responsibility

177. Band reconfiguration will be costly. We believe, however, that sole reliance on Enhanced Best Practices to abate unacceptable interference would entail a continuing expense that—over the long term—would eclipse the admittedly high initial cost of band reconfiguration.[472] Under the Consensus Proposal, and the rules that we adopt today, the cost of band reconfiguration can be accommodated to successfully address the critical interference problems faced by public safety providers. Moreover, we are confident that Nextel is capable of fulfilling its central role in achieving this result, given its demonstrated ability to bear the upfront costs of band reconfiguration.[473] The record does not reveal any effective alternative to the one we fashioned here—either by band reconfiguration or otherwise—to solve the instant problem. No other spectrum management approach provided the same assurances of success. Furthermore the plan we are adopting today will preserve the abilities that public safety licensees are likely to need in order to meet their increased Homeland Security obligations.

178. Under the band reconfiguration plan, the principle cost component will be borne by Nextel, which will pay for all channel changes necessary to implement the reconfiguration.[474] Nextel is obligated to ensure that relocated licensees receive at least comparable facilities when they change channels.[475] Moreover, a licensee electing to relocate to the ESMR block voluntarily, must receive clear, incumbent-free replacement spectrum. Thus, Nextel shall be responsible for the clearance of any incumbents affecting the replacement channel. If disputes arise concerning the cost allocation, the matter may be referred to the Transition Administrator for resolution; and, failing that, to the Chief of the Wireless Telecommunications Bureau for *de novo* review.[476]

a. Relocation Costs and Remuneration

179. The Consensus Parties estimated the cost of reconfiguring the 800 MHz band at $850 million. Nextel committed to pay up to that amount conditioned on Commission approval of the Consensus Plan without material change.[477] We conclude, however, that we cannot reasonably "cap" the amount required for band reconfiguration if completing the reconfiguration process requires more than

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[471] In the event that the requisite border area agreements are not reached within thirty-six months of the release date of the Public Notice announcing the start of reconfiguration of the first NPSPAC Region, Nextel shall elect to extend the life of the letter of credit or secure a separate letter of credit for a sum of money equal to that which would have been incurred had the Commission band plan been implemented along the borders without regard to international agreements.

[472] *See* ¶¶ 120-121 *supra*.

[473] *See* ¶ 29 *supra*. *See also* n. 478 *infra*.

[474] We note that 800 MHz licensees may divide relocation costs with Nextel if they so choose. For instance, we observe that Southern LINC and Nextel are working on an agreement whereby costs for relocating Southern LINC's facilities may be divided between the two parties. *See* ¶¶ 164-168 *supra*.

[475] *See* ¶ 201 *infra*.

[476] *See* ¶ 194 *infra*.

[477] Supplemental Comments of the Consensus Parties at iv-v.

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$850 million.[478] First, as discussed above, our band reconfiguration plan differs from that of the Consensus Parties, most particularly with respect to considerations affecting efficient use of the spectrum. In light of these changes, we place less reliance on the assumptions Nextel made when it estimated the cost of band reconfiguration. We did not undertake an *ab initio* analysis of the cost of band reconfiguration but instead carefully analyzed the data contained in the record. In that regard we have taken careful notice of certain sensitive assumptions in Nextel's analysis, which, if varied by only a few percent, greatly affect Nextel's cost estimate.[479] The one certainty that we derive from our analysis is that it would be unwise in the extreme to proceed with band reconfiguration without making it clear that Nextel is obligated to cover the entire cost thereof, with no "cap."[480] Thus, if we accepted any cap on Nextel's reconfiguration cost obligations and its estimates proved low—*i.e.,* if we capped costs at $850 million and that amount was exhausted before the completion of nationwide band reconfiguration—a balkanized 800 MHz band would likely result, in which public safety agencies in one section of the country would operate pursuant to a revised band plan and other agencies would operate pursuant to the current, interference-ridden, band plan. This could seriously diminish public safety interoperability between NPSPAC Regions, and could also impair the ability of non-NPSPAC public safety systems to develop interoperable networks. We also observe that the Consensus Parties themselves admit the possibility that $850 million may prove inadequate.[481] Thus, when discussing the assurance that the exhausted funds would not result in a half-reconfigured 800 MHz band, they state that: "no incumbent licensees will be required to relocate within a Region…unless funding is available for all licensee relocations required in that Region."[482] While this addresses the possibility of the incomplete reconfiguration of a single Region, the Consensus Parties are silent on the greater hazard resulting from the funds evaporating before the reconfiguration of all Regions: *e.g.,* a negative effect on inter-region interoperability.

b. Continued Availability of Funds

180. In the *NPRM*, the Commission sought comment on how to guarantee the availability of funding to complete the reconfiguration of the 800 MHz band regardless of the financial status of the contributing party or parties.[483] In response, parties suggested how to ensure the completion of band reconfiguration notwithstanding the inability of the funding entity to continue to furnish funds for reasons of bankruptcy or otherwise.[484] The Consensus Parties, for example, initially proposed that Nextel could secure its ability to fund retuning costs by setting up a separate corporate entity to hold assets securing the Nextel funding obligation. The stock of the entity would be pledged to an escrow agent/trustee, with the power to sell the assets and hold the cash proceeds in escrow for the benefit of the Fund Administrator in

[478] We take this step pursuant to Section 4(i) of the Communications Act. 47 U.S.C. § 154(i).

[479] *See* n. 489 *infra.*

[480] This is consistent with the Commissions actions in the Upper 200 and Microwave Relocation proceedings. *See* 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 and Amendment to the Commission's Rules Regarding a Plan for Sharing Costs of Microwave Relocation, WT Docket No. 95-157.

[481] Supplemental Comments of the Consensus Parties at 6 (noting estimate of total costs for relocating public safety licensees is subject to several significant variables such as the number of total radios which will need to be replaced).

[482] *See* Supplemental Comments of the Consensus Parties at 12.

[483] *See NPRM,* 17 FCC Rcd at 4899 ¶ 45.

[484] *See, e.g.,* Supplemental Comments of the Consensus Parties at 8; Nextel Nov 3 *Ex Parte.*

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the event Nextel failed to meet its payment obligations.[485] However, this proposal was superseded on November 3, 2003, when Nextel committed to deposit $100 million in cash into an escrow account created and designated for paying 800 MHz band reconfiguration costs pursuant to the Consensus Plan and securing up to an additional $750 million for this purpose through an irrevocable stand-by letter of credit.[486] Nextel claims that this proposal would insulate band reconfiguration funds from any financial reversals that Nextel might encounter, including bankruptcy.[487]

181. Nextel's escrow deposit and irrevocable stand-by letter of credit appear better capable of assuring continued relocation funding than the Consensus Parties' earlier proposal, although we prefer to rely solely on the Letter of Credit. However, we remain mindful of those parties who questioned the Consensus Plan cost estimates, both with respect to the number of systems that would have to be relocated and whether equipment in those systems could be retuned or would have to be replaced.[488] We also recognize that even small errors in certain sensitive parameters could dramatically increase total relocation costs.[489] We are therefore faced with the question of who should assume the risk if relocation cost projections prove to be inadequate: Nextel, which made the estimates, or the public, which would suffer the consequences of incomplete implementation of a nationwide 800 MHz band plan. In resolving that question, we note that Nextel has stated that it is "highly confident" in the accuracy of its estimates, which suggests that it perceives little risk in assuming the entire band reconfiguration obligation. However, we

[485] *See* Supplemental Comments of the Consensus Parties at 8.

[486] *See* Nextel Nov. 3 *Ex Parte* at 3.

[487] *See id.* at 3; Supplemental Comments of the Consensus Parties at 7-8; *cf. NPRM,* 17 FCC Rcd at 4899 ¶ 45 (seeking comment on safeguards to guarantee that the "then state of finances of a contributing party or parties" would not hinder the completion of band reconfiguration).

[488] *See* Comments of Mobile Relay Associates to Supplemental Comments of the Consensus Parties at 6; (no way to determine whether Consensus Plan adequately estimates overall funding needs); Comments of Border Area Coalition to Supplemental Comments of the Consensus Parties at 12 (Consensus Plan does not take into account additional costs that border area licensees would incur); Comments of Small Business in Telecommunications to Supplemental Comments of the Consensus Parties at 2-4 (questioning estimate of $17,000 per channel for relocation and $12,000 per channel for rebanding.). *See also* Comments of CTIA to Supplemental Comments of the Consensus Parties at 10 and Comments of Michigan DIT to Supplemental Comments of the Consensus Parties at 3 (Consensus Plan underestimates number of small public safety systems that would be relocated).

[489] Nextel's estimates are based on replacing one percent of public safety portable and mobile radios. However, the City and County of San Diego provided estimates that more than thirty percent of its units would have to be replaced. *See* Comments of San Diego to Supplemental Comments of the Consensus Parties at 12-13. Subsequently, Nextel filed a letter stating that the San Diego estimates were overstated; but that, nonetheless, more than one percent of the units in the San Diego system would have to be replaced. *See* Letter, dated February 20, 2004, from Larry Krevor, Esq., Nextel to Michael Wilhelm, Esq. Public Safety and Critical Infrastructure Division, Wireless Telecommunications Bureau, Federal Communications Commission. The San Diego system may not be representative inasmuch as it was constructed in 1991 and is still using radios of that vintage. *See also, e.g.* Reply Comments of ALLTEL *et. al.* to Supplemental Comments of the Consensus Parties at 6-7 (the cost of receiver replacement increases $78 million for every one percent increase in number of receivers that must be replaced.) *See also* Comments of Verizon Wireless to Supplemental Comments of the Consensus Parties at 10 and Comments of Preferred Communications to Supplemental Comments of the Consensus Parties at 9-10 (Questioning Consensus Plan estimate that one percent of public safety receivers would need to be replaced) Comments of Ameren to Supplemental Comments of the Consensus Parties at 5 (Consensus Plan proposal of $150 million to relocate B/ILT incorrectly assumes that relocation would only require the replacement of only five percent of B/ILT equipment).

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also believe it is important to protect against the risk of Nextel experiencing an unanticipated financial crisis or insolvency that would impair its ability to fully fund relocation.

182. Because the Commission Plan requires Nextel to shoulder a greater financial obligation than the financial obligation envisioned in the Consensus Plan, we will require Nextel to increase the amount of money irrevocably available to ensure completion of band reconfiguration. Specifically, we will require Nextel to provide an irrevocable letter of credit securing $2.5 billion.[490] This letter of credit will serve as the funding source for the costs involved in reconfiguring the 800 MHz systems for non-Nextel licensees and possibly as the source for any payment to the United States Treasury.[491] Nextel must directly pay its own relocation costs as well as such obligations such as the reimbursement of UTAM, the relocation of BAS incumbents and the compensation of the Transition Administrator and the Letter of Credit Trustee. We have provided a model letter of credit at Appendix E, *infra,* and expect that the letter of credit will be issued in substantially the same form set forth therein.[492] While we require that only one financial institution, acceptable to the Commission,[493] issue the letter of credit, we have no objection to the indirect participation of other financial institutions, acceptable to the Commission, if necessary.[494]

183. As described more fully at ¶¶ 198-200 *supra,* the Trustee will draw upon the letter of credit those funds necessary to accomplish band reconfiguration. As part of the process by which the Transition Administrator will certify that band reconfiguration in a particular NPSPAC region is complete—or at Nextel's reasonable request, the Transition Administrator will evaluate the sum remaining available under the initial letter of credit and any subsequent letter(s) of credit issued pursuant to this *Report and Order*. If, at any time, the Transition Administrator documents that the letter(s) of credit does not retain sufficient undrawn funds to ensure completion of band reconfiguration, Nextel will be required to open an additional letter of credit. If, however, the Transition Administrator documents that the letter(s)

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[490] We emphasize that the required $2.5 billion security is not a "cap" on Nextel's obligations hereunder, whether for 800 MHz band reconfiguration or 1.9 GHz band clearance. We further emphasize that this determination does not represent a finding by the Commission that 800 MHz band reconfiguration can, in fact, be accomplished for $2.5 billion.

[491] *See* ¶¶ 186 *infra.*

[492] The model letter of credit provides that the letter will be issued for five years unless it contains an "evergreen" clause. If such a clause is included in the letter of credit and the issuing institution gives notice of non-renewal, Nextel shall ensure that a replacement letter is issued no later than thirty days prior to the expiration date of the letter of credit. A failure to do so shall entitle the Commission to instruct the Trustee to make a draw on the letter of credit for the entire remaining balance thereof.

[493] A bank that is acceptable to the Commission to issue the Letter of Credit is a) any United States Bank that (i) is among the 50 largest United States banks, determined on the basis of total assets as of December 31, 2003, (ii) whose deposits are insured by the Federal Deposit Insurance Corporation, and (iii) has a long-term unsecured credit rating issued by Standard & Poor's of A- or better (or an equivalent rating from another nationally recognized credit rating agency); and b) any non-U.S. bank that (i) is among the 50 largest non-U.S. banks in the world, determined on the basis of total assets as of December 31, 2003 (determined on a U.S. dollar equivalent basis as of such date), (ii) has a branch office in New York City or such other branch office agreed to by the Commission, (iii) has a long-term unsecured credit rating issued by a widely-recognized credit rating agency that is equivalent to an A- or better rating by Standard & Poor's, and (iv) issues the Letter of Credit payable in United States dollars. Should the bank's credit rating fall below A- or equivalent rating, the Commission may require Nextel to procure the issuance of a letter of credit in an amount equivalent to that remaining on the current letter of credit by a bank that meets the criteria set forth herein.

[494] *Id.*

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of credit secures funds in excess of those needed to ensure completion of band reconfiguration, Nextel will be allowed to reduce the amount of the letter(s) of credit. At no point, however, will the Transition Administrator allow Nextel to reduce the total aggregate secured by the letter(s) of credit below $850 million. We believe that allowing reductions in the letter(s) of credit will relieve Nextel of an unnecessary financial burden and anticipate that Nextel may use the monies freed by the reduction to improve or expand its network, including its operations in the 1.9 GHz band. This would not only improve its service to the public, but the revenues derived from this improved service would strengthen its financial position and serve as an additional hedge against financial reversals that might affect band reconfiguration. At the conclusion of the true-up process, including securing the funds necessary to ensure reconfiguration of the band in border areas, Nextel's obligation to provide security for the cost of 800 MHz band reconfiguration shall terminate and the letter(s) of credit will terminate.[495]

184. The letter(s) of credit shall specify a trustee, acceptable to the Commission, as the beneficiary, which shall administer the funds from the letter of credit and receive the funds from the letter of credit in the event of a Nextel default. Nextel and the Letter of Credit Trustee shall formalize the terms of their relationship with a written contract and/or a trust deed, drafts of which shall be submitted for Commission final review and approval.[496] On the occasion of a material breach by Nextel of its obligations hereunder, as declared by the Commission, said trustee shall be entitled to draw on the letter of credit as specified in such instrument. The funds shall be devoted to reconfiguration of the 800 MHz band and possibly payment to the United States Treasury.[497] Neither the Transition Administrator nor the Letter of Credit Trustee will be compensated from funds available under the letter of credit, but will be compensated directly by Nextel.

185. If Nextel is unable or unwilling to fulfill its obligations pursuant to this *Report and Order,* the Commission can approve the use of letter of credit funds to compensate the Transition Administrator and the Letter of Credit Trustee for their services. The trustee shall stand as a fiduciary to the Commission. Letter of credit funds shall be applied first to band reconfiguration of non-Nextel licensees; and then to the relocation of Nextel's facilities as required to conform to the new 800 MHz band plan. Should the funds be insufficient to complete relocation of Nextel's facilities, the licenses of un-relocated Nextel facilities shall automatically revert to secondary status. Pursuant to such secondary status, such unfinished Nextel facilities must not interfere with, and must accept interference from, any other 800 MHz licensee.

186. As described in paragraph 330 *infra*, the Wireless Telecommunications Bureau will issue a Public Notice specifying the amount that Nextel will pay the United States Treasury. If Nextel does not make payment of any amount that it owes within thirty days of issuance of this Public Notice, the amount Nextel owes will be paid from the letter(s) of credit. If the letter(s) of credit do not secure sufficient funds, then, in addition to debt collection remedies that the government may employ, the Commission will determine whether forfeitures should be imposed and/or whether Nextel licenses, included, but not limited to its 1.9 GHz licenses, should be revoked.

187. Because the Commission does not engage in deciding debtor-creditor matters, including

[495] *See* Appendix E–Annex C, *infra* (Termination of Letter of Credit form).

[496] The contract will authorize the formation of the "800 MHz Relocation Trust" and the corpus of the trust will be the letter or letters of credit issued pursuant to the terms of this Order. The trust will be permitted to receive and hold draws under the letter of credit to facilitate multiple payments to particular licensees, vendors, contractors, etc., to pay for approved relocation costs. An outline of the key terms envisaged by the Commission are attached hereto as Appendix E-Annex D.

[497] *See* ¶¶ 186, 329-332 *infra.*

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those relating to bankruptcy, we, *inter alia,* will not permit Nextel to operate within the 1.9 GHz band without first providing the Commission with a legal opinion letter, at Nextel's cost, from bankruptcy counsel chosen by Nextel. This restriction is a condition of Nextel's modified license. In order to meet this condition, the opinion letter must clearly state, subject only to customary assumptions, limitations and qualifications, that in a proceeding under Title 11 of the United States Code, 11 U.S.C. Section 101 et seq. (the "Bankruptcy Code"), in which Nextel is the debtor, the bankruptcy court would not treat the Letter of Credit or proceeds of the Letter of Credit as property of Nextel's bankruptcy estate under Section 541 of the Bankruptcy Code. The scope of the opinion letter must also cover such other opinions as the Commission shall request. The opinion letter must contain detailed legal analysis of the basis of counsel's opinion. A draft opinion letter must be submitted for review and approval by the Commission's Office of General Counsel prior to issuance of the opinion. Bankruptcy counsel, and, if applicable, counsel's firm, must have a Martindale-Hubbell rating of "A/V" and must satisfy the Commission in all other respects.

5. Logistics of Band Reconfiguration

188. In the *NPRM,* the Commission acknowledged that any band restructuring proposal would require incumbents to relocate.[498] We therefore sought comment on how to implement reconfiguration of the 800 MHz band with minimum disruption to incumbent licensees. We did not endorse or propose any specific transition plan, but instead sought comment on several proposals that would help inform our decision regarding relocation and which reflected our underlying goal that relocation plans should appropriately balance the interests of all licensees.

189. In the *NPRM,* the Commission sought comment on the best mechanism to collect and administer funds and to resolve disputes with respect to the relocation of public safety systems.[499] The Consensus Parties recommend creation of a five member Relocation Coordination Committee (RCC) to oversee the relocation process.[500] For example, the RCC would first prioritize the NPSPAC regions for relocation according to population and greatest incidence of interference.[501] They also proposed a Planning Committee—separate from the RCC—to review each new relocation channel assignment to ensure that the relocated licensee would not cause or receive unacceptable co-channel interference on the new channel(s).[502] The RCC certification of a relocation plan would trigger a mandatory nine-month negotiation period between affected licensees and Nextel.[503] If an agreement were not reached by the end of the nine-month period, the parties would submit to binding arbitration by an RCC-established arbitration panel.[504] The RCC would be certified as a frequency coordinator by the Commission and—after selecting channels for a relocated system and obtaining approval of the relevant frequency coordinator—would file the applications with the Commission. They also proposed cancellation of the

[498] *See NPRM,* 17 FCC Rcd at 4891 ¶ 31.

[499] *Id.* at 4898 ¶ 45.

[500] *See* Supplemental Comments of the Consensus Parties at 14-17.

[501] *Id*. at 16. Appendix E of the Supplemental Comments of the Consensus Parties provides a sample prioritization scheme.

[502] *Id*. at 18.

[503] *Id.* at 21.

[504] *Id*. at 21-22.

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licenses of any licensee that failed to relocate within thirteen months, absent special circumstances.[505]

a. Transition Administrator

190. In the *NPRM,* the Commission sought comment on the best mechanism to collect and administer funds and to resolve disputes with respect to the relocation of public safety systems.[506] No other party filed a proposal giving details of how its band plan would be implemented; although several commenting parties criticized the Consensus Parties implementation plan as excessively Nextel-centric and unduly complex.[507] We are in general agreement with the parties who raised those issues. Although we fully appreciate the significant effort that band reconfiguration will entail, we believe the administrative structure proposed by the Consensus Parties would delay, rather than facilitate, timely completion of band reconfiguration. Moreover, we are sensitive to the comments of those parties who expressed concern about the potential conflict of interest inherent in the proposed RCC and questioned whether the Commission could legally grant the RCC the powers envisioned by the Consensus Parties.[508]

191. Accordingly, we believe that using an independent individual or company, who, or which, will serve as a Transition Administrator subject to oversight by the Commission is the best approach for ensuring that band reconfiguration proceeds on schedule. The Transition Administrator may also serve to mediate disputes that may arise in the course of band reconfiguration.[509] As contemplated by the Consensus Parties in their proposal for a RCC, Nextel will pay for the services of the Transition Administrator and staff as one of the transactional costs borne by Nextel in connection with band reconfiguration. We will follow a selection process similar to that suggested by the Consensus Parties; *i.e.,* the Transition Administrator will be an independent party with no financial interest in any 800 MHz licensee; and will be selected by a committee representative of 800 MHz licensees. We direct the following organizations to designate a representative to serve on the search committee for the Transition

[505] *Id*. at 24.

[506] *See NPRM*, 17 FCC Rcd at 4998-99 ¶ 45.

[507] *See, e.g.,* Comments of Carolina Power and Light to Supplemental Comments of the Consensus Parties at 3, 7-8; Comments of Cinergy to Supplemental Comments of the Consensus Parties at 16; Comments of Consumers Energy, Inc. to Supplemental Comments of the Consensus Parties at 25-26.

[508] *See, e.g.,* Comments of Alliant Energy to Supplemental Comments of the Consensus Parties at 3, Comments of Ameren Corp. to Supplemental Comments of the Consensus Parties at 12-13, Comments of Boeing to Supplemental Comments of the Consensus Parties at 25-26.

[509] We will make this appointment pursuant to the authority given to us under Section 4(i) of the Act. *See* 47 U.S.C. § 154(i). The Commission has used similar third-party solutions in the past. In 1994, the Commission appointed an independent, non-governmental entity, UTAM, as the coordinating body to oversee the transition from fixed microwave operations to UPCS and to manage the transition to full band clearing. *See* Amendment of the Commission's Rules to Establish New Personal Communications Services, *Memorandum Opinion and Order*, 9 FCC Rcd at 4957 ¶ 209 (1994). In 1996, the Commission appointed the Personal Communications Industry Association (PCIA) and the Industrial Telecommunications Association, Inc. (ITA), two private non-governmental entities, to administer the microwave clearinghouse cost-sharing plan. *See* Amendment of the Commission's Rules Regarding a Plan for Sharing the Costs of Microwave Relocation, WT Docket No. 95-157, *Memorandum Opinion and Order,* 11 FCC Rcd 9394 (WTB 1996).

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Administrator:[510]

- Nextel Communications, Inc.;
- The Association of Public Safety Communications Officials-International;
- The Industrial Telecommunications Association;
- Southern LINC; and
- United Telecom Council;

192. Should any of the organizations, *supra,* decline to designate a representative; the Commission will designate a substitute organization. The Public Safety and Critical Infrastructure Division of the Wireless Telecommunications Bureau is hereby delegated the authority to choose such substitute organization. The search committee shall convene within fifteen days of the date this *Report and Order* is released, and shall select the Transition Administrator within forty-five days of the date this *Report and Order* is released. The search committee should proceed by consensus; however if a vote on selection of a Transition Administrator is required, it shall be by a supermajority of the representatives of four of the organizations, *supra.* The search committee shall notify the Commission of its choice for Transition Administrator. This notification shall: (a) fully disclose any perceived potential conflicts of interest or appearance of conflicts of interest of the Transition Administrator or his or her staff; and (b) set out in detail the salary and benefits associated with each position.[510A]

193. On receipt of this notice regarding selection of a Transition Administrator, the Commission will issue a public notice to that effect. The Chief of the Public Safety and Critical Infrastructure Division is hereby delegated the authority to issue said Public Notice. During the course of the Transition Administrator's tenure, the Commission will take such measures as are necessary to ensure timely compliance with this *Report and Order*, including, should it become necessary, convening another search committee to choose a replacement Transition Administrator.

194. The Transition Administrator will serve both a ministerial role and a function similar to a special master in a judicial proceeding.[511] In the latter role, the Transition Administrator may mediate any disputes that may arise in the course of band reconfiguration; or refer the disputant parties to alternative dispute resolution fora. Any dispute submitted to the Transition Administrator, or other mediator, shall be decided within thirty days after the Transition Administrator has received a submission by one party and a response from the other party. Any party thereafter may seek expedited non-binding arbitration which

[510] We chose these parties because we believe they closely represent a cross-section of the viewpoints presented in the proceeding by parties having a vested interest in the manner in which the 800 MHz band is to be reconfigured.

[510A] Should the selected Transition Administrator be a company or other entity providing services to multiple clients, the salaries of the principals of such a company are not relevant to our inquiry. In such a case, the Transition Administrator shall report the billing rates of those persons performing the Transition Administrator function; which rates shall be no more than the billing rates charged for similar services in a project of similar complexity.

[511] Courts often appoint special masters as a means of addressing, *inter alia,* judicial limitations such as time constraints, lack of expertise in esoteric areas and lack of skill in certain roles, such as the facilitation of settlement negotiations. *See* Wayne D. Brazil, *Special Masters in Complex Cases: Extending the Judiciary or Reshaping Adjudication?*, 53 U. Chi. L. Rev. 394-394-395 (1986).

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must be completed within thirty days of the Transition Administrator's, or other mediator's recommended decision or advice. The parties will share the cost of this arbitration.[512] Should issues still remain unresolved they may be referred to the Chief of the Public Safety and Critical Infrastructure Division of the Wireless Telecommunications Bureau within ten days of the Transition Administrator's, or other mediator's recommended decision or advice. When referring an unresolved matter to the Chief of the Public Safety and Critical Infrastructure Division, the Transition Administrator shall forward the entire record on any disputed issues, including such dispositions thereof that the Transition Administrator has considered. Upon receipt of such record and advice, the Commission will decide the disputed issues based on the record submitted. The authority to make such decisions is hereby delegated to the Chief of the Public Safety and Critical Infrastructure Division of the Wireless Telecommunications Bureau who may decide the disputed issue or designate it for an evidentiary hearing before an Administrative Law Judge. If the Chief of the Public Safety and Critical Infrastructure Division of the Wireless Telecommunications Bureau decides an issue, any party to the dispute wishing to appeal the decision may do so by filing with the Commission, within ten days of the effective date of the initial decision, a Petition for *de novo* review; whereupon the matter will be set for an evidentiary hearing before an Administrative Law Judge. Parties seeking *de novo* review of a decision by the Wireless Telecommunications Bureau are advised that, in the course of the evidentiary hearing, the Commission may require complete documentation relevant to any disputed matters; and, where necessary, and at the presiding judge's discretion, require expert engineering, economic or other reports or testimony. Parties may therefore wish to consider possibly less burdensome and expensive resolution of their disputes through means of alternative dispute resolution.

195. The duties of the Transition Administrator will include, but not be limited to:

- Obtaining estimates from licensees regarding the cost of reconfiguring their systems and ensuring that estimates contain a firm work schedule and other matters set forth in Appendix E-Annex E, *infra.* The Transition Administrator will retain copies of all estimates and make them available to the Commission on request.

- Resolving disputes between Nextel and licensee on cost estimates for reconfiguring a system.

- Issuing the Draw Certificate to authorize and instruct the Letter of Credit Trustee to draw down on the Letter of Credit to pay relocation costs in connection with reconfiguring a licensee's system.[513] *See* Appendix E–Annex B2.

- Establishing a relocation schedule on a NPSPAC region-by-region basis, prioritizing the regions on the basis of population.[514] However, should a given region be encountering unusually severe amounts of unacceptable interference, that region may be moved up in priority. Any party disputing such a change in priority may refer the matter to the Chief of the Public Safety and Critical Infrastructure Division, who hereby is delegated the authority to resolve such disputes. The Transition Administrator may direct that adjoining regions be reconfigured simultaneously when conditions so require.

[512] We note, however, that some government agencies can not engage in mediation or arbitration.

[513] The Transition Administrator will devise a suitable payment system with respect to each system that is reconfigured, including, if appropriate, instructing the Letter of Credit Trustee to make stage payments to licensees, vendors, *etc*.

[514] In developing such a schedule, the Transition Administrator has the discretion to exclude certain non-public safety licensees from a NPSPAC region relocation schedule, provided that they are eventually relocated prior to the end of band reconfiguration.

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- The Transition Administrator will coordinate relocation of a NPSPAC Region's NPSPAC channels with the relevant Regional Planning Committee(s) prior to commencing band reconfiguration in a NPSPAC Region.

196. Once band reconfiguration commences in a given NPSPAC Region, the Transition Administrator will serve primarily an oversight function as necessary to implement band reconfiguration. For example the Transition Administrator will:

- Monitor the retuning schedule and resolve any schedule delays or refer same to the Public Safety and Critical Infrastructure Division for resolution.

- Coordinate with adjoining NPSPAC Regions to ensure that interference is not being caused to their existing facilities from relocated stations.

- Provide quarterly progress reports to the Commission in such detail as the Commission may require and include, with such reports, certifications by Nextel and the relevant licensees that relocation has been completed and that both parties agree on the amount received from the Letter of Credit proceeds in connection with relocation of the licensees' facilities. The report shall include description of any disputes that have arisen and the manner in which they were resolved. These quarterly reports need not be audited.

- Provide to the Public Safety and Critical Infrastructure Division, on each anniversary of the effective date of this Report and Order, an audited statement of relocation funds expended to date, including salaries and expenses of Transition Administrator.[515]

- Facilitate resolution of disputes by mediation; or referral of the parties to alternative dispute resolution services.

197. The Transition Administrator may not serve as the repository of funds used in band reconfiguration, excepting such sums as Nextel may pay for the Transition Administrator's services. Moreover, the Transition Administrator will not be certified by the Commission as a frequency coordinator.

198. We envision the relocation process in a particular region unfolding as follows:

1) Nextel shuts down its General Category channels and relocates all non-Nextel General Category licensees.[516] It temporarily shifts many of its operations to "green space" at 900 MHz.
2) NPSPAC licensees relocate to six megahertz of spectrum in the former General Category space at Nextel's expense.
3) Nextel relocates its systems from the green space and from the interleaved portion of the band into the vacated NPSPAC channels; surrendering its rights to spectrum below 817 MHz/862 MHz spectrum in the process.
4) Any remaining relocations necessary to effect complete reconfiguration of the band in that region

[515] An audited statement is one that comports to the relevant Financial Accounting Standards Board (FASB) standards. *See* n. 510A, *supra.*

[516] In this connection, we observe that during band reconfiguration the provisions of Section 90.157 will not apply to Nextel and non-Nextel stations that have been shut down in order to accommodate our rebanding plan. *See* 47 C.F.R. § 90.157.

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are made at Nextel's expense, e.g. moving public safety systems out of the Expansion Band.[517]

We envision system relocation involving the following steps:

1) The Transition Administrator notifies a licensee that its system needs to be relocated in order to complete band reconfiguration. The Transition Administrator will specify a replacement channel for each channel in the licensee's system that needs to be changed to a new channel.[517A]
2) The licensee obtains an estimate of the cost to reconfigure its system and provides that estimate to the Transition Administrator. The submission to the Transition Administrator shall contain the licensee's certification that the funds requested are the minimum necessary to provide facilities comparable to those presently in use.
3) The Transition Administrator will review the estimate—including an analysis to ensure that the estimate does not exceed the cost of providing comparable facilities. If the review indicates the need for additional support, or is otherwise deficient, the licensee will be so informed and will be required to furnish a revised estimate.
4) The Transition Administrator will submit the estimate to Nextel, which will have the opportunity to review the details of the estimate and, if appropriate, dispute the estimate.
5) The Transition Administrator will facilitate resolution of any such disputes, acting as an intermediary between the licensee and Nextel. We envision that all licensees will exercise good faith and we strongly encourage licensees to cooperate in resolving disputes so as not to unreasonably frustrate band realignment.[518]
6) Once Nextel's concurrence, which shall not unreasonably be withheld, has been obtained, the Transition Administrator will issue a Draw Certificate to the Letter of Credit Trustee who will draw down funds as appropriate from the letter of credit and disburse them, in accordance with the Transition Administrator's instructions, to the entity(ies) contracted to reconfigure the system (for example, the licensee, a local contractor and an equipment manufacturer—Nextel personnel will not be involved in reconfiguring a licensee's system.[519])
7) At the conclusion of system configuration the Transition Administrator will audit the amount expended and either issue a second Draw Certificate to the Letter of Credit Trustee to cover any reasonable expenditures reasonably agreed to by Nextel and the licensee that were not covered by the first Draw Certificate or direct the Letter of Credit Trustee to obtain reimbursement for any excess funds (with any disputes as to final amounts to be resolved following the dispute resolution procedures set forth in ¶ 194.
8) The licensee begins operating on the new channel(s).

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[517] In this regard, we will allow inter-category sharing for the limited purpose of this proceeding. *See* 47 C.F.R. § 90.677 in Appendix C, *infra*.

[517A] Although the Transition Administrator will specify replacement channels, the Transition Administrator is not necessarily required to select these replacement channels itself. The Transition Administrator may rely on a third party or parties for the selection of replacement channels.

[518] Licensees that fail to act in good faith or unreasonably decline to cooperate may be subject to enforcement action.

[519] The Trustee will disburse funds in accordance with the Transition Administrator's instructions which may include directions to pay contractors in a lump sum or over time in accordance with milestone payments set forth in the contractor's contract with the licensee.

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199. We expect that the Transition Administrator, the Trustee appointed to administer the Letter of Credit, and Nextel will formalize the matters set forth herein in a contract, a draft of which shall be submitted to the Commission for review and approval prior to execution. Attached hereto as Appendix E Annex D is a non-exhaustive outline of provisions that the Commission would expect to be contained in such a contract.

200. In sum, we believe that reliance on the expertise of our existing frequency coordinators, together with our use of the services of an independent Transition Administrator is preferable to the Consensus Parties' proposed RCC and multiple committees.[520] Moreover, given the detailed guidelines under which the coordinators and Transition Administrator will operate, coupled with the procedures for ongoing Commission review described *infra*, we conclude that Commission use of such expertise and services is well within our authority.[521]

b. Scheduling and Implementation

201. In assigning oversight of the logistics of band reconfiguration to a Transition Administrator, we allow all parties involved in the relocation process a degree of flexibility that would not be achievable if we set rigid rules for the relocation process. However, we do impose the following obligations on the parties:

- All parties, including Nextel, are held to a high standard of utmost good faith in their transactions with Nextel, or its designee, the Transition Administrator, other licensees, and the Commission. In particular, and without limiting the generality of the foregoing obligation, representations made to the Transition Administrator will be held to the same standard of truth and candor as representations made to the Commission.

- Within thirty days of the Commission approval of the Transition Administrator, the Transition Administrator will provide the Commission with a schedule detailing when band reconfiguration shall commence for each NPSPAC Region. The plan should also detail—by NPSPAC Region—which relocation option each non-Nextel ESMR licensees has chosen.[522] The Chief of the Public Safety and Critical Infrastructure Division of the Wireless

[520] In this connection, we strongly encourage frequency coordinators to complete any necessary review within thirty days.

[521] *See, e.g.*, *Batterton v. Francis,* 97 S.Ct. 2399, 2407 (1977) (Secretary of Health, Education, and Welfare had authority to tie AFDC benefits to state unemployment compensation determinations since in doing so the Secretary "incorporated a well-known and widely applied standard.") and *R. H. Johnson & Co. v. SEC*, 198 F.2d 690, 695 (2nd Cir. 1952), *cert. denied* 344 U.S. 855, 73 S.Ct. 94, 97 L.Ed. 664 (1952) (SEC did not unconstitutionally delegate powers to National Association of Securities Dealers because it retained power to approve or disapprove rules and to review disciplinary actions). *Compare United Black Fund, Inc. v. Hampton*, 352 F.Supp. 898, 904 (D.D.C. 1972) (Civil Service Commission Chairman may permit private entities preliminarily to determine eligibility of local health and welfare agencies for participation in the Combined Federal Campaign where Chairman set standards local agencies must meet, and where the Chairman retained final review authority) *with National Park and Conservation Ass'n v. Stanton*, 54 F. Supp.2d 7, 20 (D.D.C.1999) (National Park Service's ("NPS") delegation of management of national scenic river to a private council constitutes unlawful delegation because "NPS retains no oversight over the [c]ouncil, no final reviewing authority over the council's actions or inaction, and the [c]ouncil's dominant private local interests are likely to conflict with the national environmental interests that NPS is statutorily mandated to represent."); *cf. USTA v. FCC* (DC Cir. Mar. 2, 2004) (holding that the Commission had impermissibly subdelegated its authority to the states.)

[522] *See* ¶ 162 *supra*.

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Telecommunications Bureau is hereby delegated the authority to finalize and approve such a plan. The schedule shall provide for completion of band reconfiguration in no more than thirty-six months following the release of a Public Notice announcing the start date of reconfiguration in the first NPSPAC region. In addition, as an interim benchmark, the schedule must provide for retuning of Channels 1-120 in twenty NPSPAC Regions within eighteen months. Relocation will commence according to the schedule set by the Transition Administrator but all systems must have commenced reconfiguration within thirty months of the release of a Public Notice announcing the start date of reconfiguration in the first NPSPAC region.

- The schedule shall specify a start date for the reconfiguration of each Region. Thirty days before the start date, the Commission will issue a Public Notice initiating a three-month voluntary negotiation period between Nextel and all relocating incumbents. Nextel and relocating incumbents may agree to conduct face-to-face negotiations or either party may elect to communicate with the other party through the Transition Administrator. The Chief of the Public Safety and Critical Infrastructure Division of the Wireless Telecommunications Bureau is hereby delegated the authority to issue such Public Notices. The release of a Public Notice announcing the start date of reconfiguration in the first NPSPAC region starts the thirty-six month band reconfiguration period.

- If voluntary negotiations do not yield an agreement by the date specified in the Commission Public Notice, the parties are required to enter into three-month mandatory negotiation period and shall have obligations patterned after those specified in our *Upper 200 SMR* and *Microwave Cost-Sharing* proceedings.[523] Again, the parties may agree to conduct face-to-face negotiations or elect to communicate through the Transition Administrator. The Transition Administrator may schedule mandatory settlement negotiations and mediation sessions and the parties must conform to such schedules.

- If, after the three-month mandatory negotiation period, the parties have not reached an agreement, disputed issues shall be identified in writing by both parties, and the matter referred to the Transition Administrator who shall mediate an agreement, or refer the parties to mediation. If disputed issues remain thirty days after the end of the mandatory negotiation period, the Transition Administrator shall forward the record to the Chief of the Public Safety and Critical Infrastructure Division, together with advice on how the matter(s) may be resolved. The Chief of the Public Safety and Critical Infrastructure Division is hereby delegated the authority to rule on disputed issues, *de novo*. Any party wishing to appeal the decision of the Chief of the Public Safety and Critical Infrastructure Division may avail themselves of an evidentiary hearing as discussed in ¶ 194 *supra.*

- In the alternative, parties who are unable for technical reasons or otherwise to relocate according to the schedule may petition the Commission for a waiver of the relocation obligation. Such a waiver would only be granted on a strict non-interference basis. Moreover, there would be a high burden to surmount for any party seeking a waiver of this obligation.

[523] *See* 47 C.F.R. § 90.699(b)(2). *See also* Comments of NAM/MRFAC to Supplemental Comments of Consensus Parties at 11-12; Cinergy Corp., Consumers Energy Corp., Entergy Corp, Entergy Services March 12, 2003 *Ex Parte*.

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- All parties are charged with the obligation of utmost good faith in the negotiation process.[524] If any licensee fails to negotiate in good faith, its facilities may be involuntarily relocated and its license modified accordingly by the Commission. We hereby delegate to the Wireless Telecommunications Bureau the authority, pursuant to Section 316 of the Act,[525] to modify licenses under such circumstances.

- All relocating licensees shall be relocated to comparable facilities. Comparable facilities are those that will provide the same level of service as the incumbent's existing facilities, with transition to the new facilities as transparent as possible to the end user.[526] Specifically, (1) equivalent channel capacity;[527] (2) equivalent signaling capability,[528] baud rate and access time; (3) coextensive geographic coverage;[529] and (4) operating costs.[530] If the reconfiguration of a licensee will entail a significant interruption of service during the relocation process, Nextel will fund the installation of a redundant system.[531]

- Absent agreement between parties, the Transition Administrator will be responsible for determining the information that relocating incumbents must supply in support of a relocation agreement.

202. In setting the above framework for implementing band reconfiguration, we have considered but rejected some of the Consensus Parties' detailed proposals, *e.g.* a rule incorporating the lengthy list of equipment that incumbents would be required to submit to Nextel within a time certain.[532]

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[524] Among the factors relevant to a good-faith determination are: (1) whether the party responsible for paying the cost of band reconfiguration has made a *bona fide* offer to relocate the incumbent to comparable facilities; (2) the steps the parties have taken to determine the actual cost of relocation to comparable facilities; and (3) whether either party has unreasonably withheld information, essential to the accurate estimation of relocation costs and procedures, requested by the other party. *See* Amendment to the Commission's Rules Regarding a Plan for Sharing the Costs of Microwave Relocation, *First Report and Order and Further Notice of Proposed Rulemaking,* 11 FCC Rcd 8825, 8837-8838 ¶ 21.

[525] 47 U.S.C. § 316.

[526] *See generally,* Amendment of Part 90 of the Commission's Rules to Facilitate Future Development of SMR Systems in the 800 MHz Frequency Band, *Second Report and Order*, 12 FCC Rcd 19079, 19112-19113 ¶ 89-95 (1997) (*Upper 200 SMR Second Report and Order*).

[527] Our rules define channel capacity as the same number of channels with the same bandwidth that is currently available to the end user. *See Upper 200 SMR Second Report and Order*, 12 FCC Rcd 19079, 19112-13 ¶ 92. *See also* 47 C.F.R. § 90.699(d)(2). For example, if an incumbent's system consists of five 25 kHz channels, the replacement system must also have five 25 kHz channels. Our rules do not, however, mandate identical channel configuration. *See Upper 200 SMR Second Report and Order*, 12 FCC Rcd 19079, 19112-13 ¶ 92.

[528] *See Upper 200 SMR Second Report and Order*, 12 FCC Rcd 19079, 19112-13 ¶ 92. *See also* 47 C.F.R. § 90.699(d)(2).

[529] *Id.*

[530] *See Upper 200 SMR Second Report and Order*, 12 FCC Rcd 19079, 19113 ¶ 94. *See also* 47 C.F.R. § 90.699(d)(4). These costs will be estimated and paid as part of the relocation costs..

[531] In this regard we observe that our definition of comparable facilities is limited to already existing facilities.

[532] *See* Supplemental Comments of the Consensus Parties at 15-19 and Appendix C.

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We have done so with the knowledge that relocation of some systems will not require information to that degree of detail, and that some degree of flexibility will better serve the parties. The overriding requirement of our framework is the good faith requirement. While parties must first bring disputes over the utmost good faith requirement to the Transition Administrator, disputing parties may subsequently bring breaches of the good faith requirement to the Commission and similarly bring there, any instance in which a party frivolously or without substantiation, charges another party with failure to negotiate in good faith.[533] As the Commission has noted previously there is no "one size fits all" rule that can be applied to the good faith issue, which is largely fact-dependent and likely to vary from case-to-case.[534]

203. We also have heeded the concern of some commenting parties that information relative to band reconfiguration could be sensitive from a security standpoint. We encourage, but do not require, the parties and the Transition Administrator to exercise discretion in disclosing any security-sensitive information; but note that there is a balance between the public's need to know and the need to withhold sensitive information. Thus, for example, the Commission has struck the balance in favor of public disclosure in making its Universal Licensing System (ULS) data available on the Internet. A large amount of information on existing 800 MHz facilities is contained in the ULS and the ULS also will contain information on the license modifications necessary to implement band reconfiguration. Similarly, we are not persuaded by the argument that furnishing information necessary for band reconfiguration would somehow result in a competitor gaining access to information it could use to its advantage.[535] We do not foresee any party having access to competitively-sensitive information such as the identity and other details of an incumbent's customers.

c. Freeze on the Acceptance of 800 MHz Applications

204. The Consensus Parties requested that we freeze the acceptance of applications for 800 MHz public safety, non-cellular SMR and Business and Industrial/Land Transportation authorizations pending band reconfiguration.[536] We strongly agree with the parties who point out the adverse effects such a three-year freeze could have on their companies' business plans.[537] Nonetheless, we see no alternative to a freeze if band reconfiguration is to be timely accomplished. There is a middle ground, given the incremental implementation of band reconfiguration Region by Region. Therefore we will freeze 800 MHz applications for a region when we issue the *Public Notice* announcing the date when voluntary negotiation of relocation agreements must be concluded. This freeze will last until thirty working days after the completion of mandatory negotiations for a given Region.[538] However, such a freeze would not include the modification applications filed in order to implement band reconfiguration. Moreover, we will

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[533] *See, e.g.*, 47 U.S.C. §§ 312, 503.

[534] *See, e.g.*, *Upper 200 SMR Second Report and Order*, 12 FCC Rcd 19079; Petition For Declaratory Ruling Concerning The Requirement For Good Faith Negotiations Among Economic Area Licensees And Incumbent Licensees In The Upper 200 Channels Of The 800 MHz Band, *Memorandum Opinion and Order*, 16 FCC Rcd 4882 (2001) (*Good Faith MO&O*).

[535] *See* Supplemental Comments of the Consensus Parties at Appendix C, C-4-5.

[536] *See* Supplemental Comments of Consensus Parties at 26.

[537] *See, e.g.,* Letter, dated November 13, 2003, from R. David Laurrell, County Administrator, County of Campbell, Virginia Board of Supervisors to Marlene H. Dortch, Secretary, Federal Communications Commission; Comments of American Electric Power Company, Inc. to Supplemental Comments of the Consensus Parties at 9-10.

[538] The mandatory negotiation period essentially ends six months after voluntary negotiations begin.

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do everything possible to minimize the effect the incremental freezes may have on incumbent licensees and new applicants, and direct the Transition Administrator to make accommodations in the implementation plan that will avoid such adverse effects. Moreover, we will not freeze the acceptance of modification applications that do not change the frequency or expand the coverage area of existing systems. Finally, we remind potentially affected parties of the availability of the Commission's waiver process and Special Temporary Authorizations when needed in order to avoid prejudice to any applicant during the band reconfiguration process.

d. Tolling of 800 MHz Site-Based Construction Requirements

205. Since the 800 MHz band reconfiguration process will take place incrementally in fifty-one geographic regions, some site-based incumbent 800 MHz licensees may face construction deadlines prior to their being scheduled for relocation.[539] To resolve this issue we will allow licensees which are ready to construct and waiting only for assignment of their new channel to submit a waiver request demonstrating that they have commenced construction, *e.g.* have on hand, or have placed a firm order for, non frequency-sensitive equipment, have erected a tower, obtained a commitment for tower space, etc.

206. If the Transition Administrator has specified said licensee a new channel and the licensee can immediately use the channel without causing interference to other systems, it must construct within its currently applicable deadline. Otherwise, the licensee may submit a waiver request for extension of the construction period until: (a) six months after the Transition Administrator has specified it a channel, if that channel can be used, in advance of band reconfiguration in the region, without causing interference; or (b) if its channel cannot be activated without interference to other systems, six months after the completion of band reconfiguration in its NPSPAC region. The Commission's waiver rules[540] will apply and the waiver requests will be evaluated on a good cause basis *e.g.* on a showing by the licensee that it would have constructed but for the fact that band reconfiguration would affect its proposed facilities. Licensees whose construction deadline passed before the release of this *Report and Order*, and which do not have an extension of time request already pending, will have a particularly high evidentiary standard to meet when they submit a waiver request. These provisions also apply to EA licensees facing construction deadlines pursuant to Section 90.685 of the Commission's Rules.[541]

6. Disposition of Nextel's 900 MHz SMR and 700 MHz Guard Band Block B Spectrum

207. The Consensus Plan contemplated that, at the end of band reconfiguration, Nextel would relinquish its rights to 900 MHz SMR spectrum as an incentive for non-cellular SMR and B/ILT licensees to vacate 800 MHz band channels on a "two for one" basis, *i.e.* each 800 MHz licensee that relocated to 900 MHz spectrum would get rights to twice the spectrum it occupied in the 800 MHz band.[542] We are not persuaded that Nextel's abandoning service to the public in the 900 MHz band in order to provide non-cellular SMR and B/ILT licensees with 900 MHz spectrum for which there is no demonstrated need is in the public interest. We are further dissuaded from accepting Nextel's proffer of relinquishment of its 900 MHz spectrum rights because Nextel likely will need to use this spectrum to accommodate subscriber

[539] For example, this may include licensees with extended implementation authority, new licensees, or licensees with pending requests for extension of current authorization.

[540] *See* 47 C.F.R. § 1.925.

[541] *See* 47 C.F.R. § 90.685(b).

[542] *See* Supplemental Comments of the Consensus Parties at 13.

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demand during 800 MHz band reconfiguration; and, possibly thereafter.[543] Even if the 900 MHz spectrum went to public safety, there are no "rebanding" benefits to using this spectrum for public safety because it is isolated from the consolidated block of 800 and 700 MHz spectrum that will be available for public safety after rebanding. In this regard, 900 MHz can be distinguished from the 700 MHz Guard Band spectrum, which could be added to the consolidated block if we decided to make the 700 MHz Guard band spectrum available for public safety use. From an interference perspective, our decision to permit operational flexibility (*i.e.* cellular architecture) in the 900 MHz band effectively precludes use of 900 MHz by public safety at this time.[544] While public safety would benefit from B/ILT and SMR licensees relocating to 900 MHz as it would provide "green-space" in the 800 MHz band, to the extent Nextel wants to offer 900 MHz spectrum to B/ILT on a 2-for-1 basis, as it has proposed, it can do so through private transactions without returning this spectrum to the Commission.

208. As noted at paragraph 61 *supra*, Nextel also has proposed to surrender certain 700 MHz guard band Block B spectrum, which it holds in 40 markets; and recommends that the Commission rededicate that spectrum to public safety use. We note that the 700 MHz Guard Band's use for public safety applications, as proposed, is problematic. The 700 MHz Guard Band spectrum was established specifically to buffer 700 MHz public safety systems from interference by commercial systems operating in the Upper 700 MHz band. It would be anomalous in our view, to place public safety systems in the very interference-prone spectrum that we established to protect public safety.

209. We nonetheless will accept Nextel's 700 MHz Guard Band spectrum, but decline to redesignate it to public safety use at this time. Instead, we will consider the ultimate disposition of this spectrum in a future rule making proceeding. In this connection, we note that there are several potential public safety and public interest benefits that may be realized by a redesignation or reassignment of the 700 MHz Guard Band spectrum that Nextel offers to relinquish. However, we do not believe that the ultimate decision on how best to use the surrendered 700 MHz spectrum should be resolved in the context of this *Report and Order*. Rather, any such decision should rest on a record developed in a subsequent rule making proceeding. There, we may consider such issues as whether there are public safety applications that could exist satisfactorily in such spectrum consistent with our statutory authority; whether there is a demand for additional B/ILT spectrum that would be satisfied by access to the 700 MHz Guard Band spectrum; whether providing B/ILT licensees access to such spectrum would create opportunities for public safety to get access to additional 800 MHz band frequencies; whether there are other, new uses that may arise; and whether the 700 MHz Guard Band spectrum should be re-auctioned.

D. Appropriate Compensation for Band Reconfiguration

210. In the *NPRM*, the Commission discussed the "replacement spectrum" construct advanced by Nextel in its White Paper, *i.e.,* that if Nextel were to pay the cost of band reconfiguration and vacate certain 700 MHz, 800 MHz and 900 MHz spectrum, it should be compensated on a "megahertz for megahertz" basis with spectrum nominally in the 2 GHz range. We sought comment on the relative value of the spectrum that Nextel proposed to surrender vs. the value of its desired replacement spectrum. In the Consensus Plan, Nextel proposed that, as compensation for its relinquishment of 700, 800 and 900 MHz

[543] Nextel's need for the 900 MHz spectrum may arise if there are two 800 MHz ESMR licensees in a market, *e.g.* Nextel and Southern LINC, and both cannot be accommodated in the 817-824 MHz / 862-869 MHz cellular-architecture spectrum segment. In that instance, Nextel must surrender the additional spectrum necessary to accommodate the non-Nextel cellular-architecture system. The 800 MHz spectrum that Nextel loses in such a case may be compensated for by Nextel shifting some of its operations to its 900 MHz SMR frequencies. *See* ¶ 159 *supra.*

[544] *See* ¶¶ 335-337 *infra*.

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spectrum rights and its commitment to pay 800 MHz incumbent relocation costs, it should receive a nationwide license for ten megahertz of spectrum in the 1.9 GHz band.[545] Other parties contend that the value of the spectrum rights Nextel seeks substantially exceeds the value of spectrum rights it has offered to give up, and therefore would constitute an unwarranted windfall to Nextel.

211. We conclude that it is in the public interest to compensate Nextel for the surrendered spectrum rights and costs it will incur as a result of band reconfiguration. By facilitating band reconfiguration, giving up spectrum rights and bearing the financial burden of the relocation process for all affected incumbents, we believe that Nextel has provided the quickest, most comprehensive and most cost-effective means of solving the 800 MHz public safety interference problem of all the alternatives presented or available to the Commission. In light of these substantial public interest benefits, we conclude that it is appropriate for Nextel to receive equitable compensation in the form of spectrum rights to the 1910-1915 MHz and 1990-1995 MHz bands, conditioned on its meeting the obligations imposed by this *Report and Order*. We specifically reject the proposal by some parties to grant Nextel rights to spectrum in the 2.1 GHz band as opposed to the 1.9 GHz band.[546] Accordingly, we take those steps necessary to designate the 1.9 GHz spectrum for Nextel's use, and to provide for relocation and reimbursement by Nextel of incumbent users of the band.

212. We are sensitive to the argument made by several parties that granting Nextel spectrum rights in the 1.9 GHz band could result in an undeserved "windfall" to Nextel. To ensure that Nextel is treated equitably but does not realize any windfall gain, we provide for compensation of Nextel on a "value for value" basis. Under this approach, we first make a determination of the market value of the 1.9 GHz spectrum, based on valuation data provided by the parties and on our own analysis. Second, we provide that as offsets against this value, Nextel will receive credit for (1) the net value of the spectrum rights that Nextel is relinquishing to public safety, CII, and other 800 MHz licensees, (2) the actual cost of 800 MHz band reconfiguration (including both Nextel's costs to support relocation by other licensees and Nextel's own relocation costs), and (3) costs incurred by Nextel to clear the 1.9 GHz band, less any reimbursed expenses. Third, because we do not know at present what the costs of 800 MHz relocation and 1.9 GHz band-clearing will ultimately be, we provide for an accounting at the end of the transition period to determine the amount of these offsets and balance them against the value of Nextel's 1.9 GHz spectrum rights as determined by this *Report and Order*.[547]

1. Public Interest Considerations for Granting Spectrum Rights to Nextel

213. We recognize that the granting of valuable spectrum rights to Nextel—or to any party—without recourse to the competitive bidding process is highly unusual. However, given the extraordinary circumstances present in this proceeding, including issues involving the safety of life and property—and absent harm to other interests of the public—we are convinced that our decision in this regard is consistent with the public interest. In reaching this decision, we are mindful that Congress has expressed a strong statutory preference in the vast majority of circumstances for use of auctions to assign spectrum rights. However, Congress has also established a clear exception for public safety services that protect life and property, exempting them from the requirement that they obtain spectrum on the auction block. We believe the same rationale applies to our decision here, where we are reconfiguring spectrum for non-

[545] *See* ¶ 61 *supra.*

[546] *See* ¶¶ 217-222 *infra*.

[547] *See* ¶¶ 329-332 *infra*.

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economic reasons to benefit public safety and the public as a whole.[548] This is not to say that economic factors are irrelevant—we regard economic analysis as germane to the question of whether our action today could inadvertently impair the public's access to affordable wireless communications services. We believe the record conclusively demonstrates that there will be no such unintended consequences.

214. Nevertheless, we reject the claim that assigning Nextel spectrum rights in another band as part of this comprehensive solution is unfair because Nextel is receiving "free" spectrum while its competitors must bid for spectrum at auction. First, given the obligations we place on Nextel in this *Report and Order*, and the mechanism we have established to prevent an undue windfall, its access to other spectrum is hardly "free." Second, Nextel is taking the very substantial risk that it could end up incurring costs that are greater than the value of the spectrum rights it receives. This is because we have not merely rubber-stamped the Consensus Parties' proposal, but have imposed significant obligations beyond what the parties proposed to ensure that the public receives full benefit in exchange for making other spectrum available to Nextel. Under this restructured solution, we are requiring Nextel to assume the following substantial—and to a large degree unpredictable—risks:

- Nextel must complete reconfiguration of the 800 MHz band regardless of the ultimate cost. Although Nextel estimated it will cost up to $850 million to reconfigure the 800 MHz band, other parties contend that the actual cost will be far higher, *e.g.* CTIA claims that 800 MHz band reconfiguration cost could exceed $3 billion.[549] Thus, we are requiring Nextel to assume the risk that the cost of 800 MHz band reconfiguration could exceed any value Nextel ultimately realizes from the other spectrum.

- In order to ensure that the 800 MHz band will be reconfigured, we are requiring Nextel to obtain a $2.5 billion letter of credit to both fund the reconfiguration and to serve as insurance against a Nextel default, including bankruptcy. The cost of such a letter of credit is substantial and was not factored into the Consensus Parties' estimates.

- Should experience as band reconfiguration progresses show that the ultimate cost is likely to exceed even the $2.5 billion sum, *supra,* Nextel may be required to obtain additional letters of credit.[550] Again, the financial risk associated with such additional letters of credit would be borne by Nextel.

- Nextel must meet the interim benchmark of the retuning Channels 1-120 in twenty NPSPAC Regions.[551] If Nextel fails to meet the interim benchmark, for reasons that Nextel, with the exercise of due diligence, could reasonably have avoided, the Commission may consider and exercise any appropriate enforcement action within its authority, including assessment of

[548] These benefits may also have an economic component, though it is difficult to quantify. One study in the record posits that if improved public safety communications reduced the societal loss from crime and fire by one-tenth of one percent, the nation would save $1 billion every year. *See* Nextel Sunfire *Ex Parte* at 10.

[549] *See* Letter, dated April 29, 2004, from Steve Largent, President and CEO CTIA to Michael Powell, Chairman, Federal Communications Commission at 2-3. *See also* n. 488-489 *supra.*

[550] We note that Nextel's cost for such additional letters of credit likely would increase if Nextel's band reconfiguration progress did not meet projections, thus affecting the risk-analysis of the issuing bank(s).

[551] *See* ¶ 201 *supra.*

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monetary forfeitures or, if warranted, license revocation.[552]

- Nextel must complete band reconfiguration within thirty-six months. If Nextel fails to meet this benchmark, for reasons that Nextel could reasonably have avoided, the Commission will determine whether forfeitures should be imposed and/or whether Nextel licenses, including, but not limited to, its 1.9 GHz licenses, should be revoked.

215. We also consider the assignment of spectrum rights to Nextel to be necessary to achieve our paramount goal of abating interference to 800 MHz public safety systems. As discussed in ¶ 61 *supra*, after more than two years spent examining a record of over 2200 filings, many of them incorporating detailed technical and economic studies, we are convinced that 800 MHz band reconfiguration is the only reliable and affordable means of achieving this goal. Moreover, only the Consensus Parties have proposed a band reconfiguration mechanism that guarantees public safety and other 800 MHz licensees the funds necessary to relocate themselves out of their current inter-leaved operational environment. We do not believe that our solution—which is adapted from the Consensus Parties' proposal—can be legally or equitably imposed without a compensatory assignment of spectrum rights to Nextel. We also note that many of Nextel's cellular competitors conduct their operations on spectrum they acquired at no cost, and that some of these same parties will benefit—at no cost to themselves—from reduced interference mitigation costs as a result of the band configuration carried out at Nextel's expense.

216. In sum, although our determination may not reflect complete financial exactitude, it is firmly grounded in our statutory authority as well as our agency expertise. The public interest that we are required to uphold often rests on such unquantifiable imperatives as those recited in the preamble of our organic statute; that we exist to regulate communications "for the purpose of the national defense, for the purpose of promoting safety of life and property."[553] Thus, we find utmost consistency between our statutory charge and the certain value of Nextel's unique ability to abate the unacceptable interference that hinders our Nation's first responders in their supremely difficult task of defending against terrorism and ensuring the safety of our life and property. We believe the balance we have struck here is fair and equitable.

2. Choice of 1.9 GHz Replacement Spectrum

217. As discussed in the *NPRM*, we are applying two basic criteria in selecting replacement spectrum for Nextel, and in considering the proposal in the Consensus Plan that Nextel be granted spectrum rights at 1910-1915/1990-1995 MHz: (1) the segment selection would have to be consistent with the highest and best possible use of the spectrum; and (2) there would have to be an acceptable plan for relocating incumbent licensees or reimbursing other users, *e.g.* BAS, FS licensees and UPCS.[554] In making our selection, we also must decide whether to redesignate 1910-1915 MHz to permit the provision of licensed fixed and mobile services, an issue noticed in ET Docket 00-258. Based on the record evidence, in WT Docket 02-55 and in ET Docket 00-258, we are assigning the 1910-1915/1990-1995 MHz band segment as paired replacement spectrum for Nextel for the provision of licensed Fixed and

[552] We note that the Commission has issued Notices of Apparent Liability for Forfeiture assessing substantial penalties on carriers that have failed to comply with Commission rules intended to enhance the safety of life and property. *See* In re T-Mobile USA, Inc., *Notice of Apparent Liability for a Forfeiture*, 18 F.C.C.R. 3501 (EB 2003); *see also* In re AT&T Wireless Services, Inc., *Notice of Apparent Liability for a Forfeiture,* 17 F.C.C.R. 9903 (EB 2002).

[553] Communications Act of 1934, Title I, Section 1, 47 U.S.C. § 151.

[554] *See NPRM* at 17 FCC Rcd at 4904 ¶ 57.

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Mobile services on a primary basis. In so doing, we have carefully balanced the competing recommendations for use of this band segment.[555] We have determined that the need to facilitate the rebanding to remedy interference to 800 MHz public safety and CII communications systems, now and in the future, and to restore spectrum capacity lost by Nextel in the course of band reconfiguration, far outweighs the benefits of other potential use of this 1.9 GHz spectrum.[556] We find that providing replacement spectrum rights for Nextel is a *sine qua non* for elimination of unacceptable interference in the 800 MHz band.[557]

218. In several recent *ex parte* filings in this proceeding, CTIA argues that if the Commission is to award replacement spectrum rights to Nextel as part of this order, it should select spectrum in the 2.1 GHz band rather than the 1.9 GHz spectrum proposed by the Consensus Parties.[558] CTIA points out that Nextel in its 2002 White Paper originally identified 2.1 GHz spectrum as potential replacement spectrum. CTIA further contends that the 2.1 GHz band is sufficiently comparable to the 1.9 GHz band that it would be suitable spectrum for Nextel's needs, although it may be slightly lower in value.[559] In response, Nextel contends that 2.1 GHz would not be suitable replacement spectrum because of technical and operational deficiencies in comparison to 1.9 GHz.[560]

219. We conclude that the record does not support substituting 2.1 GHz for 1.9 GHz as proposed by CTIA. We recognize that the Nextel White Paper identified 2.1 GHz as a potential replacement band, and that the Commission sought comment on this and other potential bands in the NPRM. However, when the Consensus Parties filed their initial proposal in August 2002, they specifically identified spectrum in the 1.9 GHz band as the proposed replacement spectrum for Nextel. During the comment and reply period, numerous commenters debated the Consensus Parties' proposal to use 1.9 GHz, but no commenter proposed further consideration of 2.1 GHz as an alternative or provided information regarding the characteristics or suitability of the band. CTIA's proposal to consider substituting 2.1 GHz for 1.9 GHz was not made until more than two years after we initiated this proceeding. Although several additional *ex parte* submissions have been filed in response to the CTIA proposal since then, we find that they have primarily raised additional issues and questions that would require further development of the record to resolve.

220. For example, Nextel cites a number of differences between 2.1 GHz and 1.9 GHz that Nextel contends significantly reduce the former's comparative utility and value. Nextel contends that developing 2.1 GHz subscriber equipment will be time-consuming and costly because it cannot readily be adapted from existing equipment designs, whereas existing PCS equipment can be adapted quickly with

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[555] *See* ¶¶ 224-235 *infra.*

[556] For a discussion of our legal authority to take this step in furtherance of the public interest *see* ¶¶ 62-87 *supra.*

[557] We reach this conclusion based upon our assessment of the state of communications technology and its current deployment, and cognizant of our obligations pursuant to 47 U.S.C. § 151. *See* ¶ 211 *supra.*

[558] *See* CTIA April 29 *ex parte* at 2; CTIA May 7 *ex parte* at 2. CTIA proposed that Nextel not receive 2.1 GHz spectrum until the rebanding process is complete. As discussed in ¶¶ 213-216 *supra*, we conclude that it is appropriate to grant spectrum rights to Nextel at the commencement of the rebanding process with those rights conditioned on the successful and timely completion of rebanding.

[559] CTIA May 7 *ex parte* at 5.

[560] Nextel May 14 *ex parte* 3-4.

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only minor changes to operate in adjacent 1.9 GHz spectrum.[561] Nextel also points to different incumbency and band-clearing issues in the two bands, particularly the presence of fixed microwave incumbents in the 2.1 GHz band (some of them licensed to Nextel's competitors), which it contends will lead to greater cost and more uncertain time frames for clearing the band in comparison to 1.9.[562] CTIA contends that these differences do not have as significant an impact on the value of 2.1 GHz as Nextel contends, or that if they do lower the value of 2.1 GHz in comparison to 1.9 GHz, this merely serves to reduce the risk that Nextel will receive a windfall.[563] However, neither CTIA nor any other party has presented additional data or analysis to support these contentions.[564]

221. We believe that Nextel has raised legitimate questions with respect to technical and operational differences between the 2.1 GHz band and the 1.9 GHz band.[565] However, because of the late-developed and limited nature of the record regarding the 2.1 GHz band, we lack sufficient information from which to draw conclusions on how these differences might affect the relative suitability or value of the 2.1 GHz band. Therefore, further consideration of this option would require additional development of the record, which would significantly delay action in this proceeding. Given the already lengthy nature of this proceeding, and the urgency of the public safety interference problem we are addressing, such delay would not be in the public interest. In contrast to the limited record on 2.1 GHz, the record regarding the 1.9 GHz band is well-developed, and we are satisfied based on this record that awarding 1.9 GHz spectrum rights to Nextel, subject to the conditions and safeguards of this order, is fully consistent with our public interest goals and obligations. Accordingly, we see no reason to delay our decision to gather additional information on an uncertain alternative.

222. We also do not believe that issuing Nextel a bidding credit or auction discount voucher for unspecified future spectrum is an acceptable alternative to awarding it 1.9 GHz spectrum rights.[566] We recognize that Nextel may need to apply revenues derived from 1.9 GHz service to meet its obligation to timely complete 800 MHz band reconfiguration. It can do so only if it is afforded timely and certain access to 1.9 GHz spectrum rights in exchange for vacating certain 800 MHz spectrum and assuming the cost of 800 MHz band reconfiguration. Reconfiguration of the 800 MHz band is essential to our goal of timely abating unacceptable interference to public safety, CII and other 800 MHz systems. Given the unique facts of this case, there is an inextricable connection between quick abatement of unacceptable 800 MHz interference and Nextel's quick access to additional spectrum. Neither a bidding credit nor an auction discount voucher would assure timely and certain access to the needed additional spectrum or the associated revenue.

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[561] *Id.* at 4.

[562] *Id.* at 4.

[563] CTIA May 7 E*x Parte* at 5-6.

[564] Verizon states that would be prepared to bid a "substantial" amount for 2.1 GHz spectrum, but less than what it would bid for 1.9 GHz spectrum. Verizon May 27 *Ex Parte* at 3.

[565] In addition to equipment costs and band-clearing issues, Nextel cites inferior propagation characteristics at 2.1 GHz in comparison to 1.9 GHz as reducing the relative value of 2.1 GHz spectrum. Nextel May 14 *Ex Parte* at 3-5. We accord very little weight to this factor: the differential free space path loss between 1.9 GHz and 2.1 GHz is less than one-tenth of a dB, and the attenuation due to foliage, precipitation, and other environmental factors is essentially identical for the two bands.

[566] *See Ex Parte* presentation of James Kay, dated June 25, 2003, at 11.

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3. Assignment of Spectrum Rights at 1.9 GHz to Nextel

223. We here take the necessary actions to assign to Nextel a ten-year license to the 1910-1915 MHz and 1990-1995 MHz bands. For the reasons described in detail below, we take action in ET Docket No. 00-258 to redesignate the 1910-1915 MHz band for licensed Fixed and Mobile services, to be used for AWS, and to pair that spectrum with the 1990-1995 MHz band. For the public interest reasons described above, we here also assign to Nextel a ten-year license by taking the necessary action in WT Docket No. 02-55. In light of this redesignation and assignment, we then adopt a UTAM reimbursement plan, and discuss how Nextel, as a new entrant, will participate in our existing relocation procedures for the 1990-2025 MHz band (in ET Docket No. 95-18).

a. Redesignation of the 1910-1915 MHz Band

224. We here redesignate the 1910-1915 MHz Band for licensed Fixed and Mobile services for AWS use on a primary basis, as opposed to continuing to dedicate this five megahertz band to unlicensed PCS or providing for an alternative licensed allocation. We also consider and deny various pending Petitions for Waiver and Petitions for Rulemaking that would instead have us waive or modify our current UPCS rules that apply to 1910-1915 MHz.

225. *Redesignation.* In the *AWS Third NPRM*, we sought comment as to whether we should redesignate all or a portion of the 1910-1930 MHz band, which is currently designated for UPCS, for licensed fixed and mobile services. Many commenting parties to the *AWS Third NPRM* endorse the introduction of higher power licensed services into all or a portion of the band. For example, Ericsson states that by allocating the spectrum at 1910-1915 MHz as part of a paired band the Commission can increase the value of this spectrum by putting it to a higher-value use. Ericsson predicts that such a redesignation, in conjunction with regulation pursuant to the Part 24 rules we have used for Broadband PCS, are likely to promote industry investment in the band, promote competition, and foster technological innovations in the 1910-1915 MHz band.[567] Commenting parties also assert that the 1910-1920 MHz band, or a portion thereof, would be best utilized for new and innovative services or as relocation spectrum for existing services. For example, Nextel states that it should be assigned rights to a portion of the spectrum (1910-1915 MHz) as replacement spectrum in conjunction with its Consensus Plan for the 800 MHz realignment.[568] Nextel reiterated its contention that relocating to this band from the public safety band at 800 MHz will help resolve public safety interference in the private land mobile bands and can be implemented without causing harmful interference to adjacent Broadband PCS operations. As another option, commenting parties including CTIA and Verizon assert that rights to the 1910-1915 MHz band should be allocated for PCS-like services, as part of a paired block.[569] Proponents of this redesignation also state that it would provide efficient use of spectrum, improve global harmonization of spectrum, and achieve economies of scale. Finally, proponents of MDS state the 1910-1916 MHz band (as part of a pairing with the 1990-1996 MHz band) would provide suitable replacement spectrum rights for MDS operations in the 2.1 GHz band.[570] We note that many of the commenting parties who endorse high-power

[567] Ericsson Comments to *AWS Third NPRM* at 3-4.

[568] Nextel Comments to *AWS Third NPRM* at 5-12.

[569] *See, e.g.*, CTIA Comments to *AWS Third NPRM* at 2; Verizon Comments to *AWS Third NPRM* at 5. See also Ascom Comments to *AWS Third NPRM* at 2 (agreeing with re-designation of 1910-1920 MHz for fixed and mobile uses); Motorola Comments to *AWS Third NPRM* at ii, 3 (agreeing with re-designation of 1915-1920 MHz for PCS use).

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use of the 1910-1915 MHz band also discuss the extent to which we could reduce the existing separation between the Broadband PCS bands at 1850-1910 MHz and 1930-1990 MHz without causing harmful interference to existing Broadband PCS operations or requiring the use of filters, power reduction, or other protective measures that would increase the cost of deploying new high-powered licensed systems within the 1910-1930 MHz band or otherwise limit its usefulness.[571] Generally, the commenting parties supporting reallocating this five megahertz portion for high-power operations also state that it would be feasible to leave a fifteen megahertz separation between Broadband PCS bands without causing mobile-to-mobile and base-to-base interference.[572]

226. Rather than redesignate the 1910-1920 MHz band for new licensed mobile services, some commenting parties state that isochronous UPCS should be redesignated for use throughout the whole UPCS band. For example, UTAM and Peñasco Valley Telephone Cooperative (PVT) state that the public interest supports retaining the entire 1910-1930 MHz band for UPCS with technical modifications to enable isochronous devices to use the asynchronous band.[573] Commenting parties state that retaining this ten megahertz of spectrum for unlicensed use would both maintain an adequate separation between the licensed PCS mobile and base transmit bands and meet the growing demands for UPCS devices.[574] Specifically, ICO Global Communications (ICO) and Motorola indicate that the growing demand for UPCS devices and need for more isochronous UPCS spectrum supports the expansion of isochronous spectrum.[575] JSM Electronics, Inc., and UTStarcom have proposed use of the 1910-1915 MHz spectrum for the deployment of community wireless network systems.[576] We also note that some commenting parties ask that we extend isochronous UPCS use to an additional five megahertz in the 1915-1930 MHz

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[570] *See, e.g.*, Ad Hoc Comments to *AWS Third NPRM* at 4-5; Cingular Comments to *AWS Third NPRM* at 4 (stating that allocation will add flexibility for MDS to provide fixed and mobile services); DCT Los Angeles (DCT) Comments to *AWS Third NPRM* at 14; Nucentrix Comments to *AWS Third NPRM* at 11-13 (asserting that MDS proponents have worked to provide technically viable solution for displaced MDS that no other proponents of various allocation schemes have submitted); WCA Comments to *AWS Third NPRM* at 13, 18. In the Second R&O, we reallocated MDS spectrum at 2150-2155 MHz for AWS. MDS Channels 1 and 2/2A consist of the 2150-2160/62 MHz band. While our recent decision to relocate MDS channels 1 and 2 to the 2.5 GHz band, discussed *infra*, makes these proposals moot, we believe that they continue to be of value to this proceeding insofar that they illustrate commenters' beliefs that high-powered services could occupy the band.

[571] *See, e.g.,* Motorola Comments to *AWS Third NPRM* at 4; Verizon Comments to *AWS Third NPRM* at 5, Ericsson Comments to *AWS Third NPRM* at 3, Lucent Reply Comments to *AWS Third NPRM* at 2.

[572] *See, e.g.,* Ad Hoc Comments to *AWS Third NPRM* at 5; CTIA Comment to *AWS Third NPRM* at 3; Nextel Comments to *AWS Third NPRM* at 11-12; UTAM Comment to *AWS Third NPRM* at 4; Verizon Comments to *AWS Third NPRM* at 5-6.

[573] UTAM Comments to *AWS Third NPRM* at 2; PVT Reply Comments to *AWS Third NPRM* at 2-3; See also UTStarcom Comments to *AWS Third NPRM* at 3-4 (proposes community wireless systems in UPCS extended band); Inventel Reply Comments to *AWS Third NPRM* at 2; Midstate Communications (Midstate) Reply Comments to *AWS Third NPRM* at 2 ("Leaving UCPS spectrum for unlicensed use will encourage deployment of niche services and local mobility applications that show great promise to benefit consumers in rural, underserved and tribal areas"); PBC Reply Comments to *AWS Third NPRM* at 2.

[574] *See, e.g.*, UTAM Comments to *AWS Third NPRM* at 4-5 (stating record does not show evidence that reduction of spectrum by ten megahertz is feasible, and evidence shows something to the contrary).

[575] Ericsson Comments to *AWS Third NPRM* at 5; ICO Comments to *AWS Third NPRM* at 5; Motorola Comments to *AWS Third NPRM* at 8-10.

[576] JSM Comments to *AWS Third NPRM* at 2; UTStarcom Comments to *AWS Third NPRM* at 4-5.

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band, particularly in the event that we redesignate the 1910-1915 MHz band segment. Proponents of this option claim that isochronous UPCS should be extended because the current asynchronous designation has not resulted in service, continued low power (UPCS) use would reduce potential interference to high power adjacent band Broadband PCS licensees, and demand exists to expand unlicensed voice applications beyond the existing ten megahertz.[577] Siemens, for example, suggests that by extending isochronous UPCS use to the 1915-1920 MHz band and implementing several technical changes to the Rules, the Commission could allow for the introduction of products using DECT technology into the United States.[578]

227. Based on the record, we conclude that the public interest would be best served by re-designating five megahertz of spectrum in the 1910-1915 MHz band for licensed Fixed and Mobile services on a primary basis to support the types of high-powered mobile applications associated with AWS, Broadband PCS expansion, and Nextel's mobile operations. We note that there is strong support for such a designation in the record, and we agree with those parties that assert that such a designation will promote efficient use of the spectrum, allow for the rapid introduction of high-value services, and otherwise serve the public interest.

228. We find that such a designation is preferable to continued unlicensed uses of the band. Even if the demand for isochronous devices is growing or similar unlicensed voice applications (such as those associated with community wireless networks) could be deployed in the band, we cannot conclude that such use would be preferable to the types of higher powered licensed applications that the band could support. The proven public demand for licensed mobile services and the need to provide additional spectrum to support their continued deployment leads us to conclude that designation of this spectrum to licensed Fixed and Mobile services will allow us to put this spectrum to a higher use than it can serve as unlicensed spectrum. Moreover, no commenter has suggested that asynchronous applications for the band will be developed or deployed in the near future and those parties that promote expanded voice applications in the band would only offer deployment in limited geographic areas or urban locations where the 1920-1930 MHz band is already put to high use. By contrast, the redesignation of this band to licensed use would promote the rapid and widespread introduction of services into spectrum that heretofore has lain fallow.

229. We note that by assigning these spectrum rights to Nextel we preclude other AWS-like use, on which we sought comment in the *AWS Third NPRM*, including expansion of the existing Broadband PCS bands and allocation of this spectrum to MDS as replacement spectrum. However, such use does not offer us the ability to resolve the critical public safety issues that we will be able to address by assigning the spectrum to Nextel.[579] Also, we note that the proposal by MDS proponents to redesignate

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[577] *See, e.g.*, Ascom Comments to *AWS Third NPRM* at 2; Siemens Comments to *AWS Third NPRM* at 2; Verizon Comments to *AWS Third NPRM* at 6; WCA Comments to Third NRPM at 17, 20; See also Ericsson Comments to *AWS Third NPRM* at 5 (stating that such an expansion is consistent with current use of spectrum); Siemens Comments to *AWS Third NPRM* at 3 (noting that expansion improves spectrum efficiency and reduces levels of interference, thereby enhancing quality of service); Cingular Comments to *AWS Third NPRM* at 2-3 (support retaining 1916-1930 MHz for UPCS).

[578] *See ex parte* Comments of Siemens Corp., et. al. filed in ET Docket 00-258 on December 12, 2003. DECT is a digital wireless technology that originated in Europe and is used in a variety of wireless applications, including cordless telephones and wireless office telecommunications products.

[579] *See, e.g.*, Ad Hoc Comments to *Third NPRM* at 4; Cingular Comments to *Third NPRM* at 4; WCA Comments to *Third NPRM* at 12-13. Because this decision exclusively considers the resolution of allocation matters in the 1910-1915 and 1990-1995 MHz bands, we make no decision herein with respect to relocation of MDS operations other than to conclude that assignment of this spectrum to Nextel best serves the public interest

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the 1910-1916 MHz band paired with the 1990-1996 MHz band as replacement spectrum for MDS channels 1 and 2 has been rendered moot by our recent decision in which we established a relocation plan for those MDS channels in conjunction with the restructuring of the 2.5 GHz band.[580]

230. Finally, we note that while we are re-designating the 1910-1915 MHz band segment for Fixed and Mobile services, we do not address the 1915-1920 MHz band segment at this time. Commenting parties generally concur that Broadband PCS mobile and base transmit bands will be able to continue to operate with a duplexer gap of fifteen megahertz without causing interference to each other. Because we are not modifying the existing designation for the 1915-1920 MHz band, we need not consider at this time those comments that discuss whether or how we could preserve an adequate separation gap between the Broadband PCS bands if we were to redesignate spectrum above 1915 MHz for high-power licensed services. Furthermore, we are retaining the option to, *inter alia*, use the 1915-1920 MHz band for AWS use or in conjunction with an expansion of our UPCS rules to allow for expanded voice-based applications, but will address these matters in a subsequent action.

231. Accordingly, we find ample support in the record for allowing high-powered use of the 1910-1915 MHz band segment and that such use can occur without causing interference to existing Broadband PCS operations. For the reasons stated above, we are re-designating the 1910-1915 MHz band for licensed Fixed and Mobile services and updating our Part 15 rules to remove the 1910-1915 MHz band from asynchronous UPCS use.

232. *Petitions for Rulemaking and Petitions for Waiver Regarding the 1910-1930 MHz Band.* As mentioned, *supra,* the under-utilization by unlicensed devices of the 1910-1920 MHz band has prompted the filing of four petitions for waiver from Lucent, UTStarcom & Drew University, Ascom, and Alaska Power; and two petitions for rulemaking from WINForum and UTStarcom, which all request certain rule changes to these bands.

233. In its petition for waiver, Lucent requests that it be allowed to use the 1910-1920 MHz band for its Definity PBX voice system within the confines of Cook County, Illinois. It claims that several of its customers need high-capacity indoor wireless communications and that the existing ten megahertz of spectrum reserved for voice in the 1920-1930 MHz band is insufficient to meet those needs. Also, UTStarcom & Drew University request permission to use the 1910-1920 MHz band to install the UTStarcom Personal Access System (PAS) on the campus of Drew University in Madison, New Jersey, in order to provide wireless telephone service to the students and staff, as an extension of the university's wired telephone system. It states that the PAS system complies with Japan Personal Handy Phone System (PHS) Standard RCR-28 but does not meet Part 15 requirements for either isochronous or asynchronous devices and typically operates at higher power levels than mandated by Part 15. It further states that once Broadband PCS Block C licensees are selected in Auction #35 (for the 1895-1910 MHz band paired with the 1975-1990 MHz band) it would be possible to negotiate use of that spectrum on the Drew University campus with the winning licensee. In addition, Ascom requests that it be allowed to use the 1910-1920 MHz band for its Freeset DCT 1900 PBX voice system within the confines of Cook County, Illinois; New York City; and San Francisco County, California, because several of its customers, who are boards of trade or stock exchange entities, need high-capacity indoor wireless communications. Ascom submits that the ten megahertz of spectrum reserved for voice in the 1920-1930 MHz band is, again, insufficient to meet such needs. Finally, Alaska Power requests a waiver of Part 15 asynchronous spectrum etiquette to

[580] Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands, *et al.*; WT Docket Nos. 03-66, *et al.*, *Report and Order and Further Notice of Proposed Rulemaking*, FCC 04-135 (rel. Jul. 29, 2004) (*2.5 GHz MDS Restructuring R&O and NPRM*).

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operate a community wireless voice system over the 1910-1920 MHz (data) band, in order to serve small rural areas in Alaska that are currently unserved or underserved by wireless service providers.

234. In its petition for rulemaking, WINForum asks the Commission to allow isochronous UPCS devices to use the 1910-1920 MHz band and to phase out asynchronous use in this band, thereby providing twenty megahertz of spectrum (1910-1930 MHz) for isochronous devices, and also to modify certain technical requirements for UPCS devices in Part 15. WINForum further requests that the Commission modify the frequency stability requirements for asynchronous UPCS data devices.[581] In its petition, UTStarcom requests that the 1910-1920 MHz band be made available for licensing via competitive bidding to permit the establishment of community wireless network service, using its PAS which is based on Japan's RCR-28 Personal Handy Phone System (PHS) standard.[582] Subsequently, UTStarcom modified its requests to seek changes to the Part 15 rules for coordinated unlicensed operation in the 1910-1920 MHz band for its PAS system, with coordination performed by UTAM, using the existing UTAM coordination infrastructure.[583]

235. As a consequence of our decision to redesignate the 1910-1915 MHz band for licensed Fixed and Mobile services for AWS use, we deny in part the waiver petitions from Lucent, Ascom, Alaska Power, and UTStarcom and Drew University insofar as they request use of spectrum in the 1910-1915 MHz band. We also deny in part the petitions for rulemaking from WINForum and UTStarcom. Again, our decision to deny in part the rulemaking petitions is made only with respect to the 1910-1915 MHz band, and is based on the fact that re-designation of this band precludes the petitioners' requests to use the entire 1910-1920 MHz band for expanded unlicensed applications. At this time we are not deciding the disposition of the 1915-1920 MHz band, and so we do not address the petitions for waivers and petitions for rulemaking with respect to this five megahertz band segment. To the extent that these parties can operate without use of spectrum in the 1910-1915 MHz band, we will further address their petitions when we consider the disposition of the 1915-1920 MHz band.

b. Pairing the 1910-1915 MHz and 1990-1995 MHz Bands

236. As part of our proposal in ET Docket 00-258 to redesignate the 1910-1920 MHz band (or a portion thereof) in the *AWS Third NPRM* for Fixed and Mobile Services, we also proposed options for pairing the 1910-1920 MHz band with the 1990-2000 MHz band for the redesignation of AWS, expansion of Broadband PCS, or the relocation of existing services.[584] Such a pairing was made possible because, in the *Report and Order* portion of that decision, we redesignated the 1990-1995 MHz band to the Fixed and Mobile Services as part of our restructuring of the 2 GHz MSS band.[585]

237. Those parties that support use of the 1910-1915 MHz band for high power licensed services generally agree with our proposal to pair the band with an equal amount of spectrum from the

[581] *Id.* at 15-16. Currently, 47 C.F.R. §15.321(e) requires the measurement of the carrier frequency in order to ensure its frequency stability. WINForum believes that for asynchronous data devices that transmit in short bursts, explicit measurement of the carrier frequency as a function of time for a short modulated burst is inherently problematic. WINForum's proposal would allow for a more realistic measurement of the frequency stability of the device.

[582] *See* UTStarcom Petition at 2.

[583] *See* UTStarcom Reply Comments to *AWS Third NPRM* at 3.

[584] *AWS Third NPRM*, 18 FCC Rcd 2223 ¶¶ 47-49.

[585] *AWS Third R&O*, 18 FCC Rcd 2223 ¶ 28.

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1990-1995 MHz band. For example, CTIA (which supports pairing 1915-1920 MHz with 1990-1995 MHz for a PCS-like terrestrial wireless service), notes that such a pairing would benefit from the design of high-power PCS equipment in the adjacent Broadband PCS bands, which in turn would promote the rapid design and deployment of new systems and result in economies of scale.[586] Proponents of the CTIA proposal also assert that this pairing would maximize the value of the spectrum by achieving greater spectrum efficiency. For example, Cingular states that a pairing of the 1910-1916 MHz and 1990-1996 MHz bands would provide flexibility for MDS licensees to provide fixed and mobile services.[587]

238. We agree with Nextel, CTIA, and other parties that a pairing of the 1910-1915 MHz with 1990-1995 MHz bands would allow for the rapid introduction of terrestrial wireless services.[588] Many potential high-power licensed mobile service providers—including Nextel—are designed to operate on distinct base station transmit and mobile receive bands that incorporate adequate frequency separation between the bands. Thus, paired use of these two five megahertz blocks is consistent with many possible technologies, such as the IMT-2000 standards being considered for AWS and the request of Nextel and WCA for relocation spectrum. These paired bands are located immediately upper adjacent to the existing Broadband PCS bands and is therefore consistent with both the band location and frequency separation between bands that has allowed for the successful design and deployment of Broadband PCS systems. In addition, because the 1910-1915 MHz band lacks incumbent UPCS users, new licensees will only need to address relocation as it pertains to the relocation of incumbent point-to-point microwave systems in the band.[589] For these reasons, we will license the 1910-1915 MHz and 1990-1995 MHz bands as a pair to promote the most efficient use of this spectrum.[590]

c. Relocation and Cost Sharing Obligations in the 1910-1915 MHz Band

239. Since we have assigned Nextel spectrum rights to the 1910-1915 MHz band, *supra*, we are imposing on Nextel an obligation to relocate remaining incumbent microwave links anywhere in the 1910-1930 MHz band operating on a primary basis wherever commencement of Nextel operations in the 1910-1915 MHz band would cause harmful interference to such links. We also consider, in more detail, Nextel's cost sharing obligations in the 1910-1915 MHz band.

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[586] CTIA Comments to *AWS Third NPRM* at 2. *See also* Ericsson Comments to *AWS Third NPRM* at 3; Nextel Comments to *AWS Third NPRM* at 10.

[587] Cingular Comments to *AWS Third NPRM* at 4-5. *See also* DCT Los Angeles Comments to *AWS Third NPRM* at 14.

[588] Nextel Comments to *AWS Third NPRM* at 10; CTIA Comments to *AWS Third NPRM* at 2.

[589] Microwave systems operating with paired frequencies use the 1910-1930 MHz band paired with the 2160-2180 MHz band. We note that UTAM previously relocated certain microwave incumbents from the 1910-1920 MHz band in conjunction with the designation of the 1910-1930 MHz band for UPCS use. We discuss relocation and reimbursement procedures for the 1910-1915 MHz band to account for the re-designation in ¶¶ 239-249, *infra*. We observe that the rules adopted in the 1992 *Emerging Technologies* proceeding apply to this band. *Emerging Technologies First Report and Order and Third Notice of Proposed Rule Making*, 7 FCC Rcd at 6890 ¶¶ 23-24. This relocation right was affirmed in the *Emerging Technologies Memorandum Opinion and Order and Third Notice of Proposed Rulemaking and Order*, 13 FCC Rcd 23949 (1998). The rules are codified in 47 C.F.R. §§ 101.69-101.99. Because these procedures are well known, parties can move expediently to initiate any relocation deemed necessary (to the extent that UTAM has not already completed such work). For these reasons, we believe that service providers can roll out service in this band quickly.

[590] As discussed *supra,* we further conclude that it serves the public interest to assign this paired spectrum block to Nextel in conjunction with our efforts to resolve public safety interference issues in the 800 MHz band.

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240. The Commission's relocation policies with respect to PCS spectrum, including UPCS spectrum, has generally been to require new entrants to relocate, before commencing operations in a location, any existing incumbent microwave links that would otherwise experience harmful interference from those operations.[591] In its comments Nextel has committed to fund its *pro rata* share of any additional band clearing if it were provided spectrum at 1910-1915 MHz.[592] Therefore, we here impose an obligation on Nextel to relocate any such incumbent links operating on a primary basis.[593]

241. With respect to cost sharing obligations, in the *AWS Third NPRM*, we proposed that if we were to redesignate all or a portion of the 1910-1920 MHz band, we would implement a reimbursement plan that would repay UTAM a percentage of the expenses it incurred in clearing the UPCS band of microwave links.[594] We sought comment on this proposal and the method by which UTAM should be repaid. Those parties that commented on this issue generally agree with our proposal, and support the adoption of a reimbursement plan that would compensate UTAM for its expenses.[595]

242. UTAM, which supports retention of the entire 1910-1920 MHz band for UPCS, also states that in the event we redesignate spectrum in this band, we must ensure that new licensees fully and fairly compensate UTAM for the relocation of incumbent microwave users. In its comments, UTAM generally concurs that the reimbursement plan we proposed—which is based on the cost-sharing model we previously adopted for the relocation of microwave incumbents to allow for the introduction of licensed PCS—would provide such compensation.

243. In addition, UTAM raises several points as to how we should implement a reimbursement plan for redesignated UPCS spectrum. First, UTAM states that its compensation must be adjusted to include the base *pro rata* percentage of total costs it has incurred. To do this, UTAM notes that certain of its microwave relocation cost-sharing obligations are being paid in installments for links that have been moved by third parties, and asks that it be compensated for the pro-rata share of the present value of these future costs in one lump sum.[596] Second, UTAM states that new licensees should be required to follow the same cost-sharing rules as existing licensees that are adjacent to the UPCS band. In other words, if UTAM relocates a microwave link that accrues to the benefit of a new licensee, UTAM believes that the new licensee should be responsible for paying the relocation costs proportionate to the number of licenses benefiting from the relocation. This same cost-sharing obligation would apply to UTAM paying for reimbursement if a licensee relocated a link that accrued to the benefit of UTAM's members.[597] Also, UTAM states that a new licensee should, as a precondition to the grant of a license, be required to make its reimbursement payment to UTAM. This precondition, UTAM claims, would be similar to that of the payment of auction funds as a prerequisite to licensing. New licensees would therefore be able to factor the microwave relocation payment into a licensee's bidding strategy, in the event the spectrum is

[591] 47 C.F.R. § 24.239.

[592] *See* Nextel Comments to the Third NPRM at 16.

[593] This obligation ends on the sunset date, at which time individual operations in the band will become secondary. *See* 47 C.F.R. § 101.79.

[594] *AWS Third NPRM*, 18 FCC Rcd 2223 ¶¶ 29-30.

[595] UTAM Comments to *AWS Third NPRM* at 6-7; Nextel Comments to *AWS Third NPRM* at 15-16; PCIA Comments to *AWS Third NPRM* at 4-5.

[596] UTAM Comments to *AWS Third NPRM* at 6.

[597] *Id.*

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auctioned.[598] Finally, UTAM suggests that we consider allocating reimbursement costs among multiple new licensees entering the band by POPs as an effective, simple, and manageable means of cost recovery.[599]

244. Nextel also agrees with our proposal for reimbursing UTAM incurred relocation costs. Nextel states that if it were relocated to 1910-1915 MHz, it will reimburse UTAM the band-clearing costs related to relocating incumbent microwave facilities from this five megahertz block of spectrum. Specifically, Nextel states that it agrees that UTAM should be entitled to receive a proportional share of the total expenses UTAM will have incurred to relocate microwave incumbents from the 1910-1930 MHz band as of the effective date of any final rules adopted in this proceeding.[600] Nextel also states that it would fund a *pro rata* share of any additional band clearing costs that are incurred following assignment of the spectrum block.[601] PCIA, which also supports our general relocation proposal, proposes that we establish a band-clearing cost-sharing clearinghouse to manage the relocation compensation in the allocation of UPCS bands to AWS.[602] PCIA states that many AWS licensees would benefit from UTAM relocating incumbent microwave links from the UPCS bands, because AWS licensees licensed in different geographic service areas could cause interference to or receive interference from a single incumbent licensee. PCIA therefore submits that a band-clearing cost-sharing clearinghouse needs to be developed to fairly reimburse UTAM, similar to the cost-sharing procedures for PCS in Part 24 of the Commission's Rules.[603]

245. In conjunction with our re-designation of the 1910-1915 MHz band for licensed Fixed and Mobile services, we find that UTAM must be fully and fairly reimbursed for relocating incumbent microwave users that operate on a primary basis in this band. We agree with commenting parties, such as Nextel, that UTAM should be made whole for the investments it has made in clearing the UPCS bands. We also find that in view of our assignment of this spectrum to Nextel, it is appropriate to require Nextel to reimburse UTAM twenty-five percent of UTAM's total relocation costs associated with relocation of incumbents from the 1910-1930 MHz band as of the date of assignment of the 1910-1915 MHz spectrum block to Nextel. We also agree with UTAM that we should apply the same cost-sharing obligations to Nextel that we have imposed on licensees on channels that are adjacent to the UPCS bands.[604] Thus, we will allow Nextel or UTAM to seek reimbursement for the proportion of its relocation costs that benefits spectrum whose relocation obligations would otherwise be borne by the party that uses or is otherwise responsible for that spectrum band. For example, if in order to make spectrum in the 1910-1915 MHz band available for use, Nextel relocates microwave links in both the 1910-1915 MHz and the 1915-1930 MHz bands, Nextel may seek reimbursement from UTAM for the actual costs associated with the

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[598] *Id* at 7.

[599] *Id*. POP is an abbreviated term for population used by the Commission. One pop equals one person. The Commission currently uses the 1990 census as a measure of population. *See* http://wireless.fcc.gov/auctions/glossary.html.

[600] Nextel Comments to *AWS Third NPRM* at 15.

[601] *Id.* at 15-16. *See also* Nextel Reply Comments to *AWS Third NPRM* at 6.

[602] Cost-sharing procedures for relocation of microwave incumbents are found in § 24.239 through § 24.253 of the Commission's Rules.

[603] PCIA Comments to *AWS Third NPRM* at 4-5.

[604] UTAM Comments to *AWS Third NPRM* at 6.

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relocation of the microwave links in the 1915-1930 MHz band.[605]

246. Our decision to require Nextel to reimburse UTAM a *pro rata* share of costs, in addition to being consistent with the comments supporting a reimbursement mechanism for UTAM, offers a fair and easy procedure to implement. Because UTAM has already cleared most of the incumbent microwave links deployed across the entire 1910-1930 MHz band, this reimbursement plan represents the most reasonable and easiest approach to address the relocation costs that UTAM has already incurred. We believe that such a course is superior to the difficult and complex prospect of making retroactive calculations for apportionment and represents an equitable and administratively efficient means of compensating UTAM. We note that no party has objected to this approach.

247. Our decision to assign the 1910-1915 MHz band to Nextel makes several portions of UTAM's comments and PCIA's clearinghouse proposal unnecessary to implement a reimbursement plan for the band. UTAM states in its comments that a new licensee should be required to make its reimbursement payment to UTAM as a precondition to the grant of its license. We are requiring Nextel to reimburse UTAM as condition precedent to commencing operations in the 1.9 GHz band. Our decision to provide Nextel a nationwide license for the 1910-1915 MHz block obviates our need to consider UTAM's suggestion to allocate reimbursement costs among multiple licensees entering the band by POPs. This decision also renders moot evaluation of PCIA's proposal to adopt a band-clearing cost-sharing clearinghouse for bands allocated for AWS with respect to the 1910-1915 MHz band because there will be no complex sharing issues among multiple new entrants or among entities operating in less-than-nationwide service areas.

248. We also do not believe that it is necessary for us to require Nextel to immediately pay UTAM a share of the present value of UTAM's future installment payment obligations made to third parties. Again, because Nextel will be the sole nationwide license in this band, UTAM and Nextel will be able to address such matters as part of the overall process of accounting for and funding relocation obligations.[606] Finally, we note that the decisions made today only apply to the 1910-1915 MHz band. Therefore, we are not addressing how the proposals by UTAM and PCIA regarding reimbursement and cost-sharing would affect any future proceeding that considers redesignation of the 1915-1920 MHz band.

249. Accordingly, we adopt a reimbursement plan that entitles UTAM to twenty-five percent—on a *pro rata* basis—of its total costs incurred as of the date that Nextel gains access to the 1910-1915 MHz spectrum band. Nextel must pay this amount before it begins operations in the band.[607] Afterward we will allow Nextel and UTAM to seek reimbursement for the proportion of its relocation costs incurred in clearing incumbent fixed microwave systems that benefits spectrum whose relocation obligations would

[605] Thus, Nextel's future relocation obligations will not necessarily represent a twenty-five percent share of any future microwave relocation costs in the 1910-1930 MHz band. If UTAM funds the relocation of a paired microwave link where only one half of the paired link operates in the 1910-1915 MHz band and the relocation costs are evenly divisible between both links, then Nextel would be liable to reimburse UTAM for one half of the total relocation costs associated with that paired link. Because we are not altering the current allocation of the 1915-1920 MHz band at this time, we are not modifying the existing procedure whereby UTAM is responsible for costs associated with the relocation of incumbent microwave facilities in that band.

[606] We do not suggest that Nextel is not obligated to reimburse UTAM a *pro rata* share of such expenses—only that the timing and means of this reimbursement is best left to the parties to negotiate within the thirty-six month band reconfiguration process.

[607] Nextel must also meet other conditions precedent to the commencement of operations in the 1.9 GHz band. *See* ¶¶ 344,347 *infra.*

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otherwise be borne by the party that uses or is otherwise responsible for that spectrum band. UTAM and Nextel shall reimburse those based on the actual costs associated with the relocation of these facilities.

d. Relocation and Cost Sharing Obligations in the 1990-1995 MHz Band

250. In this section, we address Nextel's obligations, as a new entrant, to relocate incumbent BAS systems in the 1990-1995 MHz band. As an initial matter, we are not altering the underlying relocation rules that we established for MSS entrants that undertake the relocation of BAS incumbents from the 1990-2025 MHz band and MSS licensees will continue to follow the procedures that the Commission adopted in the *MSS Third R&O* when relocating BAS incumbents.[608] We are, however, modifying on reconsideration one aspect of the existing MSS plan to relocate BAS incumbents in order to allow Nextel to enter into the band and to address BAS relocation issues raised in the petitions for reconsideration of the *MSS Third R&O*. By retaining the existing MSS relocation rules but also overlaying procedures by which Nextel may relocate BAS incumbents, we will be able to ensure the continuity of BAS during the transition. It is essential that we do so, because BAS is a critical part of the broadcasting system by which emergency information and entertainment content is provided to the American public. Therefore, we expect that Nextel and MSS licensees will work together to minimize the disruption BAS licensees will experience in the transition.

(i) Nextel-BAS Plan

251. *MSTV-NAB-Nextel BAS Relocation Plan.* On May 3, 2004, MSTV, NAB, and Nextel submitted a proposed BAS relocation plan, which offered a means to clear BAS licensees from the 1990-2025 MHz band.[609] Under this proposal, Nextel would commit to funding the entire cost of relocating all BAS incumbents nationwide from the 1990-2025 MHz band.[610] Specifically, Nextel proposes to complete the relocation of all BAS licensees in the 1990-2025 MHz band in all markets in two stages—stage one within eighteen months and stage two within thirty months after the effective date of a Commission order in this proceeding.[611]

252. We will require Nextel, as a condition on Nextel's 1.9 GHz licenses, to follow a relocation procedure based on its proposed BAS relocation plan and relocate all BAS licensees in the 1990-2025 MHz band within thirty months after the effective date of this *Report and Order*, as described below. We believe that the parties' proposed BAS relocation plan is sufficiently similar to the BAS relocation plan the FCC adopted for MSS entrants, which was modeled on the policies set forth in our earlier *Emerging*

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[608] *See* ¶ 56 *supra*. As noted earlier, we will address the petitions for reconsideration or clarification of BAS relocation decisions made in the *MSS Third R&O* in this proceeding. We will, however, address the FS relocation issues raised in the pending joint petition for reconsideration or clarification of the *MSS Third R&O* at a later date.

[609] *See* MSTV/NAB/Nextel May 3, 2004 *Ex Parte*. This plan was also supported by SBE. *See ex parte* comments, dated May 7, 2004, from SBE (SBE May 7, 2004 *Ex Parte*).

[610] In return, Nextel requests that the Commission assign to Nextel replacement spectrum in the 1910-1915/1990-1995 MHz bands and receive credit for BAS relocation costs. MSTV/NAB/Nextel May 3, 2004 *Ex Parte* at 2.

[611] MSTV/NAB/Nextel May 3, 2004 *Ex Parte* at 2-3. The parties also note that "these targets may be adjusted to take into account issues regarding the availability of equipment, tower crews and other installation technicians." *Id.* at 3.

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Technologies proceeding,[612] and which requires MSS entrants to provide comparable facilities to BAS incumbents that are relocated prior to the sunset dates specified in the *MSS Third R&O*.[613] Accordingly, we will also require Nextel to provide comparable facilities to BAS incumbents that are relocated.[614] Further, Nextel and MSS licensees, each of which individually are authorized to operate on a fraction of the band, will mutually benefit from the clearance of all BAS licensees in the band.[615] Nextel is therefore obligated to participate in the relocation of all BAS operations from 1990-2025 MHz, as discussed immediately below, even if it ultimately does not build its own facilities in some geographic areas. As we determined in the *MSS Third R&O,* a one-phase relocation plan avoids the possibility of BAS operations on three different band plans, and eliminates the potential disruption and down time to BAS associated with being relocated under two different phases in a short period of time.[616] We also note that our decision to accommodate Nextel's entry into the band does not alter our need to minimize the disruption to incumbent BAS operations during the transition. Therefore, we believe that including Nextel as a participant in the relocation of all BAS operations from the 1990-2025 MHz band strikes an appropriate balance that is not unreasonably burdensome upon Nextel as an entrant in the band, while also fair to the incumbents and MSS entrants.

253. *Relocation Schedule.* Under the BAS relocation plan, MSTV, NAB, Nextel, SBE and other interested broadcast parties will develop a joint relocation schedule and implementation plan to be submitted to the Commission. The joint implementation plan would address the timing of individual market relocations within the two-stage plan that will be completed within thirty months, measures to minimize disruption to ENG services during the transition, and measures to facilitate an expeditious and efficient relocation process. The joint relocation schedule will be based on the following criteria: during stage one, Nextel will relocate all BAS incumbents in markets where it chooses to deploy immediately, as well as any adjacent markets that raise inter-market coordination and interference problems; and during stage two, Nextel will relocate all remaining markets. Throughout this process (including after the initiation of stage two), BAS licensees that have not been relocated would be permitted to continue operation on their existing seven channels until they are relocated to the new band plan at 2025-2110 MHz.[617] According to the parties, this relocation proposal would therefore minimize disruption to

[612] *See* Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies, ET Docket No. 92-9, *First Report and Order and Third Notice of Proposed Rule* Making, 7 FCC Rcd 6886 (1992); *Second Report and Order*, 8 FCC Rcd 6495 (1993); *Third Report and Order and Memorandum Opinion and Order*, 8 FCC Rcd 6589 (1993); *Memorandum Opinion and Order*, 9 FCC Rcd 1943 (1994); *Second Memorandum Opinion and Order*, 9 FCC Rcd 7797 (1994); *aff'd Association of Public Safety Communications Officials-International, Inc. v. FCC*, 76 F.3d 395 (D.C. Cir. 1996) (collectively, "*Emerging Technologies* proceeding").

[613] *MSS Third R&O*, 18 FCC Rcd 23638.

[614] *See* 47 C.F.R. §§ 74.690, 101.73.

[615] Each authorized 2 GHz MSS licensee receives an equal share of the available frequencies in which its primary service operations will take place, to be chosen at the time it has launched one satellite into its intended orbit. Each authorized 2 GHz MSS system may also operate at other frequencies in the 2 GHz MSS band, provided it does not cause harmful interference to other assigned satellite networks or incumbent terrestrial services that have not been relocated. *See* In The Matter Of The Establishment Of Policies And Service Rules For The Mobile Satellite Service In The 2 GHz Band, IB Docket 99-81, *Report and Order,* 15 FCC Rcd 16127, 16138-140 ¶¶ 16-21 (2000).

[616] *MSS Third R&O*, 18 FCC Rcd at 23654-57 ¶¶ 32-35.

[617] MSTV/NAB/Nextel May 3, 2004 *Ex Parte* at 3-6.

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incumbent BAS operations as well as serve the public interest by preserving the ability of broadcasters to provide the public with timely coverage of emergencies and other news events. The parties further contend that the thirty-month timeframe for relocating all BAS incumbents under the proposed Nextel-BAS relocation plan "should ensure that the 1990-2025 MHz band is cleared nationwide before MSS entrants are ready to begin service in the 2000-2025 MHz band."[618]

254. We will require Nextel to file progress reports within twelve months and twenty-four months after the effective date of this *Report and Order* on the status of the transition, including identifying the markets that will be relocated during stage one and all remaining markets that will be relocated during stage two. This filing also should include the other information the parties stated they would provide as part of the joint implementation plan described in the Nextel-BAS relocation plan.[619] Nextel also will be required to certify to the Commission that all BAS facilities have been relocated within thirty months after the effective date of this *Report and Order*. We note that Nextel's obligation to relocate BAS incumbents must not interfere with its obligation to relocate public safety users in the 800 MHz band.

255. Nextel, which uses a terrestrial network, has a different interference potential between its service and BAS than that of MSS and BAS. Unlike satellites, whose signals can blanket the whole country simultaneously, a terrestrial network is limited to discrete geographic areas served by multiple base stations. Thus, the terrestrial nature of Nextel's service allows for the gradual relocation of incumbents during a geographically-based build-out period. Consequently, we will allow Nextel to determine its own schedule for relocating incumbent BAS facilities in a TV market as follows: Nextel must relocate incumbent BAS licensees before beginning operation in a particular BAS market, but Nextel may determine the markets it wishes to serve. Thus, whereas we had established a relocation process based on specific markets (1-30, 31-100, and 101-210) for MSS, Nextel's operations will only affect those markets where Nextel chooses to deploy its service. Unlike MSS, which may take up to five years to relocate BAS services in markets 31 and above, Nextel must relocate incumbent BAS operations in every BAS market it wishes to serve—including markets 31 and above—prior to beginning operations, and all BAS markets within the thirty-month timeframe proposed in the Nextel-BAS relocation plan. We conclude that the differences between the terrestrial nature of Nextel's service and the ubiquitous service that will be provided by MSS warrant these distinctions in the relocation procedures.

256. Further, the integrated nature of BAS operations also makes isolated, link-by-link relocation infeasible. Therefore, as a practical matter, we note that it may be necessary for Nextel to relocate more BAS facilities than an interference analysis might indicate as technically necessary in order to meet the comparable facility requirement for relocating BAS operations.[620] Nextel has agreed to relocate BAS licensees across multiple TV markets to avoid inter-market coordination and interference problems.[621] We also recognize that Nextel is likely to deploy its service in some locations in a manner that does not correspond to the geography of the BAS market areas, and note that Nextel will be obligated to relocate all incumbent BAS operations in all BAS markets, as proposed in the Nextel-BAS relocation plan, including those markets where Nextel provides partial, minimal, or no service.

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[618] *Id.* at 7.

[619] MSTV/NAB/Nextel May 3, 2004 *Ex Parte* at 3-4. *See also* ¶ 253 *supra.*

[620] *See* 47 C.F.R. §§ 74.690(d) and 78.40(d-e). For example, a BAS licensee's operations in an adjacent market may need to be relocated even though Nextel does not initiate operations in that adjacent market.

[621] MSTV/NAB/Nextel May 3, 2004 *Ex Parte* at 5.

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257. Nextel, MSTV, and NAB argue that if one or more MSS entrant is prepared to launch service before the spectrum is cleared in all markets, a "key principle" of the Nextel plan should continue to apply—namely that Nextel will remain responsible for paying the upfront relocation costs.[622] We disagree to the extent that this principle is intended to prevent MSS licensees from clearing BAS incumbents earlier. Under this *Report and Order*, MSS licensees will retain the option of accelerating the clearing of those markets so that they could begin operations before Nextel has completed nationwide clearing. We recognize that the parties will have to work cooperatively to ensure a smooth transition for BAS incumbents. To facilitate this process, we will require Nextel to file with the Commission and copy the MSS licensees, within thirty days after the effective date of this *Report and Order*, its plan for the relocation of BAS operations in the markets that will be relocated during stage one (*i.e.*, within eighteen months). MSS licensees will have thirty days to review the Nextel plan[623] and identify to Nextel and the Commission which of the top thirty TV markets and fixed BAS operations, if any, they intend to invoke involuntary relocation.[624] If MSS licensees choose not to trigger involuntary relocation, Nextel will proceed under its plan to relocate BAS incumbents.

258. *Negotiation Schedule.* The Nextel-BAS relocation plan proposes mandatory negotiation periods between Nextel and BAS licensees ending February 28, 2005 for stage-one relocations and December 31, 2005 for stage-two relocations, thus providing nine months for negotiations for each stage.[625] We note that these dates were contingent on the Commission releasing its decision in this proceeding on May 31, 2004. Because of the time that has passed between May 31st and the release of this *Report and Order*, we will extend the negotiation periods to May 31, 2005 for stage-one relocations and March 31, 2006 for stage-two relocations. MSS licensees may voluntarily join in these negotiations in order to relocate BAS operations in markets 31 and above. We encourage MSS licensees to work cooperatively with Nextel in these negotiations because all parties will collectively benefit from the expeditious relocation of BAS incumbents to the new band plan. We also note that we will entertain requests filed by MSS licensees requesting that their voluntary participation in the negotiations between Nextel and BAS incumbents initiate their mandatory negotiation period.[626]

259. *Cost sharing.* In the *MSS Third R&O*, we noted that with the redesignation of the 1990-2000 MHz and 2020-2025 MHz bands in the AWS proceeding, non-MSS licensees that may begin service later will benefit from the band clearing paid for by MSS licensees. We therefore stated that we will provide an equitable mechanism by which MSS licensees can recover some of the relocation costs incurred from other licensees who will benefit from the band clearing of incumbent BAS operations from the 1990-2025 MHz band. However, we deferred setting forth comprehensive procedures that new Fixed and Mobile service providers (including AWS entrants) in these bands must follow to reimburse MSS licensees

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

[623] *See* ¶ 253-254 *supra.*

[624] The one-year mandatory negotiation period for MSS and BAS licensees in markets 1-30 and all BAS fixed stations, regardless of market size, is already in effect and lasts until December 8, 2004. After this date, any MSS entrant may involuntarily relocate incumbent BAS operations. *See* ¶ 57, *supra.*

[625] MSTV/NAB/Nextel May 3, 2004 *Ex Parte* at 3-4.

[626] Because BAS incumbents would already be in relocation negotiations with Nextel, allowing MSS licensees to accelerate the mandatory negotiation period under the MSS plan for markets 31 and above may satisfy the intent of the mandatory negotiation requirement.

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that will have incurred relocation costs.[627]

260. As noted above, under the Nextel-BAS relocation plan, Nextel offers to pay the upfront BAS relocation costs, which MSTV and NAB estimate will be $512 million. Nextel also requests that the Commission require MSS licensees in the 1990-2025 MHz band to pay their *pro rata* share of the cost of clearing this spectrum.[628]

261. We have decided to generally follow the cost-sharing principle that the licensees that ultimately benefit from the spectrum cleared by the first entrant shall bear the cost of reimbursing the first entrant for the accrual of that benefit, except as discussed below. Therefore, the first entrant may seek reimbursement from subsequently entering licensees for a proportional share of the first entrant's costs in clearing BAS spectrum, on a *pro rata* basis according to the amount of spectrum each licensee is assigned. Consequently, Nextel is entitled to seek *pro rata* reimbursement of eligible clearing costs incurred during the 36-month reconfiguration period from MSS licensees that enter the band prior to the end of that period. Nextel will be required to inform the Commission and MSS licensees on whether it will or will not be seeking reimbursement from the MSS licensees 12 months after the effective date of this *Report and Order*.[629] Under this plan, Nextel would pay all upfront costs and receive credit for BAS relocation in the 800 MHz true-up process, less any MSS-reimbursed expenses. Thus, Nextel would no longer be entitled to reimbursement from other entrants to the band after receiving credit for its relocation costs at the 800 MHz true-up. Further, Nextel's right to seek reimbursement from any MSS entrants entering before the end of the 36-month reconfiguration period will be limited to costs Nextel incurred for clearing the top thirty markets and relocating all fixed BAS facilities, regardless of market size, and to an MSS licensee's *pro rata* share of the 1990-2025 MHz spectrum. We believe that limiting the amount of Nextel's reimbursement in this manner strikes an appropriate balance that is not unreasonably burdensome on Nextel or MSS licensees.[630]

262. Similarly, Nextel is also obligated to reimburse MSS licensees for Nextel's *pro rata* share of the MSS licensees' relocation expenses, should the MSS licensee trigger involuntary relocation or otherwise participate in the relocation process before Nextel has completed its nationwide clearing of the band. Any reimbursement by Nextel to MSS licensees must occur before the 800 MHz true-up period ends, so that these reimbursement expenses can be accounted for at the 800 MHz true-up. Both Nextel and MSS licensees under the MSS plan must clear the entire 1990-2025 band (a total of thirty-five megahertz of spectrum) while only operating in 1990-1995 MHz (a total of five megahertz of spectrum) and in 2000-2020 MHz (a total of twenty megahertz of spectrum), respectively. Therefore, Nextel's *pro rata* share

[627] *MSS Third R&O,* 18 FCC Rcd at 23644 ¶ 10.

[628] Nextel proposes that the payments by other entrants are made to the U.S. Treasury because, unlike Nextel, which would be receiving replacement spectrum, these other entrants would be receiving initial licenses. *See* MSTV/NAB/Nextel May 3, 2004 *Ex Parte* at 8. We decline to adopt this proposal. By allowing Nextel to relocate incumbent BAS licensees and retaining our existing rules that allow MSS licensees to also relocate BAS incumbents, we meet the key objective of providing BAS licensees with relocation to comparable facilities. Adoption of the proposal would not further these core relocation objectives.

[629] This deadline coincides with the date Nextel is required to submit its first status report on its BAS relocation efforts.

[630] Under the MSS plan, MSS licensees are required to clear the top 30 BAS markets and all fixed BAS stations, regardless of market size, before beginning operations. The accounting among MSS licensees to settle relocation expenditures would not occur until after the end of the MSS relocation process. *MSS Second R&O*, 15 FCC Rcd at 12338 ¶ 68.

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represents the costs to relocate one-seventh of the spectrum.

263. *Interference Issues/Technical Standards.* In order to minimize interference from systems in the 1910-1915 MHz/1990-1995 MHz blocks, we are requiring Nextel to conform to the same technical standards applicable to licensed PCS systems.[631] The Commission adopted TIA Bulletin TSB 10-F previously as the criteria for determining PCS to FS interference.[632] Due to the technical similarity of Nextel's service to PCS, which operates in nearby bands and for which TSB 10-F is well-suited, we conclude that the criteria specified in TSB 10-F should be equally suitable to determine where sharing would be possible between BAS and Nextel operations in the 1990-2025 MHz band. However, procedures other than TSB 10-F that follow generally acceptable good engineering practices may also be acceptable.[633] Our conclusion is consistent with the *MSS Second R&O* wherein the Commission determined that, in the case of new ancillary terrestrial component (ATC) service/FS interference in the 2165-2200 MHz band, TIA Bulletin 10-F would be the relevant standard.[634] In the *MSS Third R&O,* we affirmed that TSB 10-F, or its successor standard, is an appropriate standard for purposes of triggering relocation obligations by new terrestrial (ATC or AWS) entrants in the 2 GHz band to relocate FS incumbents.[635] For computing interference between satellite and fixed services, the Commission relies on the methodology and criteria in TIA Bulletin TSB-86.[636]

(ii) MSS-BAS Plan

264. In this section, we address MSS licensee obligations to relocate incumbent BAS operations in the 1990-2025 MHz band and address petitions for reconsideration and clarification of the *MSS Third R&O*. We grant in part and deny in part the petitions for reconsideration and clarification filed by MSTV, NAB, SBE, and Boeing. We have discussed, above, the process by which Nextel may enter the band and relocate incumbent BAS licensees, and how that process relates to the existing relocation procedures that we adopted for MSS licensees. Now, we turn our attention to the existing relocation rules that have already been established for MSS. Except as discussed below, those rules will remain in effect.

265. Under the MSS plan, BAS facilities in the top-thirty TV markets and all fixed BAS operations, regardless of market size, will be cleared first and the remaining markets in two segments (markets 31-100 within three years after commencement of MSS operations and markets 101-210 within

[631] *See generally*, 47 C.F.R. § 24 *et. seq*. We will ensure that Nextel's base/mobile operations conform to lower-adjacent broadband PCS operations. Specifically, we will require Nextel to operate its mobile/portable stations in the 1910-1915 MHz block and operate its base stations in the 1990-1995 MHz block. *See* 47 C.F.R. § 24.229(c) in Appendix C *infra*.

[632] *See* 47 C.F.R. § 24.237. *See also* Amendment of the Commission's Rules to Establish New Personal Communications Services, *Second Report and Order*, 8 FCC Rcd 7700, 7762 ¶ 150 (1993); *Memorandum Opinion and Order*, 9 FCC Rcd 4957, 5029 ¶ 186 (1994). Bulletin TSB 10-F describes interference criteria for microwave systems in public fixed radio services and private operational fixed microwave service bands.

[633] 47 C.F.R. § 101.105 (c).

[634] *See MSS Second R&O*, 15 FCC Rcd at 12346 ¶ 97, n.160. *See also* 47 C.F.R. §101.79 (a).

[635] *See MSS Third R&O*, 18 FCC Rcd at 23672 ¶ 70.

[636] TSB-86 was developed by a Joint Working Group comprised of the Telecommunications Industry Association (TIA) Engineering Subcommittees on Spectrum and Orbit Utilization, the TIA Engineering Subcommittee on Interference Criteria for Microwave Systems, and the National Spectrum Managers Association. *MSS Second R&O*, 15 FCC Rcd at 12340-41 ¶ 78, n.131.

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five years). The Commission recognized that the services offered via the MSS satellites, once operational, will cover all of the United States simultaneously. Therefore, BAS facilities in the band would have to be relocated or cease operation in order to minimize interference between the two services.[637] The Commission instituted this gradual approach to balance the needs of the incumbents and future MSS users of the band, notwithstanding the added challenges to BAS operations.[638]

266. *Comments.* The broadcast parties contend that the Commission's decision to require MSS licensees to relocate BAS incumbents to the final channel plan in one step (rather than in two steps under the original plan), resulting in the temporary vacating of two BAS channels (rather than one channel under the original plan) until all BAS operations are relocated, will "significantly curtail" the ability of BAS incumbents in TV markets 31 and above to provide electronic news gathering (ENG) services to the public.[639] According to the broadcast parties, the Commission's decision underestimates the harm to BAS operations, particularly in the local coverage of emergencies, news, and sporting events, outside the top 30 markets because these markets will lose two channels for up to five years before being relocated. The broadcast parties further contend that dual band plans during the transition will cause interference and inter-market coordination problems.[640] MSTV and NAB also argue that the Commission's decision to modify the BAS relocation plan to immediately begin Phase II is contrary to precepts of administrative law and the public interest.[641] The broadcast parties request, in part, that the Commission devise an alternative relocation plan that would not require BAS incumbents in markets 31 and above to cease operations on two channels without receiving compensation prior to vacating the spectrum and further that the Commission consider various means to ensure that MSS licensees pay their *pro rata* share of BAS relocation.

267. Alternatively, Boeing maintains that the Commission should reinstate the original two-phase plan, with the modifications it proposes to Phase I, and not trigger Phase II immediately.[642] Boeing argues that the benefits to retaining the two-phase BAS relocation process are that it: 1) reduces the upfront costs for BAS relocation before MSS operators begin service; 2) is a more efficient use of spectrum; 3) provides the Commission with more time to resolve regulatory uncertainties about the types of new services and the procedures for the new entrants in the 1990-2025 MHz band; and 4) gives BAS manufacturers more time for the design and development of digital BAS equipment.[643]

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[637] Since the 1990-2025 MHz band is the MSS uplink band, BAS receivers would be subject to interference from nearby MSS handsets.

[638] *MSS Second R&O*, 15 FCC Rcd at 12325-26 ¶¶ 25-28.

[639] *See* MSTV/NAB Joint Petition at 6-9 & 12-15; SBE Petition at 1-2; *see also* RTNDA Comments at 3-6. *But see* Boeing Opposition at 4-7 & 9-10; Boeing Reply at 2-3; ICO Reply at 3-4.

[640] *See* SBE Petition at 3; MSTV/NAB Joint Petition at 10-12. *But see* Boeing Opposition at 11-14.

[641] In addition, the broadcast parties contend that the revised relocation plan is inconsistent with the Commission's localism, diversity, public safety, and homeland security initiatives. *See* MSTV/NAB Joint Petition at 15-21; RTNDA Comments at 4. *But see* Boeing Opposition at 10-11.

[642] *See* Boeing Petition at 3-8; *see also* ICO Reply at 4-6.

[643] *See* Boeing Petition at 5-8. *But see* MSTV/NAB Joint Opposition 3-7; MSTV/NAB/SBE Joint Reply at 3-8. In their opposition and reply, the broadcast parties object to the aforementioned Boeing proposal by arguing that Phase II compensation would be delayed until after the sunset date. Therefore, they request that the Commission eliminate the ten-year sunset period and "create incentives that tie the ability of entrants to continue their own operations to timely fulfillment of their relocation compensation obligations to BAS incumbents." *See* (continued….)

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268. In addition, the broadcast and MSS parties request that the Commission address unresolved questions regarding the relocation obligations (*e.g.*, the timing and scope of reimbursement) of new entrants to the 2 GHz band, as well as new services that are relocated from other spectrum bands (*e.g.,* Nextel).[644] Specifically, the commenters propose that the Commission require reimbursement of BAS relocation expenses by later entrants, on a *pro rata* basis, before these new entrants begin operation in the 2 GHz band.[645] Finally, Nextel, MSTV and NAB argue that in the event an MSS entrant begins operations before all BAS incumbents have been relocated by Nextel, no BAS incumbent will be required to vacate any spectrum at 1990-2025 MHz until after it has been relocated to the new band plan at 2025-2110 MHz.[646]

269. *Decision.* On reconsideration, we will no longer require BAS licensees in TV markets 31-210 to cease operations on channels 1 and 2 until they have been relocated to their final channel plan at 2025-2110 MHz, unless licensees in a BAS market indicate as part of the relocation negotiation process that they do not wish to be relocated, in which case they must immediately restrict their operations to the 2025-2110 MHz band. We are making this modification to the MSS plan to accommodate Nextel's entry into the band consistent with the Nextel-BAS relocation plan, as described herein, which does not require BAS incumbents in markets 31 and above to cease operations on two channels without receiving compensation prior to vacating the spectrum.

270. We find that as a result of our actions here the two relocation plans will complement each other and expedite BAS relocation in the band. Under the Nextel-BAS relocation plan, the relocation of all BAS incumbents will be completed by May 2007. Under the MSS plan, MSS licensees may begin operations once the top thirty BAS markets and all fixed BAS stations, regardless of market size, have been cleared[647] and must certify that their systems are operational by no later than July 2007.[648] Nextel will likely relocate most BAS licensees before MSS licensees begin operations under their milestone requirements. In addition, as described previously, MSS operators will have an opportunity to work with Nextel to relocate BAS licensees in some additional markets. If MSS licensees begin operations before all BAS incumbents are relocated, we expect that MSS and BAS licensees will work together to minimize interference; however, MSS licensees would have to accept interference from the remaining BAS users

(Continued from previous page)
MSTV/NAB/SBE Joint Reply at 8. In its reply, Boeing argues that no justification exists to eliminate the ten-year sunset deadline and points to the Commission's decision in the *MSS Third R&O*, which states that "we continue to believe that a sunset date is a vital component of the *Emerging Technologies* relocation principles." *See* Boeing Reply at 4 (citing ¶ 46 of the *MSS Third R&O*). Because we are not adopting Boeing's plan, we need not address MSTV, NAB and SBE's request to eliminate the sunset period.

[644] *See* Boeing Petition at 8-13; Boeing Opposition at 8; MSTV/NAB/SBE Joint Reply at 9; ICO Reply at 7.

[645] *Id.*

[646] MSTV/NAB/Nextel *May 3, 2004 Ex Parte* at 7-8.

[647] Under the MSS plan, MSS licensees may invoke involuntary relocation of BAS operations in the top 30 TV markets and fixed BAS stations, regardless of market size, after December 8, 2004. As we stated earlier, MSS licensees will have an opportunity to coordinate with Nextel on which top 30 BAS markets and fixed BAS stations the MSS licensees plan to invoke involuntary relocation. *See* ¶ 257 *supra.*

[648] This deadline applies to all 2 GHz MSS licensees except TMI. TMI must certify that its system is fully operational by November 2008. *See* TMI Communications and Company, Limited Partnership and TerreStar Networks, Inc. Application for Review and Request for Stay, *Memorandum Opinion and Order*, FCC 04-144 (released June 29, 2004).

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until they are relocated. Further, the Nextel-BAS relocation plan would substantially shorten the time period during which adjacent BAS markets would operate on different channel plans, thereby mitigating the broadcast parties' concerns regarding interference and inter-market coordination problems resulting from prolonged dual band plans. Finally, we believe that adoption of a relocation plan that is based on the proposed Nextel-BAS relocation plan, as described herein, provides certain benefits to MSS licensees. In particular, Nextel has agreed to clear BAS nationwide within thirty months and to pay the upfront costs for BAS relocation.

271. We deny Boeing's petition with respect to its request for the reinstatement of the original two-phase MSS plan for BAS relocation. As we discussed in the *MSS Third R&O*, we found that given the need to provide for rapid introduction of AWS in the 2 GHz BAS band, a two-phase relocation was no longer appropriate.[649] We affirm this finding. We note that our decision herein to allow Nextel to enter the band requires that BAS incumbents be relocated expeditiously to the final Phase II channel plan. We also find that adoption of the Boeing plan is not necessary to address its concerns (*e.g.*, lower MSS upfront relocation costs) because these concerns will be satisfied by implementation of the Nextel-BAS relocation plan, as revised herein.

272. We now address the remaining arguments proffered by the parties. We find that our decision to adopt a relocation plan that is based on the Nextel-BAS relocation plan, as described herein, renders moot MSTV and NAB's procedural and public interest arguments.[650] Further, our decision today addresses the relocation obligations of Nextel, a new entrant into the 1990-2025 MHz band. With respect to the broadcast and MSS parties' request to resolve the relocation obligations of other new entrants in the 2 GHz band, we defer resolution of these issues to the appropriate docket.[651]

273. *Issues for Clarification.* Pointing to Paragraph 58 of the *MSS Third R&O*, SBE, MSTV and NAB request that the Commission clarify the relationship between BAS licensees operating on different channel plans to avoid causing coordination problems within and between TV markets.[652] Paragraph 58 of the *MSS Third R&O* states in part that:

> [b]ecause the continued use of the existing channel plan could disrupt BAS licensees that have relocated to the Phase II channel plan and lead to the difficulties in coordination that SBE describes, we will permit continued use of the 'old' channel plan only if all BAS licensees in a market will agree to such operation.[653] Moreover, BAS licensees in such markets must operate on a secondary basis to other BAS licensees using the Phase II channel plan and must be prepared for the potential disruption associated with secondary operation, such

[649] *MSS Third R&O*, 18 FCC Rcd at 23653-61.

[650] MSTV and NAB state that the *MSTV/NAB/Nextel May 3, 2004 Ex Parte* addresses the concerns raised in their joint petition. *See MSTV/NAB/Nextel May 3, 2004 Ex Parte* at 5; *see also* SBE May 7, 2004 *Ex Parte* at 2.

[651] *See* Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems, ET Docket No. 00-258.

[652] MSTV/NAB Joint Petition at 22; SBE Petition at 4-5.

[653] In the *MSS Second R&O*, we permitted BAS licensees the choice of surrendering BAS channel 1 during Phase I or relocating to the 14.5 MHz- and 15 MHz-wide Phase I channels. To facilitate an orderly coordination process and to prevent interference, we required all BAS licensees within the same Nielsen DMA to coordinate and chose one of these channel plans. *MSS Second R&O*, 15 FCC Rcd at 12330 ¶ 45.

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> as the interference likely to be caused by a BAS licensee operating on the Phase II channels that enters the market to cover a sporting event or breaking news story.[654]

274. According to SBE, there is a conflict between Section 74.24(c) and Paragraph 58 of the *MSS Third R&O*[655]. Under Section 74.24(c), a top-thirty market TV pickup station that has converted to digital and operating on the new band plan but is temporarily operating outside its licensed area to respond to a major news event would be secondary to the local TV pickup station where the major news event is occurring.[656] SBE contends that, under Section 74.24(c), if the local TV pickup station is in a market that has not converted to digital and the new band plan, it would have primary status over any visiting TV pickup station. However, we stated in the *MSS Third R&O* that a visiting TV pickup station that had converted to the Phase II channel plan would have primary status over the local TV pickup station that had not converted. Thus, SBE seeks clarification on whether Section 74.24(c) trumps Paragraph 58 of the *MSS Third R&O* or vice versa. Further, MSTV/NAB claim that it is unclear whether this applies to all broadcasters operating on the old channel plan or only in markets that elect to remain on the old channel plan even after they are entitled to relocation compensation.[657]

275. SBE also requests that the Commission clarify what it means by the "if all BAS licensees in a market will agree" language in Paragraph 58 of the *MSS Third R&O* mentioned above.[658] Specifically, SBE seeks clarification on whether: 1) a single station would be able to block or force the conversion to the new band plan of other stations in the market; or 2) the station that chooses not to convert becomes secondary to the stations that do convert.[659] According to MSTV and NAB, it is also unclear whether the primary status of BAS licensees operating on the new channel plan would allow a single broadcaster in a small or medium market to essentially compel other broadcasters in the market to convert to the new channel plan before receiving compensation by self-relocating during the transition period.[660]

276. We clarify that Paragraph 58 does not alter the operation of Section 74.24(c), *i.e.*, that any local TV pickup station will have primary status over any visiting TV pickup station, even if the local market as a whole or the individual local TV pickup station itself has not converted to the Phase II channel plan. We believe this outcome is consistent with the overall purpose of the short-term use rule, which will continue to operate after the BAS relocation is completed. Further, although we believe it would be best if all stations in a market agree to use the same channel plan, an individual station that chooses to remain on the old channel plan will be secondary to other stations within the same market that convert to the Phase II plan and also to any TV pickup station that has converted to the Phase II plan and is visiting the local market. This should encourage parties to convert to the final channel plan expeditiously.

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[654] *MSS Third R&O,* 18 FCC Rcd at 23668 ¶ 58.

[655] SBE Petition at 4.

[656] 47 C.F.R. §74.24(c). Section 74.24(c) states that a BAS station operating under short-term authority does so on a secondary, non-interference basis to regularly authorized stations.

[657] MSTV/NAB Joint Petition at 22.

[658] SBE Petition at 4-5.

[659] *Id.*

[660] MSTV/NAB Joint Petition at 22.

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4. Method for Determining Equitable Compensation

277. The record reflects considerable disagreement among the parties on whether the grant of 1.9 GHz spectrum rights to Nextel constitutes equitable compensation or an unwarranted windfall.[661] Initially, the Consensus Parties proposed that Nextel would relinquish approximately ten megahertz of 700, 800 and 900 MHz spectrum, pay for band reconfiguration, and receive ten megahertz of 1.9 GHz spectrum.[662] Other parties, however, argue that the Commission should determine whether the value of the spectrum being relinquished by Nextel, when added to the costs Nextel incurs in band reconfiguration, is equal to the fair market value of the 1.9 GHz spectrum.[663] Many of these parties further argue that the market value (FMV) of the 1.9 GHz spectrum far exceeds the value of relinquished spectrum and other costs that Nextel would incur under the Consensus Parties' proposal.[664] Nextel responds that the 1.9 GHz spectrum is equitable compensation even under a value-for-value approach.[665]

278. We conclude that a "value for value" approach is the most appropriate for determining equitable compensation in this instance. We reject the approach proposed by the Consensus Parties because we do not regard the combined 700, 800, and 900 MHz spectrum that Nextel offered to relinquish as being equivalent to the 1.9 GHz spectrum. First, as discussed in ¶ 207 *supra*, we are excluding Nextel's 900 MHz spectrum from consideration in this order, so it does not help to "balance" the bandwidth exchange. Second, while we are accepting Nextel's offer to relinquish its 700 MHz Guard Band spectrum, we regard the value of this spectrum as *de minimis* because it cannot be made available to public safety in the near term and any potential long-term benefit it might afford to public safety or any value it might have in the marketplace is purely speculative at this point. Having excluded 700 MHz and 900 MHz from consideration, the remaining 800 MHz spectrum that Nextel is relinquishing—even as recently augmented to an average of 4.5 megahertz—does not equate on a megahertz-for-megahertz basis with ten megahertz of 1.9 GHz spectrum, absent some further balancing of the equities. We also reject the option of adjusting the megahertz-for-megahertz "balance" by providing Nextel with a smaller bandwidth increment, *e.g.*, 4.5 megahertz in the 1.9 GHz band. We believe this approach would segment the 1.9 GHz band in a fashion that does not make sense from a technical standpoint and would result in inefficient use of the spectrum. We believe that providing Nextel uniform nationwide access to ten megahertz in the 1.9 GHz band not only helps to ensure that Nextel receives comparable value for its loss of spectrum rights and expenses it will incur, but also will promote efficient use of the 1.9 GHz band. To account for these and other differences, therefore, we conclude that the comparative value of spectrum and other costs incurred by Nextel to support rebanding must be considered under a "value for value" approach.

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[661] *See* Comments of Alltel, et. al. to Consensus Parties Reply Comments at 12-13; Comments of Verizon to Consensus Parties Reply Comments at 10; Comments of Access Spectrum to Supplemental Comments of the Consensus Parties at 13-14; Comments of Alltel, et. al. to Supplemental Comments of the Consensus Parties at 7; Comments of Verizon to Supplemental Comments of the Consensus Parties at 11-12; (claiming that the grant of 1.9 GHz spectrum to Nextel would result in a windfall). *But see* Comments of Nextel to Consensus Parties Reply Comments at 24-27; Comments of Nextel to Supplemental Comments of the Consensus Parties at 15-17; Reply Comments of the Consensus Parties to Supplemental Comments of the Consensus Parties at 50; Reply Comments of Nextel to Supplemental Comments of the Consensus Parties at15-17 (claiming that grant of 1.9 GHz spectrum to Nextel will make Nextel whole in return for substantial spectral contributions).

[662] *See* Consensus Parties Reply Comments at 17-19.

[663] *See* Kane Reece Study; Kane Reece Study II; CTIA April 29 *Ex Parte*.

[664] *See* Kane Reece Study at 41-58; Kane Reece Study II at 8-12.

[665] *See* Sun Fire Study at 13-33.

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a. Valuation of 1.9 GHz Spectrum

279. We begin with the value of the ten megahertz of spectrum at 1910-1915 MHz/1990-1995 MHz. Three parties—Verizon, CTIA, and Nextel—have submitted valuation studies of the 1.9 GHz spectrum, using different analytical methods and yielding different conclusions:

280. *Verizon Wireless – Kane Reece Study*. On October 27, 2003, Verizon Wireless submitted a valuation report prepared by Kane Reece Associates, a national appraisal firm.[666] The Kane Reece study concludes that "[i]f the Consensus Plan were adopted, the value of Nextel's spectrum would increase by $7.2 billion."[667] The Kane Reece study avers that "[a] giveaway of the 1.9 GHz PSC band … would result in a significant windfall to Nextel while denying the public the value of this public resource."[668] The Kane Reece study further estimates that "[t]he FMV of 10 MHz at 1.9 GHz is appraised at nearly $ 5.3 billion,"[669] which would equate to approximately $1.82 per MHz per person (MHz-pop). This estimate is based primarily on an approach which estimates (using several different approaches) the enterprise value (EV) of mobile wireless operators and then subtracts the value of physical assets and identifiable intangible assets. The remaining residual is then interpreted as the value of the spectrum licenses.

281. *CTIA*. In a July 9, 2003, *ex parte* letter, CTIA proposed that the Commission use two private market transactions involving PCS licenses to estimate the value of the 1.9 GHz G block that would be assigned to Nextel as replacement spectrum under the Consensus Plan.[670] In the first transaction, Verizon Wireless acquired PSC licenses and other assets from Northcoast Communications for $750 million.[671] In the second transaction, Cingular seeks to acquire PCS licenses from NextWave Telecom for $1.5 billion.[672] Based on these transactions, CTIA estimates the value of the 1.9 GHz spectrum at between

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[666] *See generally* Kane Reece Study n. 185 *supra*; Letter from John Scott, Vice President and Deputy General Counsel – Regulatory Law, Verizon Wireless, WT Docket No. 02-55 at 2 (dated Feb. 26, 2004) (Verizon Feb. 26, 2004 *Ex Parte* Letter).

[667] Verizon Feb. 26, 2004 *Ex Parte* Letter at 2.

[668] *Id.*

[669] *Id.*

[670] *See* Letter from Diane Cornell, Vice President, CTIA, WT Docket No. 02-55 (filed July 9, 2003) (CTIA Filing).

[671] The data used by CTIA in its evaluation of the Verizon-North Coast Transaction are as follows:

Purchase Price	$750,000,000
POPS	47,400,000
MHz	10
Price/POP/MHz	$1.58

See Id.

[672] The data used by CTIA in its evaluation of the Cingular-NextWave Transaction are as follows:

Purchase Price*	$1,500,000,000
POPS	80,700,000
MHz	10
Price/POP/MHz	$1.86

*We note that CTIA bases the purchase price estimate on press and analyst reports. *See id*.

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$4.5 billion and $5.3 billion.[673]

282. *Nextel*. In a November 20, 2003 filing, Nextel, through the Sun Fire Group LLC, asserts that a reliable estimate of the value of a nationwide G block license would use a representative selection of large, medium, and small market transactions to better account for market size value variations in constructing a nationwide value estimate.[674] The following transactions were used by Nextel to calculate an average national spectrum price:

- Verizon-North Coast Transaction[675]
- Pittsburgh, PA BTA Transaction[676]
- Lebanon, NH Transaction[677]

Based on these three transactions, Nextel estimates that the value of ten megahertz of spectrum at 1.9 GHz is worth $1.25 per MHz-pop, or approximately $3.5 billion.[678]

283. As an initial matter, we note that the valuing of spectrum is not an activity in which the Commission typically engages. We know from experience that the value of spectrum is seldom static and hinges on multiple variables, some of them intangible, which exist at the moment a willing buyer and willing seller agree to a transaction, or when an informed bidder places its bid an auction. When attempts are made to value a spectrum asset prospectively, the estimator must choose a model and employ underlying assumptions that serve as proxies for multiple variables. Given these approximations and limitations, any single figure derived cannot be exact; it necessarily has an associated uncertainty.

284. In our analysis of the three major valuations in the record, the models and assumptions differed and, in many instances, appeared tailored to reach a desired result. We believe that no strictly economic analysis can satisfactorily resolve the ultimate question of whether interference-free public safety communications—a largely unquantifiable benefit—has a dollar value commensurate with the fair market value of the 1.9 GHz spectrum Nextel will receive. However, we still believe such financial analyses are relevant to the extent that they provide a benchmark for determining whether the costs incurred and benefits received by Nextel reflect an equitable balance for the public and our licensees, or a windfall to Nextel. We further note that to the extent the possibility of a windfall may have existed under the Consensus Proposal, it is eliminated by the plan we adopt and the safeguards we impose today.

285. The studies all provide evidence relevant to determination of the FMV of the 1.9 GHz spectrum. The task of evaluating this evidence to reach a specific monetary value for the spectrum license asset, however, is complex, and any single figure derived is inherently uncertain. The standard approaches to valuation all have strengths and weaknesses, and appraisal experts often find that the best estimate of

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[673] *Id.*

[674] *See* Sun Fire Study at 32-33 and Appendix G.

[675] According to Nextel, the Verizon-Northcoast Transaction consisted of fifty BTAs with an average value of $1.58 per MHz-pop. *Id.*

[676] Nextel states that the average value per MHz-pop was $0.42. *See id*.

[677] The average value per MHz-pop was $0.25. *See id*.

[678] *See id*.

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value is one that is a synthesis of several approaches.[679]

286. Because they reasonably apply standard and valid asset appraisal techniques, we conclude that the Verizon Wireless and Nextel studies, taken together, define a reasonable range for the value of a ten megahertz nationwide spectrum license of $1.25 to $1.82 per MHz-pop. One estimate provided in the CTIA filing exceeds $1.82 per MHz-pop; however that estimate relies on information in a press account of a spectrum sale transaction that later proved to be inaccurate.[680] Further, although Verizon Wireless presents several other figures as being consistent with its preferred estimate, all such figures are less than $1.82 per MHz-pop. That is, Verizon Wireless applied a discounted cash flow analysis to a hypothetical firm by adding ten megahertz of spectrum to its ongoing business value; and, on that basis estimated the ten megahertz of spectrum at $1.73 per MHz-pop.[681] A market approach of looking at guidelines from publicly traded companies values the spectrum at $1.61 per MHz-pop,[682] and a comparable spectrum sales approach values the spectrum at $1.51 per MHz-pop.[683]

287. In order to identify an appropriate value amount that is attributed to Nextel for receipt of the 1.9 GHz spectrum rights, one must go beyond identifying a reasonable valuation range and place a specific value on the 1.9 GHz license. As further explained below, in reviewing the detailed application of the valuation methods used in the Kane Reece Study and Sun Fire Study, and also considering all the subsequent filings on valuation, we find that the $1.82 estimate likely overstates the true value of this spectrum, and the $1.25 estimate likely understates the true value.[684] Thus, neither end point in the reasonable value range likely represents the best point estimate for this value. We identify a best point estimate by focusing on several recent comparable secondary market transactions.

288. We believe the Verizon Wireless application of an EV-based calculation results in an uncertain and likely overestimated value of the spectrum license. A significant degree of uncertainty arises for several reasons. First, the EV approach inherently requires making a large number of assumptions. This is particularly true when, as is the case with the Kane Reece Study, enterprise value is estimated by a mix of "income" (or discounted cash flow) and "market" approaches. Thus, for example, under the market approach, the EV and license value estimates are very sensitive to the stock prices taken as starting points,

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[679] *See*, for example, Shannon P. Pratt, Robert F. Reilly, and Robert P. Schweihs, *Valuing a Business: The Analysis and Appraisal of Closely Held Companies*, Fourth Edition, McGraw-Hill (2000), at 437-448.

[680] The CTIA Filing, made at a time that the Cingular acquisition of certain NextWave spectrum was only "Proposed/Reported," uses a $1.5 billion purchase price, citing as sources the New York Times and three analyst reports (Bear Stearns 6/12/03, Credit Suisse/First Boston (5/28/03, and Goldman (5/28/03). As the Sun Fire Study points out (at 31, footnote 73), the correct purchase price was later disclosed to be $1.4 billion. *See* Cingular Press Release, Aug. 5, 2003 (http://www.cingular.com/about/latest_news_/03_08_05).

As the Sun Fire Study also points out (at 31), the CTIA Filing additionally errs in not recognizing that Cingular is acquiring twenty megahertz, rather than ten megahertz in two cities. Finally, we note that the CTIA Filing's estimate of population living in the areas included in the transaction differs slightly from the official U.S. Census figures for 2000, which we use below in determining the price per MHz-pop for this transaction.

[681] Kane Reece Study at 21 and Exhibit B.

[682] *Id*. at 26 and Table 2.

[683] *Id*. at 40 and Exhibit F.

[684] *See* ¶¶ 288-292 *infra*.

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and stock prices in this sector have fluctuated significantly over the recent past.[685] In addition, the calculations rely upon a mix of market values (such as the current equity prices) and book values (such as the values placed on firm debt and many tangible assets). Combining market and book figures in this way might result in overstating or understating the residually determined value of spectrum, depending on exactly how the various book values differ from true market values. Further, under the income approach, the result is also dependent on a large number of assumptions such as forecasts of future streams of revenues and costs, the choice of the appropriate discount rate to employ, and the choice of long term, or "terminal," growth rate to employ in the analysis. The exact assumptions made can greatly influence the outcome of an analysis,[686] and yet it can be difficult to determine the appropriate choices or justify choices made as most reasonable. Finally, as shown in a study submitted by Nextel, when the Kane Reece Study approach is applied to each wireless company individually, the result is a wide range of estimates of spectrum license values.[687] These estimates vary from a low of $0.41 per MHz-pop for T-Mobile to a high of $3.74 for Verizon Wireless. Nextel argues "Across all companies in its report, the Kane Reece values for spectrum vary by a factor of nearly nine. These wide variations in spectrum values further demonstrate that Kane Reece's methodology is unreliable."[688] Because the appropriateness and impact of the many detailed assumptions is unclear, and because of the great variation in resulting spectrum value estimates across companies, we believe there is considerable uncertainty about the resulting average license value estimate resulting from the EV based approach in this instance.

289. More significantly, we believe Verizon Wireless's application of the EV method introduces an upward bias to the valuation of the spectrum licenses. This occurs in two basic ways. In part, EV itself is overstated, and this overstatement flows through to overstate license value. And in part, too little value is subtracted from EV, so that again license value is overstated. One step in the analysis likely causes an overstatement in enterprise value. This occurs with the use of a "control premium" adjustment when computing the EV of the publicly traded firms in the group Verizon Wireless analyzes. That is, after determining the market capitalization of each of these firms (essentially the stock price times the number of outstanding shares), the Kane Reece Study increases the totals by thirty percent. This is said to produce the value that results from the ability to exert control of the assets and firm's operations.[689] Applying a control premium is standard and appropriate when, for example, attempting to value an entire corporation in order to determine a reasonable acquisition price for the entire firm.[690] The Sun Fire Study and the American Appraisal Report argue that it is inappropriate to employ a control premium when calculating the EV of an entire industry or when placing a value on an asset, the spectrum rights.[691] We agree with Nextel that a control premium adjustment is inappropriate when valuing assets such as spectrum

[685] Morgan Stanley, "Wireless Operator Valuation Table," Dec, 19, 2003, at 1.

[686] *See* the analysis by American Appraisal Associates (American Appraisal Report), submitted in Nextel ex parte filing, May 6, 2004, at 6-7.

[687] "Economic Analysis of the Kane Reece Spectrum Valuation," by Gregory L. Rosston, submitted in Nextel ex parte filing, Mar. 18, 2004, Exhibit A.

[688] *Id*. at 14.

[689] *See*, for example, Frank C. Evans, Evans and Evans, Certified Public Accountants, "Valuation of Companies: The Practical Aspects," Copyright 1994, American Management Association, at 100-105.

[690] "Source of Control Premium Data & What It Doesn't Tell Us," Mercer Capital, Transaction Advisor, Vol. 11, No. 3, 1999, available at http://www.bizval.com/publications/articlelibrary/SourceControlPremiumData.htm.

[691] Sun Fire Study at 24, American Appraisal Report at 8-9.

licenses. The valuation/appraisal literature associates the use of control premiums with firm ownership values, not asset values.[692]

290. Even if the Verizon Wireless analysis has computed EV correctly, we believe it likely subtracts away too little of this value, and so attributes too much of the measured EV to the residual, the spectrum licenses. First, and most fundamentally, it is well recognized that the value of ongoing businesses may—and often does—exceed the sum of the values (or costs to replace) the capital stock.[693] It has been estimated that market values for U.S. industries in general have significantly exceeded the replacement costs of their assets in recent years.[694] Second, other intangible elements may have value and thus should also be subtracted from EV. The Kane Reece Study does not account for the fact that market values may exceed the sum of the asset values, and it makes an adjustment for only one other intangible asset, the value of the current customer base. In so doing, it does not address factors such as brand equity firms may possess or any unique assets firms may have that create value (such as a uniquely strong management team or an important patent). At least one study has found, however, that in the mobile wireless sector intangible assets arising from advertising expenditures and research and development expenditures are important and statistically significant in explaining firms' market values.[695] Thus, the EV approach as applied by Verizon Wireless would be expected to leave as the residual not only the value of the spectrum licenses, but also the value of other important intangible contributors to firm value, as well as the synergies created by bringing all the assets together in an ongoing business. As a result, this approach attributes to the spectrum licenses value that is due to other critical factors and accordingly overstates the value of these licenses.

291. Turning to the Nextel's $1.25 per MHz-pop estimate, we find this likely understates the true value of a ten megahertz spectrum license. Nextel argues that the two comparable secondary market transactions employed by CTIA—the Verizon Wireless acquisition of fifty Northcoast licenses and the Cingular acquisition of NextWave spectrum in thirty-four cities—overstate the average value of a nationwide license because both of those transactions principally involved large markets.[696] Therefore, Nextel derives its figure using a "tiered pricing model" that relies on three comparable sales benchmarks: the Verizon Wireless/Northcoast acquisition and two other single-license transactions (Pittsburgh, PA and Lebanon, NH). This model, in effect and in intent, places a lower price per MHz-pop on spectrum in smaller cities. We find, first, however, as argued by Verizon Wireless, that this approach places undue reliance on the two single-license sales, and that this is particularly worrisome when those sales may not have been true arms-length transactions.[697]

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[692] *See* Pratt, Reilly, and Schweihs at 25-26, 48-49, and 354-361; "Goodwill Hunting: Part II," Mercer Capital, Transaction Advisor, Vol. 4. No. 3, 2001, available at http://www.bizval.com/publications/articlelibrary/GoodwillHuntingPart2.htm.

[693] *See,* for example, James Tobin, Money Credit and Capital, McGraw Hill (1998) at 147-155. The ratio of the market value of the firm to the replacement costs of its assets is known as "Tobin's q."

[694] That is, Tobin's q has been estimated as significantly greater than one. *See* "A New Bull, or a Bear Market Rally?" by David Edwards, in TheSreet.com, June 3, 2003, available at: http:/thestreet.com/funds/managerstoolbox/10090875.html.

[695] "Measuring and Valuing Intangible Capital in the Wireless Communications Industry," by Mark Klock and Pam Megna, The Quarterly Review of Economics and Finance, 40 (200) 519-532.

[696] Sun Fire Study at 22, 26-27, 32-33.

[697] Kane Reece Study at 18-19.

292. Second, while we agree with Nextel in principle that the average value derived from the comparables used by CTIA need not equal the value of a nationwide license, and that some geography-based value adjustment may be required, we find that in this instance the tiered pricing model likely results in an exaggerated downward adjustment. We have investigated the difference in value between the average of each of the comparable transactions and a true nationwide average by reviewing data from Auction No. 11, for the D, E, and F Block PCS licenses, which closed in January, 1997. This auction provides the most recent complete set of data on how PCS license prices vary across geographic areas.[698] Specifically, we have compared the average price, in terms of dollars per MHz-pop, that the license areas encompassed in each comparable transaction sold for in Auction No. 11 to the overall average for all licenses in that auction. We find no support for a downward adjustment to $1.25 per MHz-pop based on variations in value across geographic areas.[699]

293. Having concluded that the $1.82 estimate is higher than, and the $1.25 estimate lower than, the best point estimate of the FMV of the G Block, we compute the best estimate as follows. Given the problems with application of the EV-based approach, we find that an approach based on comparable spectrum sales is most reliable. Two recent benchmark secondary market transactions—those identified by CTIA—provide strong evidence of the current FMV of the 1.9 GHz spectrum. These are:

- the December 2002 purchase by Verizon Wireless of fifty Northcoast licenses at a price equating to approximately $1.58 per MHz-pop; and
- the Fall 2003 agreement to purchase by Cingular Wireless of NextWave spectrum in thirty-four cities at a price equating to approximately $1.66 per MHz-pop.[700]

294. These two transactions are compelling benchmarks for several reasons. Both are relatively recent, and represent arms-length transactions. Both transactions essentially involve spectrum licenses alone, as opposed to spectrum bundled with other assets, thus obviating the need to estimate the proportion of the purchase price that represents the value of the spectrum. Finally, since both transactions involve a relatively large number of licenses spanning a representative range of small to large markets, they should reasonably reflect the value of a nationwide license.

295. More recently, Qwest Communications and Verizon Wireless agreed to another transaction involving a large number of licenses. Verizon Wireless will acquire from Qwest sixty-two spectrum licenses in fifty-seven areas in Qwest territory for $418 million. While this transaction does not solely involve spectrum licenses, however it appears to place an average value on the licenses themselves

[698] While these auction data are seven years old, and are not useful for estimating the absolute value of spectrum today, we are using them here only to estimate the relative level of prices across geographic areas. While different geographic areas, of course, have grown at different rates over the last seven years, we do not believe that the relative pattern of values across licenses today is significantly different from that at the time the auction closed.

[699] While we find the Auction No. 11 evidence sufficient to conclude that the estimate resulting from the tiered pricing model is too low, we do not attempt to use Auction No. 11 results to make any alternative value estimates. Differences among the three auctioned license blocks in how prices varied across license areas suggest that the Auction No. 11 results should not be relied upon to produce an adjustment to the result of the tiered pricing model.

[700] Throughout our analysis here of secondary market transactions, where we compute per MHz-pop values we employ population counts for the appropriate geographic areas from the 2000 Census. *See* the data at: http://wireless.fcc.gov/auctions/data/maps/cntysv2000_census.xls

of about $1.36 per MHz-pop.[701] While this is somewhat lower than our other two comparables, we believe it is consistent with them given the different mix of markets included in this transaction: a greater preponderance of small and mid-sized markets, and a lesser preponderance of very large metro areas. In general, licenses for large metropolitan areas are more highly valued per MHz-pop than licenses for the smaller cities and rural areas.

296. Secondary market transactions that involve only small numbers of licenses are more likely to reflect values that are specific to local conditions, and therefore may be inappropriate models for valuation of nationwide spectrum. Notwithstanding the limited data provided by such transactions, two other recently announced agreements also provide some relevant evidence of current value. First, in late May of this year, as part of a larger transaction between the two firms, it was announced that T-Mobile USA will acquire from Cingular Wireless ten megahertz of PCS spectrum in three BTAs, San Francisco-Oakland-San Jose, Sacramento, and Las Vegas. The agreed price is $180 million,[702] which corresponds to approximately $1.67 per MHz-pop. Second, on July 8 NextWave Telecom, Inc. sold three PCS licenses for a total of $973.5 million.[703] A ten megahertz license in the New York BTA was purchased by Verizon Wireless for $4.74 per MHz-pop. And ten megahertz licenses in two Florida BTAs were purchased by MetroPCS: Sarasota-Bradenton for $1.37 per MHz-pop and Tampa-St. Petersburg-Clearwater for $1.33 per MHz-pop. While not yet consummated, both of these transactions appear to be firm, arms-length transactions between willing buyers and sellers.

297. We view all these more recently announced transactions as confirming our two primary comparables, which yield an average value of $1.62 per MHz-pop. However, we believe that this value may understate the current FMV of a nationwide 1.9 GHz spectrum because a nationwide license—or a near-nationwide license that encompasses the great majority of areas where mobile telephony service coverage would be desired—may command a small value premium. We do not expect such a premium to be large, because today many likely buyers of spectrum already hold large spectrum footprints, and may be most interested in filling holes in those footprints or adding to capacity in local areas. Nonetheless, some firms would likely still see added value in having a nationwide license for a single set of frequencies, for example because such a license could enable less costly equipment development and deployment. Accordingly, we make a five percent upward adjustment in the average price of our primary comparable transactions. Our final point estimate of the value of the 1.9 GHz spectrum is $1.70 per MHz-pop, or approximately $4.86 billion.[704]

b. Offsets

298. Having determined the value of the 1.9 GHz spectrum, we must balance it against the costs that will be incurred by Nextel pursuant to this *Report and Order*. We conclude that the following categories of costs to Nextel merit compensation, and therefore should be offset against the above-determined value of the 1.9 GHz spectrum: (1) Nextel's costs to relocate incumbents within the 800 MHz

[701] "Sale of Wireless Assets Positive for both VXW and Q," Analyst Comment, Goldman Sachs, July 2, 2004.

[702] "T-Mobile USA to End Network Venture with Cingular and Acquire California/Nevada Network and Spectrum," Press Release, May 25, 2004.

[703] "NextWave Auction Attracts Winning Bids Totaling $973.5 Million," News Release, NextWave Telecom, July 8, 2004.

[704] For the calculation of the total dollar amount, we use the total year 2000 population for the United States including possessions, or 285.62 million.

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band, including payments Nextel has made for the services of the Transition Administrator; (2) Nextel's own relocation costs; (3) Nextel's costs to clear the 1.9 GHz spectrum; and (4) the net value of the 800 MHz spectrum that Nextel will relinquish for public safety use.[705] We also assign *de minimis* value to the 700 MHz Guard Band spectrum that Nextel will relinquish.

(i) Relocation and Band-Clearing Costs

299. *Cost to Relocate 800 MHz Incumbents*. In the Consensus Parties proposal, Nextel has estimated the cost of relocating public safety, CII, and other 800 MHz incumbents at $850 million.[706] Nextel asserts that these costs should be credited to Nextel because they are integral to accomplishing band reconfiguration without imposing a prohibitive cost burden on public safety.[707] Verizon Wireless argues that Nextel should not receive credit for the cost of relocating other 800 MHz licensees on the grounds that these are "necessary costs of doing business" to remedy interference that has been caused by Nextel itself.[708] Verizon also asserts that Nextel has not provided documentation to support its $850 million relocation cost estimate.[709]

300. We reject Verizon's argument that Nextel should not receive credit for these relocation costs. First, we disagree with Verizon's premise that Nextel is legally responsible as the sole "cause" of the interference problem being remedied, and therefore could be compelled to pay these costs without compensation. The record in this proceeding has documented that while Nextel has been implicated in great number of interference incidents, the interference problem has not been not "caused" by any single party—Nextel, cellular, or public safety—but rather has been caused collectively by the proximity of all of these parties to one another in the 800 MHz band, even though all parties are operating in compliance with Commission rules. Moreover, Nextel is not only bearing the entire cost of solving the problem, but is supporting the optimal solution to the problem—band reconfiguration—even though this is considerably more costly to Nextel than other, less optimal solutions, such as exclusive reliance on Enhanced Best Practices. Based on these considerations, crediting Nextel for the cost of relocating other incumbents is consistent with equitable principles and furthers the public interest goals of this proceeding in achieving a comprehensive long-term solution to the interference problem. Finally, we do not require documentation of Nextel's estimate, as Verizon contends, because the offset will be calculated based on actual relocation costs, not estimated costs, as verified by the Transition Administrator.

301. *Nextel's Own 800 MHz Relocation Costs*. Nextel identifies two categories of costs associated with relocation of its own operations in the reconfigured 800 MHz band. First, to protect non-cellular systems below 816/861 MHz from OOBE, Nextel will install improved filters for all of its 800 MHz base station transmitters to achieve a sharper OOBE roll-off.[710] Nextel previously projected these filter costs at $150 million, but in conjunction with the revised band plan under which Nextel will relinquish an additional two megahertz of spectrum at 816-817/861-862 MHz, Nextel has revised its

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[705] We provide these offsets pursuant to our authority under Section 4(i) of the Act. 47 U.S.C. § 154 (i). *See* ¶¶ 75-76 *supra.*

[706] *See* Supplemental Comments of the Consensus Parties at 5-6.

[707] *See* Comments of Nextel to Supplemental Comments of the Consensus Parties at 15-17.

[708] Verizon June 30 ex parte at 3-4. *See also* Verizon June 9 ex parte at 6.

[709] *Id.* at 4.

[710] Nextel July 27 ex parte at 1-2. *See* n. 401 *supra.*

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projected filter costs to $407 million.[711] Second, to implement band reconfiguration, Nextel will need to relocate its own operations to new channels. In some instances, this will require Nextel equipment to be retuned more than once in order to provide a seamless transition for other licensees.[712] Nextel estimates the cost at $400 million. Nextel seeks credit for both of these cost categories, while Verizon contends that Nextel should be required to bear these costs without credit or compensation.[713]

302. Verizon's argument that Nextel should not receive credit for its own relocation costs also fails. The costs that Nextel is incurring to relocate its own system are just as integral to the optimized solution of band reconfiguration as are the costs of relocating other 800 MHz licensees. The installation of new filters in Nextel's system will provide needed interference protection to public safety, CII, and other 800 MHz licensees on the additional spectrum that is being provided to them by Nextel under the new band plan. With respect to retuning costs, Nextel is paying for multiple relocations of its own operations to ensure that other incumbents can operate seamlessly while band reconfiguration is taking place. Thus, giving credit to Nextel for these costs is not tantamount to paying a "polluter" to stop polluting, as Verizon contends.[714] Instead, it is recognizing that Nextel—alone among the parties to this proceeding—is paying to support a comprehensive solution to a collective "pollution" problem even though this will require more expensive changes to its own system than would otherwise be required. We conclude that Nextel should be entitled to credit for these costs, as verified by the Transition Administrator. These costs will include payments Nextel has made for the services of the Transition Administrator.

303. *Cost of Clearing 1.9 GHz Spectrum*. As discussed in ¶¶ 239-263, *supra*, as a condition of receiving 1.9 GHz spectrum rights, Nextel is required (1) to pay UTAM for the cost of clearing the 1910-1915 MHz band and (2) to clear BAS from the 1990-2025 MHz band within thirty months. Nextel seeks credit for these costs as an offset against the value of the 1.9 GHz spectrum.[715] Verizon objects to this offset on the same grounds as the 800 MHz relocation cost offsets discussed above. In addition, Verizon argues that Nextel should not receive credit for clearing BAS from the entire 1990-2035 MHz band when clearing of the 1990-1995 MHz band is all that is required for Nextel's purposes.[716]

304. We conclude that Nextel should receive credit for all BAS relocation costs, less any MSS-reimbursed expenses incurred prior to the end of the thirty-six month reconfiguration period, when the

[711] Nextel June 21, July 27 ex partes. Nextel states as a result of giving up the additional 2 megahertz, it will require more expensive filters so that it can operate closer to the band edge while still protecting the relinquished spectrum from OOBE. In addition, Nextel will need to install filters at a greater number of base station sites than under the previous plan. Nextel July 27 ex parte at 2.

[712] Nextel July 27 ex parte at 2. Although Nextel will ultimately relocate from the current General Category and interleaved channels to the old NPSPAC block, it will not do so directly. Instead, it will need to relocate many of its operations to temporary channels in the 800 MHz band or to spectrum in the 900 MHz band while it is clearing the General Category block and moving non-Nextel General Category licensees to channels it has vacated in the interleaved bands. Only after the new NPSPAC block is cleared of incumbents and NPSPAC operations can be relocated there will Nextel be able to move its operations back from the 900 MHz band to the old NPSPAC block.

[713] Nextel June 21 ex parte at 2; Verizon June 30 ex parte at 3-4.

[714] Verizon June 9 *ex parte* at 6.

[715] MSTV/NAB/Nextel May 3, 2004 Ex Parte at 4; Nextel June 21 *ex parte* at 2.

[716] Verizon June 9 *ex parte* at 6.

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offsets will be calculated.[717] First, the value we have determined for the 1.9 GHz spectrum is based on comparable transactions that involved unencumbered spectrum. Because the 1.9 GHz is encumbered, however, it is appropriate to consider the costs of clearing the band as an offset against this value. Second, we disagree with Verizon's contention that Nextel should not receive credit for the full cost of clearing BAS from the 1990-2025 MHz band. Although Nextel will only have spectrum rights in the 1990-1995 MHz portion of this band, as discussed in ¶¶ 251-263, *supra*, we are requiring Nextel to clear the entire band as a condition on those spectrum rights. We impose this requirement because it promotes responsible use by Nextel of the 1.9 GHz spectrum we are granting as part of our solution to the public safety interference problem, and because it provides a rapid and efficient band-clearing solution at 1.9 GHz that benefits all parties—Nextel, BAS, MSS, other prospective users of the band above 1995 MHz, and the public. Having required Nextel to incur these costs as an integral component of this order, we conclude that it is reasonable to allow Nextel to obtain credit for these same costs. Moreover, there is no risk in our decision of double recovery by Nextel because it cannot claim credit for any BAS relocation expenses for which it seeks or obtains reimbursement from MSS licensees.

305. We recognize that giving Nextel credit for the costs it incurs in clearing the 1.9 GHz band, differs from the Commission's usual practice of auctioning spectrum "as is," *i.e.*, a typical auction winner acquires spectrum rights subject to encumbrances such as incumbent users. We decline to take the "as is" approach in the instant situation, however, because the comparable transactions used above to determine the value of the 1.9 GHz band involved unencumbered spectrum. Thus, we believe it more accurate to grant Nextel credit for the verifiable costs of clearing the 1.9 GHz band instead of incorporating an estimate of these costs into our spectrum valuations.

306. *Combined Relocation and Band-Clearing Costs.* Nextel has estimated the cost of relocating 800 MHz incumbents at $850 million, its own relocation costs (retuning and additional filters) at $807 million, and the cost of clearing or relocating 1.9 GHz incumbents (UTAM and BAS) at $527 million.[718] If these estimates prove to be accurate, Nextel will be credited with combined offsets for these costs totaling $2.184 billion against the value of the 1.9 GHz spectrum. However, it is unnecessary to rely on Nextel's estimate, because the final offsets will be based on actual relocation and band-clearing costs incurred by Nextel, as verified by the Transition Administrator at the conclusion of the thirty-six month transition period for 800 MHz band reconfiguration. Thus, if the combined relocation and band-clearing costs prove to be higher than Nextel's estimate, Nextel will receive a correspondingly larger offset; similarly, if its costs are lower than this estimate, the offset will be correspondingly lower.

(ii) 800 MHz Spectrum Relinquished to Public Safety and Other 800 MHz Incumbents

307. As noted above, Nextel is relinquishing all of its spectrum in the 800 MHz General Category and interleaved bands, and two megahertz of spectrum at 816-817/861-862 MHz from the Upper 200 SMR channel block, for relocation and use by public safety and other non-ESMR incumbents. At the same time, once band reconfiguration and relocation are complete, Nextel will hold the rights to the six megahertz of contiguous spectrum in the current NPSPAC band (821-824/866-869 MHz). Nextel states that through its relinquishment of 800 MHz General Category and interleaved spectrum, it is giving up an average of 8.5 megahertz of bandwidth, resulting in an average net gain of 2.5 megahertz to public

[717] In the event that Nextel were to incur any BAS-related relocation expenses after the thirty-six month reconfiguration period, they are outside the scope of this proceeding and Nextel may not claim credit for them, under the band clearing expense offset process we have established herein.

[718] Nextel June 21 ex parte at 2.

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safety.[719] Combined with the two megahertz of spectrum that Nextel is giving up from its spectrum holdings in the Upper 200 block, the average net amount of spectrum being relinquished by Nextel is 4.5 megahertz.[720]

308. Nextel's relinquishment of these spectrum rights to public safety accomplishes an important public interest objective of this proceeding by increasing the amount of 800 MHz spectrum available for public safety use. Parties to this proceeding differ, however, on whether it also imposes a cost on Nextel, because the General Category and interleaved spectrum that Nextel is relinquishing is non-contiguous, while the NPSPAC band is contiguous. Verizon contends that Nextel's gain of rights to contiguous 800 MHz spectrum exceeds the value of the rights to non-contiguous 800 MHz spectrum being relinquished by Nextel.[721] Thus, Verizon contends that Nextel's exchange of spectrum rights in the 800 MHz band constitutes a windfall gain, notwithstanding the net loss of bandwidth. Nextel, on the other hand, contends that there is no difference in the per-megahertz value of the non-contiguous spectrum rights it is relinquishing and the contiguous spectrum rights it is gaining, so that the net loss of bandwidth imposes a substantial net cost on Nextel.[722]

309. As discussed more fully below, we do not agree with Verizon's contention that Nextel will realize a windfall gain from the net loss of spectrum rights at 800 MHz. While we conclude that Nextel will realize some technical efficiency benefit from being able to operate its network on contiguous 800 MHz spectrum, that benefit is relatively small and does not translate into a windfall for Nextel. We further conclude that the gain that Nextel will realize from the exchange of non-contiguous for contiguous spectrum rights at 800 MHz is more than offset by the total value of the 800 MHz spectrum rights being relinquished by Nextel, and the fact that Nextel will be unable to fully utilize the additional contiguous 800 MHz spectrum until the end of the transition. On balance, the result is a net cost to Nextel—though not as great a cost as Nextel contends—for which compensation is appropriate.

310. Verizon argues that the exchange of spectrum at 800 MHz is a windfall for Nextel based on the disparate valuations of contiguous and non-contiguous spectrum rights presented in the Kane Reece report. First, the Kane Reece report uses the same "enterprise valuation" method that Kane-Reece applied to the 1.9 GHz spectrum to value the rights to the contiguous six-megahertz NPSPAC band at $1.82/MHz-pop, or about $3.2 billion. Then, using an engineering analysis that compares non-contiguous spectrum used for mobile voice and data against contiguous spectrum in a CDMA 1xRTT use, the Kane-Reece report values the non-contiguous spectrum rights given up by Nextel at $.45/MHz-pop, or about $.9 billion—approximately twenty-five percent of the value Kane-Reece claims for rights to contiguous spectrum.[723] Combining these two figures, the Kane-Reece report asserts that Nextel will realize a $2.3 billion net benefit from the exchange of spectrum rights at 800 MHz.[724]

311. We believe Verizon's analysis is unpersuasive in several respects. First, Verizon asserts that Nextel will derive significantly increased value from exchanging contiguous for non-contiguous

[719] *See* Nextel Reply Comments at 7. *See also* Consensus Parties Reply Comments at 18.

[720] Nextel June 9 *Ex Parte* at 2.

[721] *See* Kane Reece Study at Table 7; Kane Reece Study II at 2.

[722] *See* Sun Fire Study at 27-28.

[723] *See* Kane Reece Study at 43-52.

[724] *Id.* at 42, Table 7.

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spectrum at 800 MHz because contiguous spectrum affords flexibility to use wideband technologies, such as CDMA, that cannot be deployed on non-contiguous spectrum. In Nextel's case, however, such flexibility is more theoretical than real. The record indicates that, as a practical matter, Nextel is unlikely to abandon its iDEN network and switch to wideband technology as a result of this exchange of contiguous for non-contiguous spectrum.[725] Given Nextel's existing investment in iDEN and its large customer base, it is more cost-effective for Nextel to extend its existing network into the additional six megahertz than to switch to an alternative technology such as CDMA, which would be very costly and time-consuming for Nextel and would impose significant burdens on its customers. In addition, to ensure continued service to its twelve million iDEN customers, Nextel will need to use the six megahertz for added spectrum capacity in its system to compensate for the lost capacity associated with spectrum rights being relinquished to public safety pursuant to rebanding. Thus, while we agree with Verizon that under most circumstances, contiguous spectrum offers more technical flexibility and is more highly valued by the marketplace, we believe the analysis here must focus on the practical effect of this specific exchange of spectrum rights on Nextel's existing network and service. In this context, the highest-value use that Nextel is likely to derive from the six megahertz it will acquire is to use it for iDEN expansion. This would not create a significant increase in value for Nextel because iDEN does not require contiguous spectrum.

312. For similar reasons, we find that Verizon's analysis understates the value of the non-contiguous spectrum rights being given up by Nextel. While the market value of non-contiguous spectrum is generally lower than that of contiguous spectrum, Verizon's analysis does not sufficiently account for Nextel's highly effective use of iDEN technology to maximize the capacity that it derives from non-contiguous spectrum. Using iDEN, Nextel can and does provide interconnected mobile voice and data at current-generation speeds on the spectrum it currently uses.[726] In fact, Nextel has been able to achieve capacity and throughput levels that are superior to many providers that operate on contiguous spectrum. Therefore, from a technology perspective, Nextel does not gain significant new capability to provide these services as a result of converting from non-contiguous spectrum to contiguous spectrum in the 800 MHz band.[727]

313. While we conclude that Verizon has not taken Nextel's efficient use of non-contiguous spectrum into account, we do not agree with Nextel's contention that its use of iDEN means that non-contiguous and contiguous spectrum rights should be valued equally. Even in an iDEN configuration, Nextel will realize some increase in technical efficiency as a result of using contiguous spectrum. For example, moving to contiguous spectrum will give Nextel somewhat more flexibility to optimize frequency reuse in its iDEN network, and Nextel will have fewer constraints on spectrum use because once relocation is complete, the contiguous band will be cleared of non-Nextel incumbents. Because Nextel has not taken these variables into account in its valuation of the 800 MHz spectrum it is relinquishing, we have conducted our own analysis to determine the appropriate offset for contiguous and non-contiguous spectrum.

314. *Contiguous Spectrum at 800 MHz.* We start by estimating the value to Nextel of the spectrum rights to the six megahertz of contiguous spectrum currently occupied by NPSPAC. We believe that Verizon's proposed market valuation of the six megahertz at $1.82 MHz-pop, for a total of $3.2 billion, is overstated. This valuation figure is derived using the same "enterprise valuation" method that

[725] *See* Rosston Study at 7-9.

[726] *See* Sun Fire Study at 17.

[727] *See* Letter dated Dec. 19, 2003 from Regina Keeney, Esq. Counsel for Nextel to Michael J. Wilhelm, Esq., WTB at 16. *See also* Nextel Communications, Inc. Proposed Spectrum Swap: Working Through the Noise, *UBS Investment Research Report* dated April 15, 2004 at 6 (*April 15 UBS Report*).

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Verizon uses to value the 1.9 GHz spectrum. As noted above, we find that this method results in an inflated value for the 1.9 GHz spectrum, and accordingly, it overstates the value of 800 MHz spectrum to at least an equal degree.

315. We believe that our above-determined $1.70/MHz-pop valuation of the 1.9 GHz spectrum represents a more appropriate baseline for determining the value of the contiguous 800 MHz spectrum being acquired by Nextel. Although Nextel asserts a higher value for 800 MHz spectrum (both contiguous and non-contiguous) based on propagation characteristics, based on our analysis of comparable sales discussed above, we have not found that this factor adds appreciable value to 800 MHz spectrum in comparison to 1.9 GHz spectrum. Moreover, to the extent that it may add value, there are other factors that tend to cancel out any such difference as applied to the 800 MHz spectrum that Nextel will acquire. First, we assume that the market value of six megahertz of spectrum would not be proportional on a per-megahertz basis to the market value of ten megahertz of spectrum. Where we have established new bands for advanced wireless services, we have never established licensing blocks smaller than ten megahertz. In addition, a six megahertz block provides no more capacity than a five megahertz block for the typical CDMA configuration based on 1.25 MHz channels, *i.e.*, only four channels can be accommodated in either case.

316. We also find that an offset should be made against the six megahertz of contiguous 800 MHz spectrum that Nextel is gaining because it is also relinquishing two megahertz of contiguous spectrum at 816-817 MHz/861-862 MHz. This reduces Nextel's net gain of contiguous spectrum from six megahertz to four megahertz. We also make an adjustment for operational restrictions that Nextel is accepting under this order at the new lower edge of its contiguous 800 MHz ESMR spectrum. As described by Nextel, these restrictions will effectively limit Nextel's use of half a megahertz of its ESMR spectrum after rebanding.[728] Based on all of the above factors, we conclude that Nextel should be credited with the net gain of 3.5 megahertz of contiguous 800 MHz spectrum as opposed to six megahertz. Applying our baseline of $1.70/MHz-pop to this amount of spectrum on a nationwide basis yields an approximate value of $1.739 billion.[729]

317. *Non-Contiguous Spectrum at 800 MHz.* In addition to determining the value of contiguous spectrum at 800 MHz, we also must consider the value of the non-contiguous 800 MHz spectrum rights being relinquished by Nextel in the General Category and interleaved spectrum bands. Again, we are presented with a range of values by the parties. Verizon values Nextel's non-contiguous spectrum rights at $.45/MHz-pop—one quarter the value it ascribes to contiguous spectrum—which we regard as too low.[730] Nextel, on the other hand, argues for a valuation of $2.02/MHz-pop, which we regard as thinly supported, since it is based on a single secondary market transaction.[731] As in our discussion of

[728] Nextel June 4, 2004 *Ex Parte* at 3. This record statement by Nextel, as with all such statements in the record, is governed by Section 1.17 of the Commission's rules governing accuracy in written statements to the Commission. *See* 47 C.F.R. § 1.17.

[729] We make a small downward adjustment to the two megahertz offset because while Nextel is giving up all of its spectrum holdings at 816-817/861-862 MHz, our records indicate that there are seventeen EA licenses in this band licensed to parties other than Nextel, which these licensees are not required to relinquish. Accordingly, in calculating the MHz-pop (11.56 million pops) value of the two megahertz of spectrum given up by Nextel, we have deducted the population of those non-Nextel EAs from the calculation.

[730] Kane Reece Report at Table 7.

[731] *See* Sun Fire Study. The Sun Fire valuation is based on Nextel's acquisition of Chadmoore Communications. Although this transaction is a useful data point, we do not believe it provides sufficient support in and of itself for the valuation proposed in the report.

contiguous spectrum above, we focus our analysis of non-contiguous spectrum on its specific use in Nextel's existing network and service, which we consider more relevant than its hypothetical market value to other parties. In particular, we focus on the differences in technical efficiency that affect iDEN operation on contiguous versus non-contiguous spectrum. While these differences are difficult to quantify with precision, we have identified variables that we believe provide a reasonable measure of the increase in efficiency that Nextel will realize as a result of obtaining rights to contiguous spectrum, and which can be used to provide an appropriate discount on the value of the non-contiguous spectrum rights it is relinquishing. We set forth this analysis below.

318. *Interleaved Channels.* In the 809.75-816/854.75-861 MHz band, 80 SMR channel pairs totaling 4 megahertz of bandwidth are interleaved with public safety and B/ILT channels. The interleaved nature of the band plan puts twenty of these channels at band edges adjacent to non-SMR spectrum, including public safety spectrum. Using the OOBE limits applicable to EA licenses,[732] we assume that if Nextel is operating on one of its band-edge channels in the vicinity of an adjacent-channel non-SMR licensee, Nextel must limit use of its band-edge channel to avoid interference. We estimate that this reduces the utility of the band edge channels by fifty-percent, because they can still be used in areas where the adjacent non-SMR licensee is operating on a non-band-edge channel. A fifty-percent impairment to one quarter of the eighty interleaved channels translates to a 12.5 percent reduction in capacity—— effectively one out of every eight channels that Nextel is unable to use on interleaved spectrum but could use if the same channels formed a single contiguous block. Thus, we believe a 12.5 percent discount is an appropriate benchmark for the technical efficiency loss in an iDEN configuration from the spectrum being non-contiguous.

319. Applying this analysis to the interleaved spectrum rights being given up by Nextel, we have reviewed Nextel's interleaved spectrum holdings in eleven top US markets.[733] We believe that focusing on Nextel's spectrum holdings in top markets is appropriate because these are the markets where Nextel's gains and losses of spectrum are likely to have the most significant impact on efficiency. In less populated markets, efficiency gains from using contiguous as opposed to non-contiguous spectrum are less likely to translate into an economic benefit for Nextel, and the net loss of bandwidth is less likely to translate into an economic loss. In these markets, Nextel holds an average of 3.84 megahertz of interleaved SMR spectrum—in fact, in all but two of these markets, it holds all eighty available interleaved SMR channels.[734] On average, non-Nextel incumbents occupy only 0.08 megahertz of spectrum in the interleaved EA blocks licensed to Nextel. Because these non-Nextel incumbents must be protected by Nextel, we attribute an average of 3.76 megahertz of interleaved spectrum to Nextel.

320. To determine the value of this spectrum, we start with our $1.70/MHz-pop baseline value for contiguous 800 MHz spectrum, and discount it by 12.5 percent, resulting in a MHz-pops value of

[732] 47 C.F.R. § 90.683.

[733] For purposes of this review, we have analyzed eleven of the top fifteen US markets, excluding three border markets—Detroit, Seattle, and San Diego—as well as Atlanta. The border markets are excluded because under band reconfiguration, Nextel will both give up and receive smaller amounts of 800 MHz spectrum in these markets, so they are not representative. We have excluded Atlanta because Southern LINC may receive a significant portion of the contiguous 800 MHz spectrum in that market if it elects ESMR status. *See* ¶¶ 164-169 *supra.* Thus, it is also not a representative market.

[734] *See* Exhibits attached to Letter, dated July 26, 2002, from Michael K. Powell, Chairman, Federal Communications Commission to the Honorable W.J. (Billy) Tauzin, Chairman, Committee on Energy and Commerce, U .S. House of Representatives (*2002 Report to Congress*).

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$1.49.[735] In addition, because Nextel does not have full nationwide coverage on interleaved spectrum, we adjust the population coverage figure from 286 million to 234 million.[736] This results an approximate valuation of $1.309 billion for Nextel's interleaved spectrum rights.

321. *General Category.* The 806-809.75/851-854.75 MHz General Category band more closely resembles contiguous spectrum than the 800 MHz interleaved band, because it is not divided into interleaved band segments specifically assigned to SMR, public safety, and B/ILT. Instead, the General Category band is segmented into six contiguous twenty-five channel blocks licensed on an EA basis.[737] The vast majority of these EA licenses are held by Nextel. The band is not fully contiguous, because EA licensees must protect grandfathered site-based licenses in the General Category band. Thus, in markets where there are non-Nextel incumbents, Nextel must maintain a seventy-mile spacing for co-channel interference protection,[738] which will likely prevent Nextel from employing that channel in that same market. To account for this circumstance, we discount Nextel's spectrum rights in the General Category by the number of channels that it is prevented from using because of the need to protect co-channel incumbents. But in contrast to the interleaved band, we do not consider it necessary to discount Nextel's General Category spectrum rights holdings based on the presence of adjacent channel non-SMR incumbents. Most of the General Category incumbents are single-channel conventional systems rather than the five-channel trunked systems found in the interleaved block. In addition, over the past several years Nextel has purchased the spectrum rights of many of these incumbents in order to clear and consolidate its General Category spectrum rights. This affords Nextel more channels to choose from in the General Category band than it has in the interleaved band, even where incumbents in adjacent non-SMR bands that must be protected.

322. Using the same markets that we have reviewed to assess Nextel's interleaved spectrum rights, our licensing records indicate that Nextel holds an average of 6.9 megahertz of General Category spectrum in these markets (out of a total of 7.5 megahertz) through EA licenses. On average, non-Nextel incumbents occupy 1.78 megahertz of spectrum in the EA blocks licensed to Nextel in these markets.[739] Because these co-channel incumbents prevent Nextel from using all of its General Category channels in a particular market, Nextel is on average only able to use 5.12 megahertz of its total 6.9 megahertz of General Category spectrum. We therefore apply our $1.70/MHz-pop baseline to 5.12 megahertz, and use the same adjusted population figure (234 million) applied to the interleaved spectrum, resulting in an approximate valuation of $2.037 billion for Nextel's General Category spectrum rights.

323. *Combined 800 MHz Spectrum Offsets.* Offsetting the valuation amounts for Nextel's contiguous and non-contiguous spectrum rights as determined above results in an offset to Nextel of

[735] We recognize that the $1.70 MHz-pops value we have derived for 1.9 GHz is based in part on the nationwide nature of that spectrum block, whereas the 800 MHz spectrum being given up by Nextel does not cover 100 percent of the population. However, the coverage afforded by Nextel's 800 MHz interleaved and General Category spectrum is substantial: Nextel covers approximately 234 million pops (about eighty-one percent of the national population) and virtually all major markets. We regard this as sufficiently close to nationwide coverage that applying the same valuation is appropriate.

[736] *See* Kane Reece Study at 36, Table 5B. Kane Reece bases the estimate of Nextel's coverage on Commission licensing records.

[737] *See* 47 CFR § 90.615

[738] *See* 47 C.F.R. § 90.621.

[739] *See 2002 Report to Congress*.

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approximately $1.622 billion for its net loss of 800 MHz spectrum. We note that our calculation is based on a spectrum amount that is slightly higher than the 4.5 megahertz identified by Nextel as the average amount of 800 MHz net bandwidth it is giving up in the exchange.[740] However, we believe this amount also provides a reasonable basis for valuation if we were to use 4.5 megahertz as our benchmark. By relinquishing 4.5 megahertz of spectrum on a nationwide basis, Nextel is giving up forty-five percent of the bandwidth it is gaining at 1.9 GHz. But our $1.607 billion valuation of Nextel's relinquished 800 MHz spectrum is approximately one third of the $4.86 billion value we attribute to the 1.9 GHz spectrum. Thus, on a per-MHz basis, this spectrum has a value twenty-seven percent lower than the 1.9 GHz spectrum. We regard this as an appropriate discount to account for the non-contiguous nature of some of the spectrum and for the somewhat lower population coverage. Accordingly, in the financial reconciliation to be made by the Transition Administrator at the end of the band reconfiguration process, Nextel will receive a credit of $1.607 billion for its relinquishment of 800 MHz spectrum rights.[741]

(iii) 700 MHz Guard Band Spectrum

324. Nextel submits that it paid $350 million at auction for its 700 MHz Guard Band spectrum and thus should be credited that amount as part of the Commission's determination of compensation that is equitable to Nextel. We disagree. Given the slow development of services in the 700 MHz Guard Band, and the presence of incumbent television stations that may remain there beyond the period contemplated in the 700 MHz Guard Band licensees' business plans, there is no assurance that the Guard Band spectrum is worth today what Nextel paid for it in 2001. Moreover, as noted, *supra,* this spectrum cannot be made available to public safety in the near term and any potential long-term benefit it might afford to public safety or any value it might have in the marketplace is purely speculative at this point.[742] That said, however, we have no basis to conclude, absolutely, that the record in the future rule making proceeding will not inform us that the 700 MHz Guard Band spectrum may be used to benefit of public safety. The above factors considered, we have determined that Nextel's relinquishing its 700 MHz Guard Band spectrum—although its present worth cannot legitimately be quantified in monetary terms—it does add *de minimis* value to the overall bundle of spectral and financial benefits that Nextel brings to the table to justify giving it access to the 1.9 GHz spectrum. Thus, Nextel's surrender of this spectrum has weighed, albeit not heavily, in the equities that undergird our determination that the balance we establish today is equitable to all concerned.

5. Financial Aspects of Band Reconfiguration

325. The financial and other aspects of band reconfiguration will be conducted in a manner that provides optimum transparency and protection of affected licensees and the public. The first step in the process will be Nextel's delivery to the Commission the following set of documents. The items listed in the first three bullets below ensure that funds for band reconfiguration will remain available until the project is completed. The item in the fourth bullet governs companies related to Nextel such as Nextel Partners, which will be required to perform certain acts, *e.g.,* reconfiguration of their own facilities, in connection with band reconfiguration. Moreover, certain of such companies and, it is believed, Nextel,

[740] Our calculations based on the top markets show Nextel giving up an average of 4.96 megahertz in these markets rather than the 4.5 megahertz that Nextel identified based on a running average of all markets nationwide. Because the top markets are where demand for spectrum capacity is likely to be highest, we see them as providing an appropriate measure of the value of spectrum that Nextel is giving up, even if the average amount of spectrum on a nationwide basis is slightly lower.

[741] *See* ¶ 35 *supra*.

[742] *See* ¶ 278 *supra*.

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have operations in Canada and Mexico, which operations may have to be modified in order to derive suitable border band plans.[743] The document referenced in the fourth bullet binds all such entities to the obligations assumed hereunder by Nextel to the extent necessary to implement 800 MHz band reconfiguration, nationwide. Specifically,

- Within sixty days of the publication of this *Report and Order* in the Federal Register, Nextel shall comply with the following conditions precedent commencing any operations within the 1.9 GHz band:

    - Certify that it has obtained an irrevocable letter of credit, in all material respects identical to that contained in Appendix E hereto, which provides assurances that $2.5 billion will be available for band reconfiguration, notwithstanding the financial condition of Nextel, or its successor(s).

    - Specify on the initial letter of credit and any subsequent letters of credit, a Trustee, acceptable to the Commission, which shall draw upon and disburse funds in accordance with the terms thereof and the Transition Administrator's instructions. Further, on the occasion of a material breach by Nextel of its obligations hereunder, as declared by the Commission, said trustee shall receive the remaining balance of the letter(s) of credit to hold in trust and disburse in accordance with the terms of this *Report and Order*. Said funds shall be devoted exclusively to reconfiguration of the 800 MHz band except as otherwise provided in this *Report and Order*.

    - Deliver an opinion letter from counsel clearly stating, subject only to customary assumptions, limitations and qualifications, that in a proceeding under Title 11 of the United States Code, 11 U.S.C. Section 101 et seq. (the "Bankruptcy Code"), in which Nextel is the debtor, the bankruptcy court would not treat the Letter of Credit or proceeds of the Letter of Credit as property of Nextel's bankruptcy estate under Section 541 of the Bankruptcy Code. The scope of the opinion letter must also cover such other opinions as the Commission shall request. The opinion letter must contain detailed legal analysis of the basis of counsel's opinion. A draft opinion letter must be submitted for review and approval by the Commission's Office of General Counsel prior to issuance of the letter. Bankruptcy counsel, and, if applicable, counsel's firm, must have a Martindale-Hubbell rating of "A/V" and must satisfy the Commission in all other respects.

    - Supply a letter or letters, in content satisfactory to the Commission, from any and all parties having a financial or equitable interest in any existing or proposed 800 MHz system, whether in the United States, Mexico or Canada, and connected in any way to Nextel by way of being a subsidiary, partner, or otherwise; to the effect that such parties are bound to perform the obligations imposed on Nextel herein to the extent such obligations are necessary or desirable in the completion of reconfiguration of the

[743] Nextel Partners (Partners) is an affiliate of Nextel Communications, Inc. (Nextel.) Nextel holds about a thirty-percent non-controlling interest in Partners which is separately listed and traded on NASDAQ. Nextel and Partners have an agreement concerning the branding of Partner's service as Nextel and associated quality, marketing, switch sharing and related standards and provisions. Partners, an independent FCC licensee, was created for the express purpose of speeding the deployment of Nextel's iDEN service in secondary, tertiary and rural markets. Partners filed in this proceeding confirming its support of the Consensus Plan and agreement to contribute its spectrum to and participate in the 800 MHz realignment along with Nextel. Accordingly, Nextel's commitments include Partners' service areas as well.

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800 MHz band.

326. With this *Report and Order*, the Commission is hereby modifying the licenses of certain 800 MHz band licensees, as specified herein. As indicated above, once the details of the band reconfiguration become clear (*e.g.*, the specific relocation channel and any other necessary operating parameters are identified), affected licensees will file applications for further modification with the Commission, which will be acted upon by the Wireless Telecommunications Bureau under its delegated authority. As conditions precedent to Nextel's commencement of any operations under its 1.9 GHz licenses, however, (a) Nextel shall provide the documents specified in the previous paragraph within the required sixty day timeframe, (b) the Commission must approve these documents,[744] (c) Nextel must pay to UTAM the amount of required reimbursement specified in paragraph 249 *supra*; and (d) Nextel shall file such additional applications, notifications, *etc.* as the Commissions Rules may require. In addition, the 1.9 GHz licenses, which shall be for a ten-year term, are subject to the following license conditions:[745]

- Operations on the 1.9 GHz spectrum shall be discontinued in any EA region where Nextel fails to timely abate unacceptable interference to any 800 MHz public safety or CII system as described in ¶¶ 139-141, *supra*.

- Nextel must reconfigure the 800 MHz band within thirty-six months as described herein. If Nextel fails to meet the final benchmark, for reasons that Nextel could reasonably have avoided, the Commission will determine whether forfeitures should be imposed and/or whether Nextel licenses, including, but not limited to, its 1.9 GHz licenses, should be revoked.

- Nextel shall certify to the Commission that all BAS facilities have been relocated within 30 months after the effective date of this *Report and Order*. If Nextel fails to meet this benchmark, for reasons that Nextel could reasonably have avoided, the Commission will determine whether forfeitures should be imposed and/or whether Nextel licenses, including, but not limited to, its 1.9 GHz licenses, should be revoked.

- The 1.9 GHz licenses shall not be assigned to any person or entity who or which has not demonstrated to the satisfaction of the Commission that it will, and has the capacity to, assume all of Nextel's obligations hereunder.

327. The Transition Administrator will provide to the Commission a quarterly report, in form and substance satisfactory to the Commission, describing the progress of band reconfiguration. This report shall include a disclosure of the Transition Administrator's expenses and salary. Salary of Transition Administrator and staff shall be reasonable and customary with salary of employee having analogous responsibilities.[745A] Nextel shall pay the Transition Administrators salary and reasonable expenses within thirty days of the presentation of an invoice therefore and may not condition payment in any way nor may it delay or deny payment without prior Commission approval. "Reasonable expenses" will be determined according to standards provided by the Commission. Such standards shall be informed by expenses that are reasonable and customary with similar projects entailing similar responsibilities as those envisioned for

[744] We hereby delegate to the Wireless Telecommunications Bureau this approval authority.

[745] The expiration of the 1.9 GHz licenses shall be ten years from the date this *Report and Order* is published in the Federal Register. In the event that the Commission must revoke Nextel's license for failing to complete reconfiguration in a timely fashion, the Commission will provide Nextel a Special Temporary Authorization to allow its customers a reasonable amount of time to migrate to other CMRS providers.

[745A] *See* n. 510A, *infra.*

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the Transition Administrator.

328. Nextel shall keep accurate records of the labor and material reasonably expended or acquired in connection with clearance of the 1.9 GHz band. An annual audit of these expenses shall be made, at Nextel's expense, by an auditing firm satisfactory to the Commission. All Nextel claims for labor and equipment shall be at Nextel's actual cost, without markup.

6. Financial Reconciliation Process

329. As noted above, we seek to ensure that Nextel is treated equitably in facilitating 800 MHz band reconfiguration but does not realize an undue windfall.[746] To this end, we condition the grant of 1.9 GHz band spectrum rights to Nextel on its meeting the obligations imposed by this *Report and Order*, and on its payment to the U.S. Treasury of any difference between the value of the 1.9 GHz band spectrum rights and the net sum of: (a) the value of spectrum rights relinquished by Nextel, and (b) Nextel's costs incurred in reconfiguring the 800 MHz band and (c) Nextel's costs incurred in clearing the 1.9 GHz band.[747] In this regard, we recognize the importance of setting forth a procedural framework to determine whether Nextel must make a payment to the Treasury to cover any difference between the value of its credits and the value of spectrum rights in the 1.9 GHz band and to ensure that such payment flows to the Treasury in a timely and orderly manner. In this connection, we fashion certain procedural steps to afford certainty to this "true-up" process, while still providing Nextel with flexibility in the manner in which it effects any required payment. We also provide measures to ensure that funding is available for 800 MHz band reconfiguration throughout the nation, including the areas bordering Mexico and Canada. Overall we believe that the measures we detail below are reasonable and necessary to ensure that first responders and the public receive the full benefit of our realignment plan.

330. At the conclusion of the thirty-six month band reconfiguration process specified herein, but no later than six months thereafter—essentially no later than forty-two months after commencement of the band reconfiguration process—the following financial reconciliation will be made:

- Nextel will be allotted a $1.607 billion credit for relinquishing rights to an average of 4.5 megahertz of spectrum in the 800 MHz band.
- Nextel will provide the Transition Administrator an accounting of the funds spent:
  - to reconfigure its own systems in the 800 MHz band;[748] and
  - to clear the 1.9 GHz band of incumbents and to reimburse UTAM.
- Nextel will also provide the Transition Administrator an accounting of funds, if any, Nextel receives as reimbursement for clearing the 1.9 GHz band.
- The Transition Administrator shall provide an accounting of the funds spent to reconfigure the systems of incumbent operators in the 800 MHz band, including its own salary and expenses.[748A] This accounting shall include certifications from each relocated licensee that all

[746] *See* ¶ 212 *supra*.

[747] *See* ¶¶ 12, 34-35, 212 *supra*.

[748] *See* ¶¶ 298-323 *supra*.

[748A] *See* n. 510A, *infra.*

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necessary reconfiguration work has been completed and that Nextel and said licensee agree on the sum paid for such work.

- Upon compliance with the foregoing requirements, Nextel will be allotted appropriate credits.
- To the extent that those combined credits total less than the value of the 1.9 GHz spectrum, Nextel shall make a payment equal to the difference to the United States Treasury at the conclusion of the relocation process.
- Should a payment to the Treasury prove necessary, we direct the Wireless Telecommunications Bureau to release a *Public Notice* announcing the amount to be paid to the Treasury. Thirty days following release of such Public Notice, Nextel shall make such payment to the Treasury.
- Nextel may use monies separate and apart from the letter of credit to make such payment. However, should a balance remain on any letter(s) of credit after band reconfiguration has been completed, Nextel may elect to apply such excess funds to the payment to the Treasury.

331. We remain vigilant to our central purpose in this proceeding—alleviating interference to public safety—and therefore take steps to ensure that the security for funding reconfiguration remains available until the conclusion on the relocation process. Thus, the letter of credit shall remain open until the true-up process has been completed. At no time during the life of the letter(s) of credit shall the balance fall below $850 million. Nextel may terminate the letter(s) of credit only after band reconfiguration is complete and after the financial reconciliation process is complete, including any payments to the Treasury.

332. In the event that reconfiguration of the 800 MHz border areas is not completed at the end of the thirty-six month reconfiguration process due to circumstances outside of Nextel's control, the Transition Administrator shall estimate how much completing the reconfiguration will cost. Within thirty days of the completion of this estimate Nextel shall elect to either extend the life of the letter(s) of credit or secure a separate letter of credit to cover the costs of border area reconfiguration. The estimated cost of reconfiguring the 800 MHz band in the border areas shall be included as a credit in the computations described in paragraph 330 *supra.*

VII. SERVICE POOL CONSOLIDATION – THE PCIA PETITION

333. In the *NPRM*, the Commission sought comment on PCIA's petition for rulemaking to consolidate the B/ILT Pools in the 800 MHz and 900 MHz band.[749] The majority of comments received in response to PCIA's petition for service pool consolidation in the 800 MHz and 900 MHz bands were from utilities and other CII entities[750] most of which opposed consolidation.[751] Some CII interests argued that

[749] *See NPRM*, 17 FCC Rcd at 4917-18 ¶¶ 84-85.

[750] *See, e.g.,* Ameren Comments at 6; API Comments at 16-17; Cinergy Comments at 58-60; Entergy Comments at 53; Exelon Comments at 9; FL P&L Comments at 5; Scana Comments at 42.

[751] *See, e.g.,* API Comments at 16-17; Cinergy Comments at 58-60; Entergy Comments at 53; FL P&L Comments at 5; Scana Comments at 42; *but see, e.g.,* Ameren Comments at 6; Exelon Comments at 9; API Comments at 16-17 (noting, for reasons explained below, that API is not "strictly opposed" to the proposed consolidation of the two frequency pools).

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consolidation would hinder their access to needed spectrum,[752] because business radio users—with eligibility rules less stringent than those applicable to Industrial/Land Transportation users—would dominate a consolidated band.[753] Cinergy, Entergy, and Scana also opposed, for the same reasons, lifting the freeze on intercategory sharing.[754] Boeing averred that the current service pool division in the band and the freeze on intercategory sharing protects against the incursions of CMRS operations into Private Land Mobile Radio spectrum.[755] However, a contrary view was expressed by parties who argued that allowing CMRS operations would be beneficial to the extent that it affords additional flexibility in spectrum use.[756] Others support consolidation, *inter alia* because they believe it would promote spectrum-sharing.[757] One commenting party urged that we prohibit cellularized operation in the consolidated 900 MHz band lest the interference problem currently encountered by 800 MHz systems be replicated at 900 MHz.[758]

334. We are consolidating the 800 MHz and 900 MHz B/ILT Pools. Any eligible Business or Industrial/Land Transportation entity will be eligible to be licensed on the consolidated channels.[759] We agree with the parties, *supra*, who note that our recent "refarming" efforts in consolidating the service pools in bands below 512 MHz have resulted in improved spectrum efficiency without undue burden on licensees.[760] Thus, we are not persuaded by the arguments from some CII interests that today's action will impair their access to spectrum.[761] Also, because consolidation makes intercategory sharing moot, licensees and the Commission will be spared the resource burdens associated with intercategory sharing

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[752] API Comments at 16; Cinergy Comments at 58-60; Entergy Comments at 53; FL P&L Comments at 5; Scana Comments at 42.

[753] *Compare* 47 C.F.R. § 90.35(b) (Business Pool) *with* 47 C.F.R § 90.617(b) (Industrial//Land Transportation Pool).

[754] Cinergy Comments at 58-60; Entergy Comments at 53; Scana Comments at 42; *see also* API Comments at 16.

[755] "If the freeze were lifted, it is likely that history would repeat itself and SMR applicants will inundate the Commission with requests for intercategory sharing with a view towards converting increasingly scarce private radio spectrum to commercial services." Boeing Comments at 12.

[756] Cascade Two Way Radio Comments at 4.

[757] Exelon Comments at 9. In addition to consolidating the 800 MHz and 900 MHz Business and Industrial/Land Transportation services into one pool, Exelon also recommends that we "permit new intercategory sharing." *Id.* Exelon contends that the only restriction on this new intercategory sharing should be a strict prohibition against the operation of cellularized systems in the expanded pools in order to protect them from the same interference problems currently being experienced by Business and Industrial/Land Transportation licensees. *Id.*

[758] *See* Exelon Comments at 9.

[759] *See* 47 C.F.R. § 90.35.

[760] *See generally* In The Matter Of 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 (*Refarming*).

[761] API Comments at 16; Cinergy Comments at 58-60; Entergy Comments at 53; FL P&L Comments at 5; Scana Comments at 42.

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requests.[762] Finally, although we note the concern expressed about the effects of cellularized operation in a consolidated 900 MHz band, we believe that proscribing cellularized operation in a band in which interference to public safety communications is not an issue could unnecessarily hinder realization of the efficiencies inherent in cellular-architecture and other advanced technologies.

VIII. OPERATIONAL FLEXIBILITY IN THE 900 MHZ BAND

335. In the Balanced Budget Act Proceeding[763] the Commission amended its rules to permit CMRS use of PLMR frequencies in the 800 MHz land mobile band and allowed PLMRS licensees to transfer their licenses to CMRS entities.[764] The Commission sought comment on whether, in the interest of regulatory symmetry, similar rules should apply in the 900 MHz land mobile spectrum.[765] In the *NPRM* in this proceeding, the Commission sought further comment on this issue in light of Nextel's White Paper proposal to accommodate displaced 800 MHz B/ILT licensees in the 900 MHz land mobile band.[766]

336. In general, parties supported the proposal to allow CMRS operations on 900 MHz PLMR spectrum.[767] Although the proposal to relocate all 800 MHz B/ILT and SMR licensees to the 900 MHz band is no longer germane, we find that other factors merit our making the 800 MHz and 900 MHz CMRS rules complementary. In particular, we note that Nextel will have to shift some of its operations from the 800 MHz band to 900 MHz in order to provide the "green space" necessary to effect reconfiguration of the 800 MHz band. Moreover, as noted above,[768] Nextel may have to share spectrum in the 816-824 MHz segment of the reconfigured band with other ESMR licensees. To the extent that such sharing may reduce the amount of 800 MHz spectrum available to Nextel, we believe we should provide the regulatory flexibility necessary for Nextel to make up the shortfall by using 900 MHz channels. We have less

[762] Under the existing rules, there are provisions that allow entities establishing eligibility under one radio service to obtain a license for a frequency in another radio service under certain conditions (interservice sharing). Because we are consolidating the Business and Industrial/Land Transportation Pools into one pool and eliminating the individual radio service categories, interservice sharing rules will no longer be necessary with regard to applicants from either service seeking frequencies previously allotted to the other service. Under consolidation, applicants will have the opportunity to apply directly for in-pool frequencies that were previously allocated to either the Business or Industrial/Land Transportation service. We will modify the Commission's Rules accordingly. However, our action does not otherwise affect the current freeze on intercategory sharing with respect to applicants from the newly consolidated Business/Industrial Land Transportation Pool seeking intercategory sharing of those frequencies specifically allocated to Public Safety Pool. *See* Inter-Category Sharing of Private Mobile Radio Frequencies in the 806-821/851-866 MHz Bands, *Order,* 10 FCC Rcd 7350 (WTB 1995) (*Intercategory Freeze Order*).

[763] *See generally,* Implementation of Sections 309(j) and 337 of Communications Act of 1934 as Amended, WT Docket 99-87 (*BBA Proceeding)*.

[764] *See* Implementation of Sections 309(j) and 337 of Communications Act of 1934 as Amended, *Report and Order and Further Notice of Proposed Rulemaking*, WT Docket 99-87, 15 FCC Rcd 22709, 22761 ¶¶ 110-111 (FCC 2000) (*BBA R&O and FNPRM*).

[765] *Id.*, 15 FCC Rcd at 22773-22774 ¶¶ 143-144.

[766] *NPRM*, 17 FCC Rcd 4918 at ¶ 86. This essentially transferred the issue from WT Docket 99-87 to the instant proceeding. *See* Implementation of Sections 309(j) and 337 of Communications Act of 1934 as Amended, *Second Report and Order and Second Further Notice of Proposed Rulemaking*, 18 FCC Rcd 3034, 3047 n. 5.

[767] *See* Nextel Comments at 65. *See also* Ad Hoc Wireless Alliance Comments at 8-10.

[768] *See* ¶ 159 *supra.*

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concern about unacceptable interference resulting from such 900 MHz ESMR use because there are no public safety channels allocated in the 900 MHz band. Moreover, because there currently is no extensive ESMR use of the 900 MHz band, ESMR licensees designing systems "from the ground up" in the 900 MHz band will be better able to take interference abatement into account when designing their systems. However, we will not hesitate to act should it appear that the interference environment in the 900 MHz band is becoming unfavorable.

337. We therefore will allow 900 MHz PLMR licensees to initiate CMRS operations on their currently authorized spectrum or to assign their authorizations to others for CMRS use. In the *BBA R&O and FNPRM*, the Commission inquired whether to impose a holding period requirement on all new 900 MHz applications, thereby to avoid trafficking in 900 MHz licenses.[769] Although the Commission, in the *BBA Proceeding,* put parties on notice that it might impose a holding period in the future we decline to do so since we observed no speculative runs on 900 MHz PLMR spectrum after the release of the *BBA R&O and FNPRM*.[770]

IX. CONCLUSION

338. There may be no matter within our jurisdiction more crucial to Homeland Security and the overall general safety of life and property than assuring that public safety communications systems are free from unacceptable interference and have adequate capacity. Indeed, one of the express purposes of this agency's creation was for the "purpose of promoting safety of life and property through the use of wire and radio communications,"[771] and we thus would be derelict were we to ignore an opportunity—such as that represented by 800 MHz band reconfiguration—that allows us to increase the reliability and capacity of 800 MHz public safety communications systems.

339. We stress, however, that the actions we take today in response to a unique set of circumstances regarding interference to public safety communications in the 800 MHz band are consistent with our statutory obligations generally to use competitive bidding in the allocation of spectrum. Although our emphasis herein has been on public safety requirements, the far more favorable interference environment in the post-reconfiguration 800 MHz band will ensure other 800 MHz licensees will also benefit from the band reconfiguration plan and related policies that we have adopted. Underlying the policies we enunciate today is the tenet put forth by many of the commenting parties in this proceeding: parties must work together to abate interference and endure an occasional hardship as a necessary concession to the nation's overall Homeland Security obligations.

X. ORDERING CLAUSES

340. IT IS ORDERED that, pursuant to the authority of Sections 1, 4(i), 303(f) and (r), 309, 316, and 332 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 154(i), 303(f) and (r), 309, 316, and 332, the rule changes specified in Appendix C are adopted.

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[769] *BBA R&O and FNPRM*, 15 FCC Rcd 22709, 22774 ¶ 144.

[770] Moreover, we believe our existing rules also provide necessary safeguards. *See* 47 C.F.R. § 90.155 (requires licensees to have stations placed in operation within twelve months from the date of grant to avoid automatic cancellation; 47 C.F.R. § 90.609 (requires complete construction of a radio facility prior to any transfer or assignment) and 47 C.F.R. 90.157 (licenses will cancel automatically if there is a discontinuance of station operation for twelve months or more).

[771] *See* 47 U.S.C. § 151.

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341. IT IS FURTHER ORDERED that the rule changes set forth in Appendix C WILL BECOME EFFECTIVE sixty days after publication in the Federal Register. This action is taken pursuant to Sections 1, 4(i), 303(f) and (r), 309, 316 and 332 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 154(i), 303(f) and (r), 309, 316, and 332.

342. IT IS FURTHER ORDERED that, pursuant to Section 309 and 316 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 309, and 316, the licenses of all 800 MHz band licensees (including, but not limited to, Nextel Communications, Inc.), are hereby modified as specified in this *Report and Order*; provided, however, that in the event Nextel rejects any of the conditions for modification required in this *Report and Order,* all the modifications of all the 800 MHz licenses specified in this *Report and Order* are suspended unless and until the Commission orders otherwise. Nextel will be deemed to have rejected such conditions (a) unless it files with the Commission a written acceptance of all such conditions within thirty days of the publication of this *Report and Order* in the Federal Register, or (b) if it files a judicial appeal of this *Report and Order* within thirty days of the publication of this *Report and Order* in the Federal Register. Pursuant to Section 316(a)(1) of the Communications Act of 1934, as amended, 47 U.S.C. § 316(a)(1), publication of this *Report and Order* in the Federal Register shall constitute notification in writing of our Order modifying Nextel's 800 MHz licenses and those of all other 800 MHz licenses, and of the grounds and reasons therefore, and Nextel and these other 800 MHz licensees shall have thirty days from the date of such publication to protest such Order.

343. IT IS FURTHER ORDERED that, pursuant to Section 309 and 316 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 309 and 316, the Wireless Telecommunications Bureau shall further modify such licenses as are necessary in order to implement band reconfiguration in the manner specified in this *Report and Order*.[772]

344. IT IS FURTHER ORDERED that within sixty days of the publication of this *Report and Order* in the Federal Register, Nextel shall comply with the following conditions precedent to its operations on the 1.9 GHz band:

- Nextel shall certify that it has obtained an irrevocable letter of credit, in all material respects identical to that contained in Appendix E hereto, which provides assurances that $2.5 billion will be available for band reconfiguration, notwithstanding the financial condition of Nextel, or its successor(s).

- Nextel shall specify on the initial letter of credit and any subsequent letters of credit, a Trustee, acceptable to the Commission, which shall draw upon and disburse funds in accordance with the terms thereof and the Transition Administrator's instructions. Further, on the occasion of a material breach by Nextel of its obligations hereunder, as declared by the Commission, said trustee shall receive the remaining balance of the letter(s) of credit to hold in trust and disburse in accordance with the terms of this *Report and Order*. Said funds shall be devoted exclusively to reconfiguration of the 800 MHz band except as otherwise provided in this *Report and Order*.

- Nextel shall deliver an opinion letter from counsel clearly stating, subject only to customary assumptions, limitations and qualifications, that in a proceeding under Title 11 of the United States Code, 11 U.S.C. Section 101 et seq. (the "Bankruptcy Code"), in which Nextel is the

[772] The expiration of each said further modified license shall be the date specified thereon. Provided, however, that if such a specified date is less than five years from the date this *Report and Order* is published in the Federal Register, then, notwithstanding the expiration date specified on the license, the license shall expire five years after the date this *Report and Order* is published in the Federal Register.

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debtor, the bankruptcy court would not treat the Letter of Credit or proceeds of the Letter of Credit as property of Nextel's bankruptcy estate under Section 541 of the Bankruptcy Code. The scope of the opinion letter must also cover such other opinions as the Commission shall request. The opinion letter must contain detailed legal analysis of the basis of counsel's opinion. A draft opinion letter must be submitted for review and approval by the Commission's Office of General Counsel prior to issuance of the letter. Bankruptcy counsel, and, if applicable, counsel's firm, must have a Martindale-Hubbell rating of "A/V" and must satisfy the Commission in all other respects.

- Nextel shall provide a letter or letters, in content satisfactory to the Commission, from any and all parties having a financial or equitable interest in any existing or proposed 800 MHz system, whether in the United States, Mexico or Canada, and connected in any way to Nextel by way of being a subsidiary, partner, or otherwise; to the effect that such parties are bound to perform the obligations imposed on Nextel herein to the extent such obligations are necessary or desirable in the completion of reconfiguration of the 800 MHz band.

- Nextel shall obtain the Commission's approval of all documents it submits pursuant to this paragraph.

345. IT IS FURTHER ORDERED that Nextel's 1.9 GHz modified licenses do not authorize Nextel to begin operations in the band until Nextel files with the Commission an acknowledgement that meets the requirements of paragraph 87 *supra.*

346. IT IS FURTHER ORDERED that within thirty days of the publication of this *Report and Order* in the Federal Register, Nextel and Southern LINC shall deliver to the Commission an agreement for the channel distribution for all 800 MHz licensees in the areas shown in Appendix G.

347. IT IS FURTHER ORDERED that, in addition to the license conditions set forth above and below in this *Report and Order*, and also in addition to such other conditions as the Commission may, in its discretion, deem necessary to ensure reconfiguration of the 800 MHz band and timely clearance of the 1.9 GHz band, Nextel's modified licenses authorizing operations within the 1.9 GHz band are conditioned on the following:

- Nextel must complete, and the Transition Administrator must certify that Nextel has completed, the retuning of Channels 1-120 in twenty NPSPAC Regions within eighteen months after the release of a Public Notice announcing the start date of reconfiguration in the first NPSPAC region. If Nextel fails to meet this benchmark, for reasons that Nextel, with the exercise of due diligence could reasonably have avoided, the Commission may consider and exercise any appropriate enforcement action within its authority, including assessment of monetary forfeitures or, if warranted, license revocation.

- The 1.9 GHz licenses shall not be assigned to any person or entity who or which has not demonstrated to the satisfaction of the Commission that it will, and has the capacity to, assume all of Nextel's obligations hereunder.

- Nextel shall certify to the Commission that all BAS facilities have been relocated within thirty months after the effective date of this *Report and Order*. If Nextel fails to meet this benchmark, for reasons that Nextel could reasonably have avoided, the Commission will determine whether forfeitures should be imposed and/or whether Nextel licenses, including, but not limited to, its 1.9 GHz licenses, should be revoked.

- If 800 MHz band reconfiguration is not complete, in accordance with the certification

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of the Transition Administrator, thirty-six months following release of a Public Notice announcing the start date of reconfiguration in the first NPSPAC region, for reasons that Nextel could reasonably have avoided, the Commission will determine whether forfeitures should be imposed and/or whether Nextel licenses, including, but not limited to, its 1.9 GHz licenses, should be revoked.

- The 1.9 GHz licenses shall be for a ten-year term, subject, however to the foregoing termination provisions; and renewal will be conditioned on Nextel supplying substantial service[773] within the ten-year period.

348. IT IS FURTHER ORDERED that Nextel, the Association of Public Safety Communications Officials-International, the Industrial Telecommunications Association, Southern LINC and the United Telecom Council, shall form a Transition Administrator search committee within fifteen days of the date of the release of this *Report and Order*, and shall recommend a Transition Administrator to the Chief of the Public Safety and Critical Infrastructure Division of the Wireless Telecommunications Bureau no later than forty-five days after the release of this *Report and Order*.

349. IT IS FURTHER ORDERED that the Transition Administrator, within ten days of a request from Nextel, will request funds necessary for band reconfiguration of a given NPSPAC Region as the need therefore arises, from the Letter of Credit Trustee which shall disburse such funds within five business days of receipt there of from the issuing bank, or at such later time as the Transition Administrator shall specify in writing.

350. IT IS FURTHER ORDERED that the Transition Administrator will provide to the Commission a quarterly report, in form and substance satisfactory to the Commission, describing the progress of band reconfiguration. This report shall include a disclosure of the Transition Administrator's salary and reasonable expenses.[773A]

351. IT IS FURTHER ORDERED that Nextel shall keep accurate records of the labor and material reasonably expended or acquired in connection with clearance of the 1.9 GHz band. An annual audit of these expenses shall be made, at Nextel's expense, by an auditing firm satisfactory to the Commission. All Nextel claims for labor and equipment shall be at Nextel's actual cost, without markup.

352. IT IS FURTHER ORDERED that (a) as a condition of its 1.9 GHz modified licenses, Nextel shall reimburse UTAM twenty-five percent, on a *pro rata* basis, of UTAM's total relocation costs incurred as of the date that Nextel gains access to the band, (b) Nextel's 1.9 GHz modified licenses do not authorize Nextel to begin operations in the band until it pays this amount to UTAM, and (c) Nextel shall be entitled to seek reimbursement from UTAM for the actual proportional cost associated with Nextel's relocation of any remaining microwave links in the band.

353. IT IS FURTHER ORDERED that, as a condition on Nextel's 1.9 GHz licenses, Nextel SHALL, as described herein, relocate all BAS licensees in the 1990-2025 MHz band within thirty months after the effective date of this *Report and Order*, and in this connection, comply with the following requirements:

- Nextel shall file with the Commission and copy the MSS licensees within thirty days after the

[773] "Substantial service" is defined as service which is sound, favorable, and substantially above a level of mediocre service which just might minimally warrant renewal.

[773A] *See* n. 510A, *infra.*

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effective date of this *Report and Order* its plan for the relocation of BAS operations in the markets that will be relocated during stage one (*i.e.,* relocations made within eighteen months after the effective date of this *Report and Order*).

- Nextel shall follow a negotiation period for stage one relocations that ends May 31, 2005 and that ends March 31, 2006 for stage two relocations (*i.e.,* relocations made within thirty months after the effective date of this Report and Order).

- Nextel shall provide comparable facilities to BAS incumbents that are relocated.

- Nextel shall file progress reports within twelve months and twenty-four months after the effective date of this *Report and Order* on the status of the transition, including identifying the markets that will be relocated during stage one, and all remaining markets that will be relocated during stage two.

- Nextel shall certify to the Commission that all BAS facilities have been relocated within thirty months after the effective date of this *Report and Order*. If Nextel fails to meet this benchmark, for reasons that Nextel could reasonably have avoided, the Commission will determine whether forfeitures should be imposed and/or whether Nextel licenses, including, but not limited to, its 1.9 GHz licenses, should be revoked.

- Nextel shall be entitled to seek reimbursement from MSS licensees that have entered the band for the MSS licensee's pro rata share of Nextel's costs to clear the top thirty markets and relocate all fixed BAS facilities, regardless of market size, incurred during the thirty-six month reconfiguration process. Nextel shall be required to inform the Commission and MSS licensees on whether it will or will not seek reimbursement from MSS licensees within twelve months after the effective date of this *Report and Order*.

- Nextel shall have an obligation to reimburse MSS licensees for Nextel's pro rata share of the actual costs associated with the relocation of BAS incumbents in the band incurred by MSS licensees during the thirty-six month reconfiguration period.

- Nextel shall conform to the technical criteria specified in TSB 10-F or generally acceptable good engineering practices for determining interference potential between BAS and Nextel operations.

354. IT IS FURTHER ORDERED that, at the conclusion of band reconfiguration, Nextel will provide to the Transition Administrator an accounting of the funds:

- Spent to reconfigure its own systems in the 800 MHz band;

- Spent to clear the 1.9 GHz band of incumbents and to reimburse UTAM; and

- Received as reimbursement, if any, for clearing the 1.9 GHz band.

355. IT IS FURTHER ORDERED that, at the conclusion of band reconfiguration, the Transition Administrator shall provide an accounting of the funds spent to reconfigure the systems of incumbent operators in the 800 MHz band. This accounting shall include certifications from each relocated licensee that all necessary reconfiguration work has been completed and that Nextel and said licensee agree on the sum paid for such work.

356. IT IS FURTHER ORDERED that, as a condition of its 800 MHz and 1.9 GHz modified licenses, Nextel shall, within thirty days of the completion of the thirty-six month band reconfiguration

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process, as certified by the Transition Administrator and if band reconfiguration has not been completed in the border areas, elect to extend the life of the letter of credit or elect to secure a separate letter of credit, in an amount sufficient to ensure the reconfiguration of the 800 MHz licensees operating in the border area, as detailed herein.

357. IT IS FURTHER ORDERED that, as a condition of its 800 MHz and 1.9 GHz modified licenses, in the event that the computations described in paragraphs ¶ 329-332 *supra* disclose that the credits afforded Nextel thereunder are less than the value of the 1.9 GHz spectrum rights that Nextel is receiving hereunder, Nextel SHALL DEPOSIT the difference in the United States Treasury; and Nextel SHALL NOT discontinue the letter(s) of credit it is required to maintain hereunder until such deposit has been received and acknowledged.

358. IT IS FURTHER ORDERED that, within thirty days of Commission approval of the Transition Administrator, the Transition Administrator will provide the Commission with a schedule detailing when band reconfiguration shall commence for each NPSPAC-Region. The plan should also detail—by NPSPAC Region—which relocation option each non-Nextel ESMR licensees has chosen

359. IT IS FURTHER ORDERED that the Petition for Rulemakings filed by the Wireless Information Networks Forum and UTStarcom Inc., and the Petition for Waivers filed by Lucent Technologies Inc., Ascom Wireless Solutions Inc., Alaska Power & Telephone Company Inc., and UTStarcom Inc. and Drew University ARE DENIED IN PART.

360. IT IS Further ORDERED that the PCIA Petition for Rulemaking IS GRANTED to the extent stated herein and denied in all other respects. This action is taken pursuant to Sections 4(i), 303(f) and (r), and 332 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 303(f) and (r), and 332.

361. IT IS FURTHER ORDERED that the Petitions for Reconsideration and Clarification filed by the Association for Maximum Service Television and the National Association of Broadcasters, and the Society of Broadcast Engineers ARE GRANTED to the extent described herein.

362. IT IS FURTHER ORDERED that the Petition for Reconsideration and Clarification filed by the Boeing Company IS DENIED to the extent described herein.

363. IT IS FURTHER ORDERED that the Final Regulatory Flexibility Analysis, required by Section 604 of the Regulatory Flexibility Act, 5 U.S.C. 604, and as set forth in Appendix B is ADOPTED.

364. IT IS FURTHER ORDERED that the Commission's Consumer Information and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Report and Order, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch,
Secretary

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XI. PROCEDURAL MATTERS

A. Regulatory Flexibility Act

365. As required by the Regulatory Flexibility Act (RFA), the Commission has prepared a Final Regulatory Flexibility Analysis (Supplemental FRFA) of the possible impact on small entities of the changes in its rules adopted in this Report and Order. The FRFA is set forth in Appendix B. The Office of Public Affairs will send a copy of the *Report and Order*, including the FRFA, to the Chief Counsel for Advocacy of the Small Business Administration, in accordance with the RFA.

B. Paperwork Reduction Act

366. This *Report and Order* contains a new information collection, which has been submitted to the Office of Management and Budget (OMB) for approval. As part of our continuing effort to reduce paperwork burdens, we invite the general public to take this opportunity to comment on the information collection contained in this *Report and Order*, as required by the Paperwork Reduction Act of 1995, Pub. L. No. 104-13. Public comments should be submitted to OMB and the Commission, and are due thirty days from date of publication of this *Report and Order* in the Federal Register. Comments should address: (a) whether the proposed collection of information is necessary for the proper performance of the functions of the Commission, including whether the information shall have practical utility; (b) the accuracy of the Commission's burden estimates; (c) ways to enhance the quality, utility, and clarity of the information collected; and (d) 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.

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APPENDIX A: FINAL REGULATORY FLEXIBILITY ANALYSIS

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),[774] an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the *Notice of Proposed Rule Making* (*NPRM*).[775] The Commission sought written public comment on the proposals in the *NPRM*, including comment on the IRFA.[776] Three commenting parties specifically addressed the IRFA.[777] We discuss those comments below. This present Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.[778]

A. Need for, and Objectives of, the *Report and Order*:

2. In this *Report and Order*, we have concluded that reconfiguration of the 800 MHz band is essential, over the long term, to assure that critical public safety communications may be accommodated without unacceptable interference, as that term is defined in the *Report and Order.* Because increasing instances of interference to 800 MHz public safety communications systems made it imperative that we act to stem such interference without delay, we adopted rules that hold the involved ESMR and cellular telephone licensees strictly responsible for abating interference by application of a variety of technical remedies which have been subsumed in this proceeding under the rubric of *Enhanced Best Practices*. Specifically, the Commission took the following actions:

- adopted a new 800 MHz band plan that, after a transition period, will separate high-density ESMR systems in the band, principally those operated by Nextel, from public safety and other non-cellular 800 MHz operations.
- require Nextel to relinquish all of its 800 MHz spectrum holdings below 817 MHz/862 MHz resulting in an additional average of 4.5 megahertz of 800 MHz band spectrum becoming available to the public safety community, particularly in the major markets where the shortage of public safety spectrum is most acute;
- established a transition mechanism for band reconfiguration with minimal disruption to the operations of all affected 800 MHz incumbents during the transition period;
- required Nextel to pay all band reconfiguration costs of public safety and other 800 MHz incumbents that result from transition to the new band plan;
- defined unacceptable interference as a function of threshold received power levels of desired signals;
- placed strict responsibility for abatement of unacceptable interference on the licensees whose

[774] *See* 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. §§ 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[775] *See* Improving Public Safety Communications in the 800 MHz Band; Consolidating the 900 MHz Industrial/Land Transportation and Business Pool Channels, WT Docket No. 02-55, *Notice of Proposed Rulemaking*, 17 FCC Rcd 4873, 4927 (2002) (*NPRM*).

[776] *See id.* at 4920 ¶ 93.

[777] Business Autophones, Inc., Comments on IRFA (May 6, 2002) Skitronics, LLC, Comments on IRFA (May 6, 2002); Small Business in Telecommunications, Comments on IRFA (May 6, 2002).

[778] *See* 5 U.S.C. § 604.

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systems are the source of such interference;

- required prior notification, upon request, of the activation or modification of ESMR and cellular telephone cells;
- established firm rules—including response times of twenty-four hours and abatement initiation time of forty-eight—for procedures to be used to identify, report and remedy instances of unacceptable interference;
- modified certain Nextel licenses to accommodate a nationwide allocation in the 1910-1915 MHz/1990-1995 MHz paired spectrum block, in exchange for Nextel's surrendering spectrum, and bearing the financial burden and risk of reconfiguring the 800 MHz band;
- consolidated the Business and Industrial/Land Transportation Pools in the 800 MHz and 900 MHz bands, and
- allowed 900 MHz Private Land Mobile Radio (PLMR) licensees to initiate CMRS operations on their currently authorized spectrum or to assign their authorizations to others for CMRS use.

3. The Commission has taken these actions to immediately stem increasing instances of interference to 800 MHz public safety communications systems. The Commission has long recognized that the nation's public safety community requires effective radio communications systems free of unacceptable interference if public safety agencies are to adequately protect the safety of lives and property. The actions taken by the Commission in this *Report and Order* create a suitable spectrum environment for public safety and Critical Infrastructure Industries systems operating in the 800 MHz band.

4. In the *Fourth Memorandum Opinion and Order*, we both grant and deny petitions for reconsideration and clarification of the *Third Report and Order and Third Memorandum Opinion and Order*. We grant petitions to the extent described herein and clarify several points relating to BAS operations by licensees operating on different channel plans during the transition to the new BAS channel plan at 2025-2110 MHz. We otherwise deny the petitions relating to BAS relocation issues in the 1990-2025 MHz band. We also no longer require BAS licensees in TV markets 31-210 to cease operation on channels 1 and 2 (1990-2008 MHz and 2008-2025 MHz, respectively) until they have been relocated to their final channel plan in the 2025-2110 MHz band, but otherwise retain our previously adopted relocation rules for MSS licensees. The changes we adopt are necessary to allow Nextel, as a new entrant in the 1990-2025 MHz band, to participate in the relocation process we had previously established for BAS incumbents.

B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA:

5. Three parties submitted comments specifically in response to the IRFA: Business Autophones, Inc. (Business Autophones), Small Business in Telecommunications (SBT), and Skitronics, LLC (Skitronics).[779] Business Autophones opines that the Nextel Plan, which contemplated relocating B/ILT licensees from the 800 MHz band to the 700 MHz and 900 MHz at their own expense, would be financially devastating to small business B/ILT licensees and urges the Commission to either abate interference on a case-by-case basis or adopt the plan proposed by NAM/MRFAC which reconfigured the

[779] Business Autophones, Inc., Comments on IRFA (May 6, 2002) Skitronics, LLC, Comments on IRFA (May 6, 2002); Small Business in Telecommunications, Comments on IRFA (May 6, 2002).

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band but did not relocate B/ILT licensees.[780] For the reasons described *infra* we have adopted a band plan that does not relocate B/ILT licensees to the 700 MHz and 900 MHz band and requires Nextel to finance any necessary relocation of B/ILT licensees.

6. Skitronics posits on the impact of four separate alternatives set forth in the *NPRM* on small businesses.

- Skitronics echoes Business Autophones concerns about the effect of the proposal to relocate B/ILT licensees from the 800 MHz band to the 700 MHz and 900 MHz at their own expense.[781] As we discuss at ¶ 27 *infra*, we did not choose this alternative.

- Skitronics argues that Nextel's alternative proposal, one that would allow incumbent 800 MHz operators to remain in the band on a secondary status, would deleteriously affect small business SMR operators by impacting these business' growth prospects as well as their ability to guarantee continuous service to their customers.[782] We note that although Nextel offered this alternative in its original *White Paper* proposal, Nextel removed it as part of the plan it submitted as a member of the Consensus Parties. Therefore, we ceased to consider this alternative at that time and we have not chosen to enact that alternative as a rule.

- Skitronics argues that the Commission's consideration of moving 800 MHz incumbents to the 2.1 GHz imposes significant costs on small business SMR licensees since the propagation qualities of the 2.1 GHz spectrum make it unsuitable for SMR use and there is a lack of available equipment suitable for SMR operations in this band.[783] As in the case of the alternative of allowing SMR licensees to remain in the 800 MHz band on a secondary basis, this alternative was superseded by the alternative set forth by the Consensus Parties in the Consensus Plan and we have not chosen to move 800 MHz incumbents to the 2.1 GHz band.

- Skitronics contends that the alternative mentioned in the *NPRM* that has the least impact on small business is enforcement of existing rules against those licensees responsible for causing interference to public safety on a case-by-case basis.[784] For the reasons discussed at ¶ 29 *infra*, we declined to adopt this alternative.

7. Unlike the two other comments received in response to the IRFA, SBT focuses its comments on the adequacy of the IRFA in terms of its compliance with the RFA. Specifically, SBT makes the following arguments:

- the IRFA does not describe the significant or potential economic impact of the *NPRM* on small entities as required by the RFA;[785]

- the IRFA omits any description of the problem to be rectified by the regulation to be

[780] *See* Business Autophones Comments on IRFA at 2-3.

[781] Skitronics Comments on IRFA at 6-10.

[782] *Id.* at 10-11.

[783] *Id.* at 11-13.

[784] *Id.* at 4, 16.

[785] SBT Comments at 3-4 (*citing* 5 U.S.C. § 603(a)).

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promulgated or an objective for any proposed rule as required by the RFA;[786]

- the Commission either relied on outdated statistical sources in calculating the number of affected small licensees or failed to cite to the source(s) entirely;[787]

- SBT agrees with the IRFA's conclusion that the *NPRM* does not propose a rule that will entail additional reporting, record-keeping, and other compliance requirements because the *NPRM* does not, in fact, propose any rules.[788] However, in Section D *infra* we add new reporting and other requirements.

- SBT urges the Commission to amend the *NPRM*'s IRFA in any subsequent IRFA or FRFA if a substantive rule emerges from this proceeding.[789]

- SBT contends that the Commission should convert the *NPRM* to a Notice of Inquiry (NOI) and issue a second NPRM to propose specific rules.[790]

8. With regard to SBT's comments, as an initial matter we believe that we do not need to issue a NOI in this proceeding because the IRFA's description of the problem of interference to public safety systems in the 800 MHz band is a sufficient description of the problem to be rectified in this proceeding.[791] Moreover, we believe our description of the two plans under consideration in the *NPRM* adequately described the rules under consideration.[792] We also note that the Consensus Parties filed a plan superseding one of the plans discussed in the *NPRM* on September 23, 2002 and the major revision of that new plan on December 24, 2002. Both of these plans, as well as the comments received in response to these plans, proposed substantive rules. Moreover, in the interest of ensuring a complete record, the Commission opened two additional notice and comment rounds to obtain public comment on these two plans. Our position, therefore, is that the Commission clearly stated its proposals either in the *NPRM* and IRFA or fully clarified them in the two subsequent notice and comment rounds that permitted full comment on subsequently proposed plans. Indeed, the Commission received the bulk of all comments in this proceeding subsequent to the comment period initiated in the *NPRM*. Finally, we note that in Section C, *infra,* we are using updated statistical sources to assess the impact of the rules we adopt today on small

[786] *Id.* at 4. According to SBT, the Commission's tentative conclusion that spectrum reallocation serves the public interest because it would resolve harmful interference to 800 MHz public safety licensees "falls far short" of satisfying the requirements of 5 U.S.C. § 603(b)(1). *See id.*

[787] *Id.* at 5-10.

[788] *Id* at 10-11. For the same reason, SBT concurs with the IRFA's conclusion that the *NPRM* does not propose any rule that duplicates, overlaps, or conflicts with other federal rules. *See id.* at 12.

[789] *Id* at 11, 12. In addition, SBT recommends that the Commission amend the IRFA to comply with 5 U.S.C. § 603(c)(3) by discussing alternatives to rules proposed by the Commission. *See id.* at 11. Once again, SBT reiterates that the Commission has not proposed any rules and therefore could not have discussed alternatives to such rules. *Id.* To the extent that the IRFA discusses alternative proposals for rule changes that were *submitted to* the Commission, SBT contends that such "alternatives" do not qualify as alternatives *proposed by* the Commission *Id.*

[790] *Id.* at 12-13. SBT believes that the Commission should use a NOI "whenever it lacks information about the industry to be regulated or the exact nature of the problem to be addressed." *Id.* at 13.

[791] *See NPRM* at 4927.

[792] *Id.*

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businesses.

C. Description and Estimate of the Number of Small Entities To Which the Rules Will Apply:

9. The RFA directs agencies to provide a description of, and, where feasible, an estimate of the number of small entities that may be affected by the proposed rules, if adopted.[793] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[794] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[795] A "small business concern" is one that is: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).[796] Below, we further describe and estimate the number of small entity licensees and regulatees that may be affected by the rule changes adopted herein.

10. A "small organization" is generally any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.[797] Nationwide, there are approximately 1.6 million small organizations.[798] We note that, according to SBA data, there are approximately 22.4 million small businesses nationwide.[799] We describe and estimate, below, the number of small entities—applicants, licensees, and radio equipment manufacturers—that may be affected by this *Report and Order*.

11. *Governmental Entities*. The term "small governmental jurisdiction" is defined as "governments of cities, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand."[800] As of 1997, there were approximately 87,453 governmental jurisdictions in the United States.[801] This number includes 39,044 county governments, municipalities, and townships, of which 37,546 (approximately 96.2%) have populations of fewer than 50,000, and of which 1,498 have populations of 50,000 or more. Thus, we estimate the number of small governmental jurisdictions overall to be 84,098 or fewer.

12. *Wireless Telecommunications.* The SBA has developed a small business size standard for

[793] 5 U.S.C. § 603(b)(3).

[794] 5 U.S.C. § 601(6).

[795] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

[796] 15 U.S.C. § 632.

[797] 5 U.S.C. § 601(4).

[798] Independent Sector, The New Nonprofit Almanac & Desk Reference (2002).

[799] See SBA, Programs and Services, SBA Pamphlet No. CO-0028, at page 40 (July 2002).

[800] 5 U.S.C. § 601(5).

[801] U.S. Census Bureau, Statistical Abstract of the United States: 2000, Section 9, pages 299-300, Tables 490 and 492.

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wireless firms within the broad economic census category "Cellular and Other Wireless Telecommunications."[802] Under this SBA category, a wireless business is small if it has 1,500 or fewer employees. For the census category Cellular and Other Wireless Telecommunications firms, Census Bureau data for 1997 show that there were 977 firms in this category, total, that operated for the entire year.[803] Of this total, 965 firms had employment of 999 or fewer employees, and an additional 12 firms had employment of 1,000 employees or more.[804] Thus, under this category and size standard, the majority of firms can be considered small.

13. *Public Safety Radio Licensees.* As a general matter, Public Safety Radio Pool licensees include police, fire, local government, forestry conservation, highway maintenance, and emergency medical services.[805] The SBA rules contain a definition for cellular and other wireless telecommunications companies which encompasses business entities engaged in radiotelephone communications employing no more that 1,500 persons.[806] There are a total of approximately 127,540 licensees within these services.[807] With respect to local governments, in particular, since many governmental entities as well as private businesses comprise the licensees for these services, we include under public safety services the number of government entities affected.

14. *Business, Industrial and Land Transportation Licensees.* At present, there are 3239 Business and Industrial/Land Transportation (I/LT) licensees that may be affected by this Report and Order.[808] The Commission does not require B/ILT licensees to disclose information about number of employees, so the Commission does not have information that could be used to determine how many B/ILT licensees

802 13 C.F.R. § 121.201, NAICS code 513322 (changed to 517212 in October 2002).

803 U.S. Census Bureau, 1997 Economic Census, Subject Series: "Information," Table 5, Employment Size of Firms Subject to Federal Income Tax: 1997, NAICS code 513322 (issued October 2000).

804 U.S. Census Bureau, 1997 Economic Census, Subject Series: "Information," Table 5, Employment Size of Firms Subject to Federal Income Tax: 1997, NAICS code 513322 (issued October 2000). The census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is "Firms with 1000 employees or more."

805 *See* subparts A and B of Part 90 of the Commission's Rules, 47 C.F.R. §§ 90.1-90.22. Police licensees include 26,608 licensees that serve state, county, and municipal enforcement through telephony (voice), telegraphy (code), and teletype and facsimile (printed material). Fire licensees include 22,677 licensees comprised of private volunteer or professional fire companies, as well as units under governmental control. Public Safety Radio Pool licensees also include 40,512 licensees that are state, county, or municipal entities that use radio for official purposes. There are also 7,325 forestry service licensees comprised of licensees from state departments of conservation and private forest organizations that set up communications networks among fire lookout towers and ground crews. The 9,480 state and local governments are highway maintenance licensees that provide emergency and routine communications to aid other public safety services to keep main roads safe for vehicular traffic. Emergency medical licensees (1,460) use these channels for emergency medical service communications related to the delivery of emergency medical treatment. Another 19,478 licensees include medical services, rescue organizations, veterinarians, persons with disabilities, disaster relief organizations, school buses, beach patrols, establishments in isolated areas, communications standby facilities, and emergency repair of public communications facilities.

806 *See* 13 C.F.R. § 121.201 (NAICS Code 517212).

807 There is no information currently available about the number within the 127,540 that have less than 1500 employees.

808 This number is based on the Commission's licensing database.

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constitute small entities under this definition. Moreover, we note that B/ILT licensees generally are not in the business of providing cellular or other wireless telecommunications services but instead use the licensed facilities in support of other business activities.

15. *Specialized Mobile Radio Licenses*. The Commission awards "small entity" and "very small entity" bidding credits in auctions for Specialized Mobile Radio (SMR) geographic area licenses in the 800 MHz and 900 MHz bands to firms that had revenues of no more than $15 million in each of the three previous calendar years, or that had revenues of no more than $3 million in each of the previous calendar years, respectively.[809] In the context of both the 800 MHz and 900 MHz service, the SBA has approved the definitions of "small entity" and "very small entity."[810] These bidding credits apply to SMR providers in the 800 MHz and 900 MHz bands that either hold geographic area licenses or have obtained extended implementation authorizations. The Commission does not know how many firms provide 800 MHz or 900 MHz geographic area SMR service pursuant to extended implementation authorizations, nor how many of these providers have annual revenues of no more than $15 million. One firm has over $15 million in revenues. The Commission assumes, for purposes here, that all of the remaining existing extended implementation authorizations are held by small entities, as that term is defined by the SBA. The Commission has held auctions for geographic area licenses in the 800 MHz SMR band. In the 800 MHz auction, 38 of the 524 licenses won were won by small and very small entities.

16. *Wireless Communications Equipment Manufacturers.* The SBA has established a small business size standard for radio and television broadcasting and wireless communications equipment manufacturing. Under the standard, firms are considered small if they have 1000 or fewer employees.[811] Census Bureau data for 1997 indicates that, for that year, there were a total of 1,215 establishments[812] in this category.[813] Of those, there were 1,150 that had employment under 500, and an additional 37 that had employment of 500 to 999. The Commission estimates that the majority of wireless communications equipment manufacturers are small businesses.[814]

17. *Broadcast Auxiliary Service (BAS).* BAS involves a variety of transmitters, generally used to relay broadcast programming to the public (through translator and booster stations) or within the program distribution chain (from a remote news gathering unit back to the stations). The Commission has not

[809] 47 C.F.R. § 90.814(b)(1).

[810] *See* Letter, dated Aug. 10, 1999, from A. Alvarez, Administrator, Small Business Administration to Tom Sugrue, Chief, Wireless Telecommunications Bureau, Federal Communications Commission.

[811] 13 C.F.R. § 121.201, NAICS code 334220.

[812] The number of "establishments" is a less helpful indicator of small business prevalence in this context than would be the number of "firms" or "companies," because the latter take into account the concept of common ownership or control. Any single physical location for an entity is an establishment, even though that location may be owned by a different establishment. Thus, the number given may reflect inflated numbers of businesses in this category, including the numbers of small businesses. In this category, the Census break-out data for firms or companies only gives the total number of such entities for 1997, which was 1,089.

[813] U.S. Census Bureau, *1997 Economic Census*, Industry Series: Manufacturing, "Industry Statistics by Employment Size," Table 4, (issued August 1999) NAICS code 334220. We note, however that the predominant manufacturers of 800 MHz equipment, Motorola and M/A COM Private Radio Systems, Inc. are not considered small businesses.

[814] We note, however that the predominant manufacturers of 800 MHz equipment, Motorola and M/A COM Private Radio Systems, Inc. are not considered small businesses.

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developed a definition of small entities specific to broadcast auxiliary licensees. The U.S. Small Business Administration (SBA) has developed small business size standards, as follows: 1) For TV BAS, we will use the size standard for Television Broadcasting, which consists of all such companies having annual receipts of no more than $12.0 million;[815] 2) For Aural BAS, we will use the size standard for Radio Stations, which consists of all such companies having annual receipts of no more than $6 million;[816] 3) For Remote Pickup BAS we will use the small business size standard for Television Broadcasting when used by a TV station and that for Radio Stations when used by such a station.

18. According to Commission staff review of BIA Publications, Inc. Master Access Television Analyzer Database as of May 16, 2003, about 814 of the 1,220 commercial television stations in the United States had revenues of $12 million or less. We note, however, that, in assessing whether a business concern qualifies as small under the above definition, business (control) affiliations[817] must be included.[818] Our estimate, therefore, likely overstates the number of small entities that might be affected by our action, because the revenue figure on which it is based does not include or aggregate revenues from affiliated companies. There are also 2,127 low power television stations (LPTV).[819] Given the nature of this service, we will presume that all LPTV licensees qualify as small entities under the SBA size standard. According to Commission staff review of BIA Publications, Inc., Master Access Radio Analyzer Database, as of May 16, 2003, about 10,427 of the 10,945 commercial radio stations in the United States had revenue of $6 million or less. We note, however, that many radio stations are affiliated with much larger corporations with much higher revenue, and, that in assessing whether a business concern qualifies as small under the above definition, such business (control) affiliations[820] are included.[821] Our estimate, therefore, likely overstates the number of small businesses that might be affected by our action.

19. *Cable Antenna Relay Service (CARS)*. CARS includes transmitters generally used to relay cable programming within cable television system distribution systems. The SBA has developed a small business size standard for Cable and other Program Distribution, which consists of all such companies having annual receipts of no more than $12.5 million. According to Census Bureau data for 1997, there were 1,311 firms within the industry category Cable and Other Program Distribution, total, that operated for the entire year.[822] Of this total, 1,180 firms had annual receipts of under $10 million, and an additional fifty-two firms had receipts of $10 million to $24,999,999.00.[823] Thus, under this standard, the majority of

[815] 13 C.F.R. § 121.201, NAICS code 515120.

[816] *Id*. NAICS code 515112.

[817] "Concerns are affiliates of each other when one concern controls or has the power to control the other or a third party or parties controls or has to power to control both." 13 C.F.R. § 121.103(a)(1).

[818] "SBA counts the receipts or employees of the concern whose size is at issue and those of all its domestic concern's size." 13 C.F.R. § 121.103(a)(4).

[819] FCC News Release, "Broadcast Station Totals as of September 30, 2002" (Nov. 6, 2002).

[820] "Concerns are affiliates of each other when one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both." 13 C.F.R. § 121.103(a)(1).

[821] "SBA counts the receipts or employees of the concern whose size is at issue and those of all its domestic and foreign affiliates, regardless of whether the affiliates are organized for profit, in determining the concern's size." 13 C.F.R. § 121.103(a)(4).

[822] 13 C.F.R. § 121.201, NAICS code 517510 (changed from 513220 in October 2002).

[823] *Id.*

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firms can be considered small.

20. *Geostationary, Non-Geostationary Orbit, Fixed Satellite, or Mobile Satellite Service Operators (including 2 GHz MSS systems)*. The Commission has not developed a definition of small entities applicable to geostationary or non-geostationary orbit, fixed-satellite or mobile-satellite service operators. The SBA has developed a small business size standard for Satellite Telecommunications Carriers, which consists of all such companies having $12.5 million or less in annual receipts.[824] According to Census Bureau data for 1997, there were 324 firms that operated for the entire year.[825] Of this total, 273 firms had annual receipts under $10 million, and an additional twenty-four firms had annual receipts of $10 million to $24,999,990.[826] Thus, under this size standard, the majority of firms can be considered small.

21. *Fixed Microwave Services*. Microwave services include common carrier,[827] private-operational fixed,[828] and broadcast auxiliary radio services.[829] At present, there are approximately 36,708 common carrier fixed licensees and 59,291 private operational-fixed licensees and broadcast auxiliary radio licensees in the microwave services. The Commission has not yet defined a small business with respect to microwave services. For purposes of the FRFA, we will use the SBA's definition applicable to wireless and other telecommunications companies—*i.e.*, an entity with no more than 1,500 persons.[830] According to Census Bureau data for 1997, there were 977 firms in this category, total, that operated for the entire year.[831] Of this total, 965 firms had employment of 999 or fewer employees, and an additional twelve firms had employment of 1,000 employees or more.[832] Thus, under this size standard, majority of firms can be considered small.

22. We note that the number of firms does not necessarily track the number of licensees. We estimate that all of the Fixed Microwave licensees (excluding broadcast auxiliary licensees) would qualify

[824] 13 C.F.R. § 121.201, NAICS code 517410 (changed from 513340 in October 2002).

[825] U.S. Census Bureau, 1997 Economic Census, Subject Series: Information, "Receipt Size of Firms Subject to Federal Income Tax: 1997," Table 4, NAICS code 513340 (issued October 2000).

[826] *Id.*

[827] 47 CFR Part 101 *et seq*. (formerly, part 21 of the Commission's Rules).

[828] Persons eligible under Parts 80 and 90 of the Commission's rules can use Private-Operational Fixed Microwave services. *See* 47 CFR parts 80 and 90. Stations in this service are called operational-fixed to distinguish them from common carrier and public fixed stations. Only the licensee may use the operational-fixed station, and only for communications related to the licensee's commercial, industrial, or safety operations.

[829] Auxiliary Microwave Service is governed by Part 74 of Title 47 of the Commission's Rules. *See* 47 CFR Part 74 *et seq*. Available to licensees of broadcast stations and to broadcast and cable network entities, broadcast auxiliary microwave stations are used for relaying broadcast television signals from the studio to the transmitter, or between two points such as a main studio and an auxiliary studio. The service also includes mobile TV pickups, which relay signals from a remote location back to the studio.

[830] 13 C.F.R. § 121.201, NAICS code 517212 (formerly 213322).

[831] U.S. Census Bureau, 1997 Economic Census, Subject Series: Information, "Employment Size of Firms Subject to Federal Income Tax: 1997," Table 5, NAICS code 217212 (issues Oct. 2000).

[832] *Id*. The census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is "Firms with 1,000 employees or more."

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as small entities under the SBA definition. Of these licenses, approximately fourteen are issued for frequencies in the Emerging Technology bands affected by this proceeding. This, assuming that these entities also qualify as small businesses, as many as fourteen small business licensees could be affected by the rules we adopt. We note that these entities have been subject to relocation by UTAM under rules originally adopted in the Commission's *Emerging Technologies* proceeding. UTAM is the Commission's frequency coordinator for UPCS devices in the 1910-1930 MHz band. The *Fifth Report and Order* anticipates that these general relocation rules will continue to apply to FS microwave licensees and does not propose to modify the class of licensees that are subject to these relocation provisions.

D. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements

23. We expect that, at most, the rules adopted herein will result in nominal new reporting, recordkeeping, or other compliance requirements imposed on entities affected in this proceeding, as discussed Appendix B and ¶¶ 355-356, *infra*. The rules we adopt herein require that any Cellular Radiotelephone and/or ESMR licensee that receives an interference complaint from a public safety/CII licensee shall promptly respond to such complaint. Cellular Radiotelephone licensees, in conjunction ESMR licensees, shall establish an electronic means of receiving the initial complaint and shall respond on an "as soon as possible" basis and no later than twenty-four hours after receipt of initial notification. The purpose of this notification rule is to provide public safety/CII licensees a means to communicate to Cellular Radio Telephone and/or ESMR licensees instances of interference and for Cellular Radiotelephone and/or ESMR licensees to immediately initiate corrective action.

24. Additionally, the rules we adopt today provide that, upon request by a public safety/CII licensee, Cellular Radiotelephone and/or ESMR licensees must provide to the public safety/CII licensee the following information before any new cell sites are constructed or any existing cells are modified: (1) location; (2) effective radiated power; (3) antenna height; and (4) channels in use. The purpose of this rule is for informational purposes only and does not entitle the public safety/CII licensee to approve or disapprove the activation of a proposed cell site or to demand changes to the proposed technical parameters. The principal purpose of this rule is to facilitate a dialogue between Cellular Radiotelephone licensees and public safety/CII licensees regarding potential interference, identification of interference, and voluntary corrective measures.

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

25. The RFA requires an agency to describe any significant alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): (1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for small entities; (3) the use of performance, rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for small entities.[833]

26. Our decision to reconfigure the 800 MHz band is generally size-neutral, but some aspects are beneficial to small entities for the following reasons:

- Although there are significant short-term costs associated with band reconfiguration, it is the solution most likely to yield maximum interference protection benefits for the least cost over the long run. This cost savings are significant for small entities with limited resources.

[833] *See* 5 U.S.C. § 603(c)(1-4).

- Once implemented, a reconfigured band will reduce both the upfront amount of coordinated engineering work necessary to prevent interference and the burden of troubleshooting interference incidents on a case-by-case basis. This will allow small entities to utilize their scarce engineering resources more effectively.

27. We also considered proposals to reallocate (1) Nextel's 700 MHz Guard Band Block B spectrum, and the Upper 700 MHz band to public safety use; and (2) provide private radio licensees 2:1 access to 900 MHz spectrum. Our decision to decline to adopt these proposals was generally size-neutral but has the following impact on small entities:

- Since the Upper 700 MHz band is designated for auction, our decision not to utilize this band will allow small entities to bid on it in the future.

- Because we contemplate a future rulemaking proceeding to determine the ultimate disposition of Nextel's 700 MHz Guard Band spectrum, we afford small businesses an opportunity to comment on the future use of this spectrum.

28. We have considered the costs of realignment and the limited resources of small entities, including public safety, in effectuating band realignment. We believe that our decision will not have a significant economic impact on small entities in this regard because the cost of 800 MHz realignment will be borne by Nextel (*i.e.*, Nextel will pay relocation costs). We reject the alternative of deferring final action on band reconfiguration, because deferral would increase the potential for increased interference to public safety systems because ESMR and Cellular telephone licensees would remain in close proximity to such systems while expanding their operations.

29. Although we have not codified the *Best Practices Guide*, we endorse the interference abatement strategies therein. However, when we considered the sole use of Enhanced Best Practices as an alternative to reconfiguring the 800 MHz band in its entirety, we found this alternative less effective and more costly over the long term than band reconfiguration, and therefore more likely to be harmful to smaller entities. Our finding in that regard rests on the following facts:

- Addressing interference on a case-by-case basis is both labor-intensive and expensive, which puts smaller entities at risk due to their more limited resources.

- The transactional cost of applying Enhanced Best Practices as an exclusive remedy would increase as new public safety and other non-cellular systems came on line and ESMR and cellular telephone licensees increased the capacity of their systems by adding more cells.

- The increased cost and labor burden disproportionately affects public safety agencies, many of which are small entities operating with very limited human, technical and financial resources.

30. We have determined not to require public safety licensees to increase their signal strength. Such a requirement would impose a substantial burden on public safety licensees, including small entities, which would often continue to suffer from interference until the causes could be identified and until appropriate channels and sites for the construction of new base station facilities could be obtained.

31. Regarding our decision to permit negotiated agreements to swap or exchange channels as a means to resolve interference to public safety systems, we do not foresee any adverse impact on small entities. The channel swapping proposals to date have specified that Nextel will bear the costs thereof. To the extent that small entities bear channel swap expenses not assumed by Nextel, we believe, for the reasons discussed at ¶ 29 *supra*, the financial burden of these small-scale band reconfigurations should be less than the cost of reliance on Enhanced Best Practices for the long term abatement of unacceptable

interference.

32. Regarding our decision to hold Cellular Radio Telephone and ESMR licensees strictly responsible for effectively abating actual or potential unacceptable interference to 800 MHz public safety systems in the shortest practicable time, we do not anticipate a significant burden on small entities. We recognize that our rule does not exempt small entities from its ambit. However, in eliminating the interference we afford licensees the flexibility to determine which system—ESMR, Cellular Telephone or CII/public safety—to modify and what particular technical parameters to change on these systems; and impose on the interfering licensee(s), the obligation to promptly implement such changes. Moreover, we note that small entities were generally not among the interfering parties in those instances of interference that were brought to our attention by parties in this proceeding. We considered the alternative of imposing system-wide, stringent technical limitations on ESMR and Cellular Telephone licensees; however, we found selection of that alternative unwarranted at this time. Such rules would have imposed a burden on all licensees, including small entities, which were not among those causing interference to 800 MHz public safety systems. In particular, we have heeded the filings of rural cellular telephone carriers who opposed imposition of out-of-band emission standards that would require them to add expensive equipment to their cell sites.

33. Regarding our adoption of rules establishing general standards and procedures to govern the abatement of interference to public safety systems, we recognize that they will apply equally to all licensees, including small entities, which cause interference to 800 MHz public safety systems. However, we do not anticipate any significant adverse impact on small entities. We adopted rules that were intentionally general in nature to confer considerable discretion on the parties involved in abating instances of interference to public safety systems. Moreover, as noted above, small entities were generally not among the interfering parties in those instances of interference that were brought to our attention by parties in this proceeding. To the extent that they can demonstrate that they are not contributing to the interference to the public safety systems, they will not be responsible for abating the interference. Therefore, the burden should be minimal for those small entities not contributing to the public safety interference problem in the 800 MHz band. The minimal burden imposed by these rules is necessary to ensure that critical public safety communications may be accommodated without unacceptable interference.

34. In this respect, we are mindful that a number of the public safety systems that are experiencing interference are small entities. We believe that the rules will impose a minimal burden on small public safety entities. First, because we will only require them to furnish certain necessary information to all licensees that may be responsible for causing the interference. Second, because this provision will assure them of timely responses to and analyses of their interference complaints. Ultimately, the burden of supplying this information will be significantly less than that associated with identifying each source of unacceptable interference and contacting such sources individually.

35. Regarding our decision to require notification of the activation of new or modified ESMR or cellular radiotelephone cells, we do not perceive any adverse impact on small entities. Indeed, the prior notification requirement will enable small entities, such as public safety/CII licensees, to take proactive, anticipatory steps to address potential interference. Without this requirement, public safety/CII licensees would first have to experience interference before taking recourse. Similarly, the requirement that Cellular Radiotelephone and/or ESMR licensees promptly initiate corrective actions after having been notified of interference by public safety/CII licensees minimizes the burden on small entities of having to endure prolonged periods of interference. Moreover, as noted above, small entities were generally not among the interfering parties in those instances of interference that were brought to our attention by parties in this proceeding.

36. Regarding our decision to consolidate the 800 MHz and 900 MHz Business and

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Industrial/Land Transportation Pools, we perceive no adverse impact on small entities. This decision will allow any eligible Business or Industrial/Land Transportation entity to be licensed on the consolidated channels. This consolidation will improve spectrum efficiency, promote the use of advanced technologies by affording licensees more contiguous spectrum, and reduce regulatory burdens on all licensees, including small entities. The alternative of retaining separate pools for each service would subject licensees to the unnecessary burden of seeking waivers to permit intercategory sharing, which may have been comparatively more onerous for smaller entities to prepare and file.

37. Regarding our decision to allow 900 MHz PLMR licensees to initiate CMRS operations on their currently authorized spectrum or to assign their authorizations to others for CMRS use, we perceive no adverse impact on small entities. This decision will improve spectrum efficiency, promote the use of advanced technologies by affording licensees access to addition spectrum.

38. Regarding our decision to allocate the 1910-1915 MHz/1990-1995 MHz paired spectrum blocks to Nextel, we perceive no adverse impact on small entities. Redesignating this spectrum for Nextel's use, for example, will facilitate 800 MHz realignment, by, among other things, introducing an additional entity that can participate in funding the relocation costs of public safety, critical infrastructure, and private wireless entities, including small entities. Alternatively, maintaining this spectrum without applying our relocation principles will expose such entities to continued interference without sufficient spectrum and funding to achieve realignment. Further, we are satisfied that our decision will not adversely impact BAS, UPCS, MSS, and microwave interests on account of expenditures in this spectrum. As noted in the *Report and Order*, Nextel has agreed to reimburse these interests or pay the upfront costs to relocate incumbents in the manner provided by our Rules, and we will hold Nextel to that agreement.

39. **Report to Congress:** The Commission will send a copy of the *Report and Order, Fifth Report and Order, Memorandum Opinion and Order, and Order,* including this FRFA, in a report to be sent to Congress and the General Accounting Office pursuant to the Congressional Review Act.[834] In addition, the Commission will send a copy of the *Report and Order*, including this FRFA, to the Chief Counsel for Advocacy of the SBA. A copy of the *Report and Order* and FRFA (or summaries thereof) will also be published in the Federal Register.[835]

[834] *See* 5 U.S.C. § 801(a)(1)(A).

[835] *See* 5 U.S.C. § 604(b).

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APPENDIX B: PAPERWORK REDUCTION ANALYSIS

1. This document contains new information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. It will be submitted to the Office of Management and Budget (OMB) for review under Section 3507(d) of the PRA. OMB, the general public, and other Federal agencies are invited to comment on the information collection requirements contained in this document. In addition, we note that pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. 3506(c)(4), we previously sought specific comment on how the Commission might "further reduce the information collection burden for small business concerns with fewer than 25 employees." This *Report and Order* contains several new information collections. We describe our new information collections as follows:

2. In this *Report and Order* we require that any Cellular Radiotelephone and/or ESMR licensee that receives an interference complaint from a public safety/CII licensee shall respond to such complaint. To facilitate receipt of complaints, Cellular Radiotelephone licensees, in conjunction with Part 90 ESMR licensees, must establish an electronic means of receiving the initial notification and shall respond to such notification on an "as soon as possible" basis and no later than 24 hours after receipt of initial notification. The purpose of this notification rule is to provide prompt notification to ESMR and Cellular Radiotelephone licensees that their transmissions are interfering with public safety/CII transmissions, some of which are crucial to protection of life and property. These requirements constitute new "collections of information" within the meaning of the Paperwork Reduction Act of 1995, 44 U.S.C. §§ 3501-3520. Implementation of this requirement is subject to approval by the Office of Management and Budget as prescribed by the Paperwork Reduction Act.

3. Additionally, the rules we adopt today provide that upon request by a public safety/CII licensee, Cellular Radiotelephone and/or ESMR licensees must provide to the public safety/CII licensee the following information before any new cell sites are constructed or any existing cells are modified: (1) location; (2) effective radiated power; (3) antenna height; (4) channels in use. The purpose of this rule is for informational purposes only and does not entitle the public safety/CII licensee to approve or disapprove the activation of a proposed cell site or to demand changes to the proposed technical parameters. The principal purpose of this rule is to forestall activation of facilities that have the potential to cause interference to communications, some of which may be crucial to the safety of life and property. These requirements constitute new "collections of information" within the meaning of the Paperwork Reduction Act of 1995, 44 U.S.C. §§ 3501-3520. Implementation of this requirement is subject to approval by the Office of Management and Budget as prescribed by the Paperwork Reduction Act.

4. In this present document, we have assessed the effects of the above-mentioned information collection requirements on small business concerns, and find that these information collection requirements will not adversely affect businesses with fewer than twenty-five employees.

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APPENDIX C: FINAL RULES

PART 15 – RADIO FREQUENCY DEVICES

1. The authority citation for Part 15 continues to read as follows:

Authority: 47 U.S.C. 154, 302, 303, 304, 307, 336, and 544A.

2. Section 15.301 is amended as follows:

§ 15.301 Scope.

This subpart sets out the regulations for unlicensed personal communications services (PCS) devices operating in the 1915-1930 MHz and 2390-2400 MHz frequency bands.

3. Paragraph (g) of Section 15.303 is amended as follows:

§ 15.303 Definitions.

* * * * *

(g) *Personal Communications Services (PCS) Devices [Unlicensed]*. Intentional radiators operating in the frequency bands 1915-1930 MHz and 2390-2400 MHz that provide a wide array of mobile and ancillary fixed communication services to individuals and businesses.

* * * * *

4. Section 15.311 is amended as follows:

§ 15.311 Labeling requirements.

In addition to the labeling requirements of §15.19(a)(3), all devices operating in the frequency band 1915-1930 MHz authorized under this subpart must bear a prominently located label with the following statement: * * *

5. Paragraph (a) of Section 15.319 is amended as follows:

§ 15.319 General technical requirements.

(a) The 1915-1920 MHz and 2390-2400 MHz bands are limited to use by asynchronous devices under the requirements of § 15.321. * * *

* * * * *

6. Paragraphs (a) and (b) of Section 15.321 is amended as follows:

§ 15.321 Specific requirements for asynchronous devices operating in the 1915-1920 MHz and 2390-2400 MHz bands.

(a) Operation shall be contained within either or both of the 1915-1920 MHz and 2390-2400 MHz bands. * * *

(b) All systems of less than 2.5 MHz emission bandwidth shall start searching for an available spectrum window within 3 MHz of the band edge at 1915, 1920, 2390, or 2400 MHz while systems of more than 2.5 MHz emission bandwidth will first occupy the center half of the band. * * *

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* * * * *

Part 22 of title 47 of the Code of Federal Regulations is revised to read as follows:

PART 22 – PUBLIC MOBILE SERVICES

7. The authority citation for Part 22 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 222, 303, 309 and 332.

8. The following sections are added immediately after the text of Section 22.969:

§ 22.970 Unacceptable interference to Part 90 non-cellular 800 MHz licensees from cellular radiotelephone or Part 90 ESMR systems.

(a) *Definition.* Except as provided in 47 C.F.R. §90.617(k), unacceptable interference to non-cellular Part 90 licensees in the 800 MHz band will be deemed to occur when the below conditions are met:

(1) A transceiver at a site at which interference is encountered:

(i) Is in good repair and operating condition, and is receiving:

(A) A median desired signal of -104 dBm or higher, as measured at the R.F. input of the receiver of a mobile unit; or

(B) A median desired signal of -101 dBm or higher, as measured at the R.F. input of the receiver of a portable *i.e.* hand-held unit; and, either

(ii) Is a voice transceiver:

(A) with manufacturer published performance specifications for the receiver section of the transceiver equal to, or exceeding, the minimum standards set out in Section (b), below; and;

(B) Receiving an undesired signal or signals which cause the measured Carrier to Noise plus Interference (C/(I+N)) ratio of the receiver section of said transceiver to be less than 20 dB, or,

(iii) Is a non-voice transceiver receiving an undesired signal or signals which cause the measured bit error rate (BER) (or some comparable specification) of the receiver section of said transceiver to be more than the value reasonably designated by the manufacturer**.**

(2) Provided, however, that if the receiver section of the mobile or portable voice transceiver does not conform to the standards set out in paragraph (b), below, then that transceiver shall be deemed subject to unacceptable interference only at sites where the median desired signal satisfies the applicable threshold measured signal power in paragraphs (a)(1)(i) after an upward adjustment to account for the difference in receiver section performance. The upward adjustment shall be equal to the increase in the desired signal required to restore the receiver section of the subject transceiver to the 20 dB C/(I+N) ratio of paragraph (a)(1)(iv)(a) above. The adjusted threshold levels shall then define the minimum measured signal power(s) in lieu of paragraphs (a) (1) (i) at which the licensee using such non-compliant transceiver is entitled to interference protection.

(b) *Minimum Receiver Requirements*. Voice transceivers capable of operating in the 806-824

MHz portion of the 800 MHz band shall have the following minimum performance specifications in order for the system in which such transceivers are used to claim entitlement to full protection against unacceptable interference. (See paragraph (a) (2) above.)

(1) Voice units intended for mobile use: 75 dB intermodulation rejection ratio; 75 dB adjacent channel rejection ratio; -116 dBm reference sensitivity.

(2) Voice units intended for portable use: 70 dB intermodulation rejection ratio; 70 dB adjacent channel rejection ratio; -116 dBm reference sensitivity.

§ 22.971 Obligation to abate unacceptable interference.

(a) *Strict Responsibility*. Any licensee who, knowingly or unknowingly, directly or indirectly, causes or contributes to causing unacceptable interference to a non-cellular Part 90 licensee in the 800 MHz band, as defined in § 22.970 of this chapter, shall be strictly accountable to abate the interference, with full cooperation and utmost diligence, in the shortest time practicable. Interfering licensees shall consider all feasible interference abatement measures, including, but not limited to, the remedies specified in the interference resolution procedures set forth in § 22.972 of this chapter. This strict responsibility obligation applies to all forms of interference, including out-of-band emissions and intermodulation.

(b) *Joint and Several Responsibility*. If two or more licensees knowingly or unknowingly, directly or indirectly, cause or contribute to causing unacceptable interference to a non-cellular Part 90 licensee in the 800 MHz band, as defined in § 22.970 of this chapter, such licensees shall be jointly and severally responsible for abating interference, with full cooperation and utmost diligence, in the shortest practicable time.

(1) This joint and several responsibility rule requires interfering licensees to consider all feasible interference abatement measures, including, but not limited to, the remedies specified in the interference resolution procedures set forth in § 22.972(c) of this chapter. This joint and several responsibility rule applies to all forms of interference, including out-of-band emissions and intermodulation.

(2) Any licensee that can show that its signal does not directly or indirectly, cause or contribute to causing unacceptable interference to a non-cellular Part 90 licensee in the 800 MHz band, as defined in this chapter, shall not be held responsible for resolving unacceptable interference. Notwithstanding, any licensee that receives an interference complaint from a public safety/CII licensee shall respond to such complaint consistent with the interference resolution procedures set forth in this chapter.

§ 22.972 Interference resolution procedures.

(a) *Initial Notification.* (1) Cellular Radiotelephone licensees may receive initial notification of interference from non-cellular Part 90 licensees in the 800 MHz band pursuant to § 90.674(a) of this chapter.

(2) Cellular Radiotelephone licensees, in conjunction with Part 90 ESMR licensees, shall establish an electronic means of receiving the initial notification described in § 90.674(a) of this chapter. The electronic system must be designed so that all appropriate Cellular Radiotelephone licensees and Part 90 ESMR licensees can be contacted about the interference incident with a single notification. The electronic system for receipt of initial notification of interference complaints must be operating no later than **[Thirty days from effective date of *Report and Order*]**.

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(3) Cellular Radiotelephone licensees must respond to the initial notification described in § 90.674(a) of this chapter, as soon as possible and no later than 24 hours after receipt of notification from a Part 90 public safety/CII licensee. This response time may be extended to 48 hours after receipt from other Part 90 non-cellular licensees provided affected communications on these systems are not safety related.

(b) *Interference Analysis.* Cellular Radiotelephone licensees – who receive an initial notification described in § 90.674(a) of this chapter – shall perform a timely analysis of the interference to identify the possible source. Immediate on-site visits may be conducted when necessary to complete timely analysis. Interference analysis must be completed and corrective action initiated within 48 hours of the initial complaint from a Part 90 public safety/CII licensee. This response time may be extended to 96 hours after the initial complaint from other Part 90 non-cellular licensees provided affected communications on these systems are not safety related. Corrective action may be delayed if the affected licensee agrees in writing (which may be, but is not required to be, recorded via e-mail or other electronic means) to a longer period.

(c) *Mitigation Steps.* (1) All Cellular Radiotelephone and Part 90 ESMR licensees who are responsible for causing unacceptable interference shall take all affirmative measures to resolve such interference. Cellular Radiotelephone licensees found to contribute to unacceptable interference, as defined in § 22.970, shall resolve such interference in the shortest time practicable. Cellular Radiotelephone licensees and Part 90 ESMR licensees must provide all necessary test apparatus and technical personnel skilled in the operation of such equipment as may be necessary to determine the most appropriate means of timely eliminating the interference. However, the means whereby interference is abated or the cell parameters that may need to be adjusted is left to the discretion of the Cellular Radiotelephone and/or Part 90 ESMR licensees, whose affirmative measures may include, but not be limited to, the following techniques:

(i) increasing the desired power of the public safety/CII signal;

(ii) decreasing the power of the Part 90 ESMR and/or Cellular Radiotelephone system signal;

(iii) modifying the Part 90 ESMR and/or Cellular Radiotelephone system antenna height;

(iv) modifying the Part 90 ESMR and/or Cellular Radiotelephone system antenna characteristics;

(v) incorporating filters into Part 90 ESMR and/or Cellular Radiotelephone transmission equipment;

(vi) permanently changing Part 90 ESMR and/or Cellular Radiotelephone frequencies; and

(vii) supplying interference-resistant receivers to the affected public safety/CII licensee(s). If this technique is used, in all circumstances, Cellular Radiotelephone and/or Part 90 ESMR licensees shall be responsible for all costs thereof.

(2) Whenever short-term interference abatement measures prove inadequate, the affected Part 90 non-cellular licensee shall, consistent with but not compromising safety, make all necessary concessions to accepting interference until a longer-term remedy can be implemented.

(3) *Discontinuing operations when clear imminent danger exists.* When a Part 90 public safety licensee determines that a continuing presence of interference constitutes a clear and imminent danger

to life or property, the licensee causing the interference must discontinue the associated operation immediately, until a remedy can be identified and applied. The determination that a continuing presence exists that constitutes a clear and imminent danger to life or property, must be made by written statement that:

(i) is in the form of a declaration, notarized affidavit, or statement under penalty or perjury, from an officer or executive of the affected public safety licensee;

(ii) thoroughly describes the basis of the claim of clear and imminent danger;

(iii) was formulated on the basis of either personal knowledge or belief after due diligence;

(iv) is not proffered by a contractor or other third party; and

(v) has been approved by the Chief of the Wireless Telecommunication Bureau or other designated Commission official. Prior to the authorized official making a determination that a clear and imminent danger exists, the associated written statement must be served by hand-delivery or receipted fax on the applicable offending licensee, with a copy transmitted by the fastest available means to the Washington, D.C. office of the Commission's Wireless Telecommunications Bureau.

§ 22.973 Information exchange.

(a) *Prior Notification.* Public safety/CII licensees may notify a Part 90 ESMR or cellular radiotelephone licensee that they wish to receive prior notification of the activation or modification of Part 90 ESMR or cellular radiotelephone cell sites in their area. Thereafter, the Part 90 ESMR or cellular radiotelephone licensee must provide the following information to the public safety/CII licensee at least 10 business days before a new cell site is activated or an existing cell site is modified:

(1) location;

(2) effective radiated power;

(3) antenna height;

(4) channels available for use.

(b) *Purpose of Prior Notification*. The prior coordination of cell sites is for informational purposes only: public safety/CII licensees are not afforded the right to accept or reject the activation of a proposed cell or to unilaterally require changes in its operating parameters. The principal purposes of notification are to: (a) allow a public safety licensee to advise the Part 90 ESMR or Cellular Radiotelephone licensee whether it believes a proposed cell will generate unacceptable interference; (b) permit Cellular Radiotelephone or Part 90 ESMR licensees to make voluntary changes in cell parameters when a public safety licensee alerts them to possible interference; and (c) rapidly identify the source if interference is encountered when the cell is activated.

Part 24 of title 47 of the Code of Federal Regulation, is amended to read as follows:

PART 24 – PERSONAL COMMUNICATIONS SERVICES

9. The authority citation for Part 24 continues to read as follows:

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AUTHORITY: Sections 47 U.S.C. 154, 301, 302, 303, 309 and 332.

10. Paragraph (b) of Section 24.203 is amended as follows and an new paragraph (d) is added:

§ 24.203 Construction requirements.

* * * * *

(b) Licensees of 10 MHz blocks except for the 1910-1915 MHz and 1990-1995 MHz, including 10 MHz C block licenses reconfigured pursuant to Amendment of the Commission's Rules Regarding Installment Payment Financing for Personal Communications Services (PCS) Licensees, WT Docket No. 97–82, Sixth Report and Order, FCC 00–313, and 15 MHz blocks resulting from the disaggregation option as provided in the Commission's Rules Regarding Installment payment Financing for Personal Communications Services (PCS) Licensees, Second Report and Order and Further Notice of Proposed Rule Making, WT Docket 97–82, 12 FCC Rcd 16436 (1997), as modified by Order on Reconsideration of the Second Report and Order, WT Docket 97–82, 13 FCC Rcd 8345 (1998), must serve with a signal level sufficient to provide adequate service to at least one-quarter of the population in their licensed area within five years of being licensed, or make a showing of substantial service in their licensed area within five years of being licensed. Population is defined as the 1990 population census. Licensees may elect to use the 2000 population census to determine the five-year construction requirement. Failure by any licensee to meet these requirements will result in forfeiture of the license and the licensee will be ineligible to regain it.

* * * * *

(d) Licensees in the paired 1910-1915 MHz and 1990-1995 MHz bands must make a showing of "substantial service" in their license area within ten years of the date of initial issuance or renewal. "Substantial service" is defined as service which is sound, favorable, and substantially above a level of mediocre service which just might minimally warrant renewal. Failure by any licensee to meet this requirement will result in forfeiture of the license and the licensee will be ineligible to regain it.

* * * * *

11. A new paragraph (c) is added to Section 24.229 as follows:

§ 24.229 Frequencies.

* * * * *

(c) The paired frequency blocks 1910-1915 MHz and 1990-1995 MHz are available for assignment in the 175 Economic Areas defined in § 90.7 of this chapter. The 1910-1915 MHz block shall be used for mobile/portable station transmissions while the 1990-1995 MHz block shall be used for base station transmissions.

* * * * *

12. A new paragraph (c) is added to Section 24.247 as follows:

§ 24.247 Triggering a reimbursement obligation.

* * * * *

(c) Any new entrants granted licenses for the 1910-1915 MHz band must reimburse UTAM a pro rata share of its total expenses incurred by UTAM as of the date that the new entrants gain access to the

band. The percent required by new entrants to pay shall be calculated based upon the amount of spectrum granted to the new entrant as compared to the total amount of spectrum UTAM is responsible for clearing of incumbents (20 megahertz), and must be paid before a new entrant begins operations in the band. For example, if a new entrant obtains a license for 5 megahertz of spectrum in this band, it is required to reimburse UTAM one-quarter of UTAM's total costs to date on a pro rata shared basis. New entrants will be responsible for the actual costs associated with future relocation activities in their licensed spectrum, but will be entitled to seek reimbursement from UTAM for the proportion of those band clearing costs that benefit users of the 1915-1930 MHz band.

13. For the reasons discussed above, the Federal Communications Commission amends 47 CFR parts 74 and 78 as follows:

PART 74 – EXPERIMENTAL RADIO, AUXILIARY, SPECIAL BROADCASTING AND OTHER PROGRAM DISTRIBUTIONAL SERVICES

14. The authority citation for Part 74 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 303, 307, 336(f), 336(h) and 554.

15. Part 74.602(a)(3)(iii) is amended to read as follows:

§ 74.602 Frequency assignments.

(a) * * *

(3) * * *

(iii) Broadcast Auxiliary Service, Cable Television Remote Pickup Service, and Local Television Transmission Service licensees will be required to use the Band A channel plan in paragraph (a)(3)(i) of this section after completion of relocation by an Emerging Technologies licensee in accordance with § 74.690 or § 78.40 of this chapter. Licensees declining relocation may continue to use their existing channel plan but must discontinue use of the 1990-2025 MHz band when they indicate to an Emerging Technologies licensee, acting pursuant to § 74.690 or § 78.40 of this chapter, that they decline to be relocated.

16. Section 74.690 is amended to amend sections (a), (b), (c)(2), (c)(3), (d) and (e), and to remove and reserve section (e)(1)(ii) to read as follows:

§ 74.690 Transition of the 1990-2025 MHz band from the Broadcast Auxiliary Service to emerging technologies.

(a) New Entrants, collectively defined as those licensees proposing to use emerging technologies to implement Mobile Satellite Services in the 2000-2020 MHz band (MSS licensees),and those licensees authorized after July 1, 2004 to implement new fixed and mobile services in the 1990-1995 MHz band, may negotiate with Broadcast Auxiliary Service licensees operating on a primary basis and fixed service licensees operating on a primary basis in the 1990-2025 MHz band (Existing Licensees) for the purpose of agreeing to terms under which the Existing Licensees would relocate their operations to the 2025-2110 MHz band, to other authorized bands, or to other media; or, alternatively, would discontinue use of the 1990-2025 MHz band.

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(b) An Existing Licensee in the 1990-2025 MHz band allocated for licensed emerging technology services will maintain primary status in the band until the Existing Licensee's operations are relocated by a New Entrant, are discontinued under the terms of paragraph (a) of this section, or become secondary under the terms of paragraph (e)(6) of this section or the Existing Licensee indicates to a New Entrant that it declines to be relocated.

(c) * * *

(2) The New Entrant completes all activities necessary for implementing the replacement facilities, including engineering and cost analysis of the relocation procedure and, if radio facilities are used, identifying and obtaining, on the incumbents' behalf, new microwave or Local Television Transmission frequencies and frequency coordination.

(3) The New Entrant builds the replacement system and tests it for comparability with the existing system.

(d) The Existing Licensee is not required to relocate until the alternative facilities are available to it for a reasonable time to make adjustments, determine comparability, and ensure a seamless handoff. If, within one year after the relocation to new facilities the Existing Licensee demonstrates that the new facilities are not comparable to the former facilities, the New Entrant must remedy the defects.

(e) Subject to the terms of this paragraph (e), the relocation of Existing Licensees will be carried out by MSS licensees in the following manner:

(1) * * *

(ii) [removed and reserved]

* * * * *

17. PART 78 – CABLE TELEVISION RELAY SERVICE

1. The authority citation for Part 78 continues to read as follows:

AUTHORITY: Secs. 2, 3, 4, 301, 303, 307, 308, 309, 48 Stat., as amended, 1064, 1065, 1066, 1081, 1082, 1083, 1084, 1085; 47 U.S.C. 152, 153, 154, 301, 303, 307, 308, 309.

2. Section 78.40 is amended to amend sections (a), (b), (c)(2), (c)(3), (e) and (f), and to remove and reserve section (f)(1)(ii) to read as follows:

§ 78.40 Transition of the 1990-2025 MHz band from the Cable Television Relay Service to emerging technologies.

(a) New Entrants, collectively defined as those licensees proposing to use emerging technologies to implement Mobile Satellite Services in the 2000-2020 MHz band (MSS licensees) and those licensees authorized after July 1, 2004 to implement new fixed and mobile services in the 1990-1995 MHz band, may negotiate with Cable Television Relay Service licensees operating on a primary basis and fixed service licensees operating on a primary basis in the 1990-2025 MHz band (Existing Licensees) for the purpose of agreeing to terms under which the Existing Licensees would relocate their operations to the 2025-2110 MHz band, to other authorized bands, or to other media; or, alternatively, would accept a sharing arrangement with the New Entrants that may result in an otherwise impermissible level of

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interference to the Existing Licensee's operations.

(b) Existing Licensees in the 1990-2025 MHz band allocated for licensed emerging technology services will maintain primary status in the band until a New Entrant completes relocation of the Existing Licensee's operations or the Existing Licensee indicates to a New Entrant that it declines to be relocated.

(c) * * *

(2) The New Entrant completes all activities necessary for implementing the replacement facilities, including engineering and cost analysis of the relocation procedure and, if radio facilities are used, identifying and obtaining, on the incumbents' behalf, new microwave or Cable Television Relay Service frequencies and frequency coordination.

(3) The New Entrant builds the replacement system and tests it for comparability with the existing system.

(d) * * *

(e) If, within one year after the relocation to new facilities the Existing Licensee demonstrates that the new facilities are not comparable to the former facilities, the New Entrant must remedy the defect.

(f) Subject to the terms of this paragraph (e), the relocation of Existing Licensees will be carried out by MSS licensees in the following manner:

(1) * * *

(ii) [removed and reserved]

* * * * *

Part 90 of title 47 of the Code of Federal Regulations, is amended to read as follows:

PART 90 – PRIVATE LAND MOBILE RADIO SERVICES

18. The authority citation for Part 90 continues to read as follows:

AUTHORITY: Sections 4(i), 11, 303(g), 303(r), and 302(c)(7) of the Communications Act of 1934, as amended, 47 U.S.C. 154(i), 161, 303(g), 303(r), 332(c)(7).

19. The following definitions are added to the text of Section 90.7.

§ 90.7 Definitions.

800 MHz Cellular System. In the 806-817 MHz/ 851-862 MHz band, a cellular system is defined as high-density system which:

(1) has more than five overlapping interactive sites featuring hand-off capability; and

(2) any one of such sites has an antenna height of less than 30.4 meters (100 feet) above ground level with an antenna height above average terrain (HAAT) of less than 152.4 meters (500 feet) and twenty or more paired frequencies.

* * * * *

Critical Infrastructure Industry (CII). Private internal radio services operated by State, local governments and non-government entities, including utilities, railroads, metropolitan transit systems, pipelines, private ambulances, volunteer fire departments, and not-for-profit organizations that offer emergency road services, provided these private internal radio services (i) are used to protect safety of life, health, or property; and (ii) are not made commercially available to the public.

* * * * *

Enhanced Specialized Mobile Radio System (ESMR). A specialized mobile radio (SMR) system operating in the 800 MHz band which employs an 800 MHz cellular system as defined in this section.

* * * * *

20. The text in Section 90.16 is revised to reflect the location of the NPSPAC spectrum after band reconfiguration.

§ 90.16. Public Safety National Plan.

The Commission has established a National Plan which specifies special policies and procedures governing the Public Safety Pool (formally Public Safety Radio Services and the Special Emergency Radio Service). The National Plan is contained in the Report and Order in General Docket No. 87–112. The principal spectrum resource for the National Plan is the 806–809 MHz and the 851–854 MHz bands at locations farther then 110 km (68.4 miles) from the U.S./Mexico border and 140 km (87 miles) from the U.S./Canadian border ("border regions"). In the border regions, the principal spectrum for the National Plan may be different. The National plan establishes planning regions covering all parts of the United States, Puerto Rico, and the U.S. Virgin Islands. No assignments will be made in the spectrum designated for the National Plan until a regional plan for the area has been accepted by the Commission.

21. Section 90.20 is amended by revising the table in paragraph (c)(3) and by revising the text in paragraph (d)(69).

§ 90.20 Public Safety Pool.

* * * * *

(c) * * *

(3) * * *

PUBLIC SAFETY POOL FREQUENCY TABLE

Frequency or band	Class of station(s)	Limitations	Coordinator
* * * * *	* * * * *	* * * * *	* * * * *
806 to 817	….do……	69.	
851 to 862	Base or mobile	69.	
* * * * *	* * * * *	* * * * *	* * * * *

(d) * * * * *

(69) Subpart S of this part contains rules for assignment of frequencies in the 806–816 MHz and 851–861 MHz bands.

22. Section 90.35 is amended by revising the table in paragraph (b)(3) and by revising the text in paragraph (c)(71).

§ 90.35 Industrial/Business Pool.

* * * * *

(b) * * *

(3) * * *

INDUSTRIAL/BUSINESS POOL FREQUENCY TABLE

Frequency or band	Class of station(s)	Limitations	Coordinator
* * * * *	* * * * *	* * * * *	* * * * *
809 to 824	Mobile……	71.	
854 to 869	Base or mobile	71.	
* * * * *	* * * * *	* * * * *	* * * * *

(c) * * *

(71) Subpart S of this part contains rules for assignment of frequencies in the 809–824/854–869 and 896–901/935–940 MHz bands.

§ 90.209 Bandwidth limitations.

* * * * *

(b) * * *

(5) * * *

STANDARD CHANNEL SPACING/BANDWIDTH

Frequency band (MHz)	Channel spacing (kHz)	Authorized bandwidth (kHz)
*****	*****	*****
806-809/851-854 ……	12.5	20
809-824/854-869…….	25	20
*****	*****	*****

* * * * *

23. The table in Section 90.210 is amended to reflect the 800 MHz band after band

reconfiguration.

§ 90.210 Emission masks.

* * * * *

APPLICABLE EMISSION MASKS

Frequency band (MHz)	Mask for equipment with Audio low pass filter	Mask for equipment without audio low pass filter
*****	*****	*****
806-809/851-854 ……	B	H
809-824/854-869[3]……	B	G
*****	*****	*****

[1] Equipment using single sideband J3E emission must the requirements of Emission Mask A. Equipment using other emissions must meet the requirements of Emission Mask B or C, as applicable.

[2] Equipment designed to operate with a 25 kHz channel bandwidth must meet the requirements of Emission Mask B or C, as applicable. Equipment designed to operate with a 12.5 kHz channel bandwidth must meet the requirements of Emission Mask D, and equipment designed to operate with a 6.25 kHz channel bandwidth Must meet the requirements of Emission Mask E.

[3] ESMR systems shall comply with the emission mask provisions of §90.691.

* * * * *

24. The table in Section 90.213 is updated to reflect the 800 MHz band after band reconfiguration.

§ 90.213 Frequency stability.

(a) * * *

MINIMUM FREQUENCY STABILITY
[Parts per million (ppm)]

Frequency range (MHz)	Fixed and base stations	Mobile stations	
		Over 2 watts output power	2 watts or less output power
*****	*****	*****	*****
806-809 ……	[14] 1.0	1.5	1.5
809-824…….	[14] 1.5	2.5	2.5
851-854…….	1.0	1.5	1.5
854-869…….	1.5	2.5	2.5
*****	*****	*****	*****

* * * * *

25. Paragraph (e) of Section 90.607 is amended to exempt applicants for ESMR frequencies from frequency coordination requirements:

§ 90.607 Supplemental information to be furnished by applicants for facilities under this subpart.

* * * * *

(e) All applicants for frequencies governed by this subpart are subject to the frequency coordination requirements of § 90.175(b) except applicants requesting frequencies for EA-based SMR operations in the 806-824 MHz /851-869 MHz band or 896-901 MHz /935-940 MHz band.

26. Paragraph (c) of Section 90.609 is amended to eliminate references to Spectrum Block D which will no longer exist after band reconfiguration:

§ 90.609 Special limitations on amendment of applications for assignment or transfer of authorizations for radio systems above 800 MHz.

* * * * *

(c) Licensees of constructed systems in any category are permitted to make partial assignments of an authorized grant to an applicant proposing to create a new system or to an existing licensee that has loaded its system to 70 mobiles per channel and is expanding that system. An applicant authorized to expand an existing system or to create a new system with frequencies from any category obtained through partial assignment will receive the assignor's existing license expiration date and loading deadline for the frequencies that are assigned. A licensee that makes a partial assignment of a station's frequencies will not be authorized to obtain additional frequencies for that station for a period of one year from the date of the partial assignment.

* * * * *

27. Section 90.613 is amended to indicate the channel designations after band reconfiguration:

§ 90.613 Frequencies available.

The following tables indicate the channel designations of frequencies available for assignment to eligible applicants under this subpart. Frequencies shall be assigned in pairs, with mobile and control station transmitting frequencies taken from the 806–824 MHz band with corresponding base station frequencies being 45 MHz higher and taken from the 851–869 MHz band, or with mobile and control station frequencies taken from the 896–901 MHz band with corresponding base station frequencies being 39 MHz higher and taken from the 935–940 MHz band. Only the base station transmitting frequency of each pair is listed in the following tables.

TABLE OF 806-824/851-869 MHZ CHANNEL DESIGNATIONS

Channel No.	Base Frequency (MHz)
1	851.0125
2	.0375
3	.0500
4	.0625
5	.0750
6	.0875
7	.1000
8	.1125
9	.1250
10	.1375
11	.1500
12	.1625
13	.1750

14	.1875
15	.2000
16	.2125
17	.2250
18	.2375
19	.2500
20	.2625
21	.2750
22.....	.2875
23	.3000
24	.3125
25	.3250
26	.3375
27	.3500
28	.3625
29	.3750
30	.3875
31	.4000
32	.4125
33	.4250
34	.4375
35	.4500
36	.4625
37	.4750
38	.4875
39	.5125
40	.5375
41	.5500
42	.5625
43	.5750
44	.5875
45	.6000
46	.6125
47	.6250
48	.6375
49	.6500
50	.6625
51	.6750
52	.6875
53	.7000
54	.7125
55	.7250
56	.7375
57	.7500
58	.7625
59	.7750
60	.7875
61	.8000
62	.8125

63	.8250
64	.8375
65	.8500
66	.8625
67	.8750
68	.8875
69	.9000
70	.9125
71	.9250
72	.9375
73	.9500
74	.9625
75	.9750
76	.9875
77	852.0125
78	.0375
79	.0500
80	.0625
81	.0750
82	.0875
83	.1000
84	.1125
85	.1250
86	.1375
87	.1500
88	.1625
89	.1750
90	.1875
91	.2000
92	.2125
93	.2250
94	.2375
95	.2500
96	.2625
97	.2750
98	.2875
99	.3000
100	.3125
101	.3250
102	.3375
103	.3500
104	.3625
105	.3750
106	.3875
107	.4000
108	.4125
109	.4250
110	.4375
111	.4500

112	.4625
113	.4750
114	.4875
115	.5125
116	.5375
117	.5500
118	.5625
119	.5750
120	.5875
121	.6000
122	.6125
123	.6250
124	.6375
125	.6500
126	.6625
127	.6750
128	.6875
129	.7000
130	.7125
131	.7250
132	.7375
133	.7500
134	.7625
135	.7750
136	.7875
137	.8000
138	.8125
139	.8250
140	.8375
141	.8500
142	.8625
143	.8750
144	.8875
145	.9000
146	.9125
147	.9250
148	.9375
149	.9500
150	.9625
151	.9750
152	.9875
153	853.0125
154	.0375
155	.0500
156	.0625
157	.0750
158	.0875
159	.1000
160	.1125

161	.1250
162	.1375
163	.1500
164	.1625
165	.1750
166	.1875
167	.2000
168	.2125
169	.2250
170	.2375
171	.2500
172	.2625
173	.2750
174	.2875
175	.3000
176	.3125
177	.3250
178	.3375
179	.3500
180	.3625
181	.3750
182	.3875
183	.4000
184	.4125
185	.4250
186	.4375
187	.4500
188	.4625
189	.4750
190	.4875
191	.5000
192	.5125
193	.5250
194	.5375
195	.5500
196	.5625
197	.5750
198	.5875
199	.6000
200	.6125
201	.6250
202	.6375
203	.6500
204	.6625
205	.6750
206	.6875
207	.7000
208	.7125
209	.7250

210	.7375
211	.7500
212	.7625
213	.7750
214	.7875
215	.8000
216	.8125
217	.8250
218	.8375
219	.8500
220	.8625
221	.8750
222	.8875
223	.9000
224	.9125
225	.9250
226	.9375
227	.9500
228	.9625
229	.9750
230	.9875
231	854.0125
232	.0375
233	.0625
234	.0875
235	.1125
236	.1375
237	.1625
238	.1875
239	.2125
240	.2375
241	.2625
242	.2875
243	.3125
244	.3375
245	.3625
246	.3875
247	.4125
248	.4375
249	.4625
250	.4875
251	.5125
252	.5375
253	.5625
254	.5875
255	.6125
256	.6375
257	.6625
258	.6875

259	.7125
260	.7375
261	.7625
262	.7875
263	.8125
264	.8375
265	.8625
266	.8875
267	.9125
268	.9375
269	.9625
270	.9875
271	855.0125
272	.0375
273	.0625
274	.0875
275	.1125
276	.1375
277	.1625
278	.1875
279	.2125
280	.2375
281	.2625
282	.2875
283	.3125
284	.3375
285	.3625
286	.3875
287	.4125
288	.4375
289	.4625
290	.4875
291	.5125
292	.5375
293	.5625
294	.5875
295	.6125
296	.6375
297	.6625
298	.6875
299	.7125
300	.7375
301	.7625
302	.7875
303	.8125
304	.8375
305	.8625
306	.8875
307	.9125

308	.9375
309	.9625
310	.9875
311	856.0125
312	.0375
313	.0625
314	.0875
315	.1125
316	.1375
317	.1625
318	.1875
319	.2125
320	.2375
321	.2625
322	.2875
323	.3125
324	.3375
325	.3625
326	.3875
327	.4125
328	.4375
329	.4625
330	.4875
331	.5125
332	.5375
333	.5625
334	.5875
335	.6125
336	.6375
337	.6625
338	.6875
339	.7125
340	.7375
341	.7625
342	.7875
343	.8125
344	.8375
345	.8625
346	.8875
347	.9125
348	.9375
349	.9625
350	.9875
351	857.0125
352	.0375
353	.0625
354	.0875
355	.1125
356	.1375

357	.1625
358	.1875
359	.2125
360	.2375
361	.2625
362	.2875
363	.3125
364	.3375
365	.3625
366	.3875
367	.4125
368	.4375
369	.4625
370	.4875
371	.5125
372	.5375
373	.5625
374	.5875
375	.6125
376	.6375
377	.6625
378	.6875
379	.7125
380	.7375
381	.7625
382	.7875
383	.8125
384	.8375
385	.8625
386	.8875
387	.9125
388	.9375
389	.9625
390	.9875
391	858.0125
392	.0375
393	.0625
394	.0875
395	.1125
396	.1375
397	.1625
398	.1875
399	.2125
400	.2375
401	.2625
402	.2875
403	.3125
404	.3375
405	.3625

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406	.3875
407	.4125
408	.4375
409	.4625
410	.4875
411	.5125
412	.5375
413	.5625
414	.5875
415	.6125
416	.6375
417	.6625
418	.6875
419	.7125
420	.7375
421	.7625
422	.7875
423	.8125
424	.8375
425	.8625
426	.8875
427	.9125
428	.9375
429	.9625
430	.9875
431	859.0125
432	.0375
433	.0625
434	.0875
435	.1125
436	.1375
437	.1625
438	.1875
439	.2125
440	.2375
441	.2625
442	.2875
443	.3125
444	.3375
445	.3625
446	.3875
447	.4125
448	.4375
449	.4625
450	.4875
451	.5125
452	.5375
453	.5625
454	.5875

455	.6125
456	.6375
457	.6625
458	.6875
459	.7125
460	.7375
461	.7625
462	.7875
463	.8125
464	.8375
465	.8625
466	.8875
467	.9125
468	.9375
469	.9625
470	.9875
471	860.0125
472	.0375
473	.0625
474	.0875
475	.1125
476	.1375
477	.1625
478	.1875
479	.2125
480	.2375
481	.2625
482	.2875
483	.3125
484	.3375
485	.3625
486	.3875
487	.4125
488	.4375
489	.4625
490	.4875
491	.5125
492	.5375
493	.5625
494	.5875
495	.6125
496	.6375
497	.6625
498	.6875
499	.7125
500	.7375
501	.7625
502	.7875
503	.8125

504	.8375
505	.8625
506	.8875
507	.9125
508	.9375
509	.9625
510	.9875
511	861.0125
512	.0375
513	.0625
514	.0875
515	.1125
516	.1375
517	.1625
518	.1875
519	.2125
520	.2375
521	.2625
522	.2875
523	.3125
524	.3375
525	.3625
526	.3875
527	.4125
528	.4375
529	.4625
530	.4875
531	.5125
532	.5375
533	.5625
534	.5875
535	.6125
536	.6375
537	.6625
538	.6875
539	.7125
540	.7375
541	.7625
542	.7875
543	.8125
544	.8375
545	.8625
546	.8875
547	.9125
548	.9375
549	.9625
550	.9875
551	862.0125
552	.0375

553	.0625
554	.0875
555	.1125
556	.1375
557	.1625
558	.1875
559	.2125
560	.2375
561	.2625
562	.2875
563	.3125
564	.3375
565	.3625
566	.3875
567	.4125
568	.4375
569	.4625
570	.4875
571	.5125
572	.5375
573	.5625
574	.5875
575	.6125
576	.6375
577	.6625
578	.6875
579	.7125
580	.7375
581	.7625
582	.7875
583	.8125
584	.8375
585	.8625
586	.8875
587	.9125
588	.9375
589	.9625
590	.9875
591	863.0125
592	.0375
593	.0625
594	.0875
595	.1125
596	.1375
597	.1625
598	.1875
599	.2125
600	.2375
601	.2625

602	.2875
603	.3125
604	.3375
605	.3625
606	.3875
607	.4125
608	.4375
609	.4625
610	.4875
611	.5125
612	.5375
613	.5625
614	.5875
615	.6125
616	.6375
617	.6625
618	.6875
619	.7125
620	.7375
621	.7625
622	.7875
623	.8125
624	.8375
625	.8625
626	.8875
627	.9125
628	.9375
629	.9625
630	.9875
631	864.0125
632	.0375
633	.0625
634	.0875
635	.1125
636	.1375
637	.1625
638	.1875
639	.2125
640	.2375
641	.2625
642	.2875
643	.3125
644	.3375
645	.3625
646	.3875
647	.4125
648	.4375
649	.4625
650	.4875

651	.5125
652	.5375
653	.5625
654	.5875
655	.6125
656	.6375
657	.6625
658	.6875
659	.7125
660	.7375
661	.7625
662	.7875
663	.8125
664	.8375
665	.8625
666	.8875
667	.9125
668	.9375
669	.9625
670	.9875
671	865.0125
672	.0375
673	.0625
674	.0875
675	.1125
676	.1375
677	.1625
678	.1875
679	.2125
680	.2375
681	.2625
682	.2875
683	.3125
684	.3375
685	.3625
686	.3875
687	.4125
688	.4375
689	.4625
690	.4875
691	.5125
692	.5375
693	.5625
694	.5875
695	.6125
696	.6375
697	.6625
698	.6875
699	.7125

700	.7375
701	.7625
702	.7875
703	.8125
704	.8375
705	.8625
706	.8875
707	.9125
708	.9375
709	.9625
710	.9875
711	866.0125
712	.0375
713	.0625
714	.0875
715	.1125
716	.1375
717	.1625
718	.1875
719	.2125
720	.2375
721	.2625
722	.2875
723	.3125
724	.3375
725	.3625
726	.3875
727	.4125
728	.4375
729	.4625
730	.4875
731	.5125
732	.5375
733	.5625
734	.5875
735	.6125
736	.6375
737	.6625
738	.6875
739	.7125
740	.7375
741	.7625
742	.7875
743	.8125
744	.8375
745	.8625
746	.8875
747	.9125
748	.9375

749	.9625
750	.9875
751	867.0125
752	.0375
753	.0625
754	.0875
755	.1125
756	.1375
757	.1625
758	.1875
759	.2125
760	.2375
761	.2625
762	.2875
763	.3125
764	.3375
765	.3625
766	.3875
767	.4125
768	.4375
769	.4625
770	.4875
771	.5125
772	.5375
773	.5625
774	.5875
775	.6125
776	.6375
777	.6625
778	.6875
779	.7125
780	.7375
781	.7625
782	.7875
783	.8125
784	.8375
785	.8625
786	.8875
787	.9125
788	.9375
789	.9625
790	.9875
791	868.0125
792	.0375
793	.0625
794	.0875
795	.1125
796	.1375
797	.1625

798	.1875
799	.2125
800	.2375
801	.2625
802	.2875
803	.3125
804	.3375
805	.3625
806	.3875
807	.4125
808	.4375
809	.4625
810	.4875
811	.5125
812	.5375
813	.5625
814	.5875
815	.6125
816	.6375
817	.6625
818	.6875
819	.7125
820	.7375
821	.7625
822	.7875
823	.8125
824	.8375
825	.8625
826	.8875
827	.9125
828	.9375
829	.9625
830	.9875

* * * * *

28. A new section 90.614 is added immediately after the text of Section 90.613 as follows:

§ 90.614 Cellular and non-cellular portions of 806-824/851-869 MHz band for non-border areas.

The 806-824/851-869 MHz band ("800 MHz band") will be divided as follows at locations farther then 110 km (68.4 miles) from the U.S./Mexico border and 140 km (87 miles) from the U.S./Canadian border ("non-border areas")

(a) 800 MHz cellular systems – as defined in § 90.7 – are prohibited from operating on channels 1-550 in non-border areas.

(b) 800 MHz cellular systems – as defined in § 90.7 – are permitted to operate on channels 551-830 in non-border areas.

(c) In the following counties and parishes, 800 MHz cellular systems – as defined in § 90.7 – are permitted to operate on channels 411-830:

Alabama
Autauga, Baldwin, Barbour, Bibb, Blount, Bullock, Butler, Calhoun, Chambers, Cherokee, Chilton, Choctaw, Clarke, Clay, Cleburne, Coffee, Colbert, Conecuh, Coosa, Covington, Crenshaw, Cullman, Dale, Dallas, DeKalb, Elmore, Escambia, Etowah, Fayette, Franklin, Geneva, Greene, Hale, Henry, Houston, Jackson, Jefferson, Lamar, Lauderdale, Lawrence, Lee, Limestone, Lowndes, Macon, Madison, Marengo, Marion, Marshall, Mobile, Monroe, Montgomery, Morgan, Perry, Pickens, Pike, Randolph, Russell, Shelby, St Clair, Sumter, Talladega, Tallapoosa, Tuscaloosa, Walker, Washington, Wilcox, Winston

Florida
Bay, Calhoun, Escambia, Franklin, Gadsden, Gulf, Holmes, Jackson, Jefferson, Leon, Liberty, Madison, Nassau, Okaloosa, Santa Rosa, Taylor, Wakulla, Walton, Washington

Georgia
Appling, Atkinson, Bacon, Baker, Baldwin, Banks, Barrow, Bartow, Ben Hill, Berrien, Bibb, Bleckley, Brantley, Brooks, Bryan, Bulloch, Burke, Butts, Calhoun, Camden, Candler, Carroll, Catoosa, Charlton, Chatham, Chattahoochee, Chattooga, Cherokee, Clarke, Clay, Clayton, Clinch, Cobb, Coffee, Colquitt, Columbia, Cook, Coweta, Crawford, Crisp, Dade, Dawson, Decatur, DeKalb, Dodge, Dooly, Dougherty, Douglas, Early, Echols, Effingham, Elbert, Emanuel, Evans, Fannin, Fayette, Floyd, Forsyth, Franklin, Fulton, Gilmer, Glascock, Glynn, Gordon, Grady, Greene, Gwinnett, Habersham, Hall, Hancock, Haralson, Harris, Hart, Heard, Henry, Houston, Irwin, Jackson, Jasper, Jeff Davis, Jefferson, Jenkins, Johnson, Jones, Lamar, Lanier, Laurens, Lee, Liberty, Lincoln, Long, Lowndes, Lumpkin, Macon, Madison, Marion, McDuffie, McIntosh, Meriwether, Miller, Mitchell, Monroe, Montgomery, Morgan, Murray, Muscogee, Newton, Oconee, Oglethorpe, Paulding, Peach, Pickens, Pierce, Pike, Polk, Pulaski, Putnam, Quitman, Rabun, Randolph, Richmond, Rockdale, Schley, Screven, Seminole, Spalding, Stephens, Stewart, Sumter, Talbot, Taliaferro, Tattnall, Taylor, Telfair, Terrell, Thomas, Tift, Toombs, Towns, Treutlen, Troup, Turner, Twiggs, Union, Upson, Walker, Walton, Ware, Warren, Washington, Wayne, Webster, Wheeler, White, Whitfield, Wilcox, Wilkes, Wilkinson, Worth

Louisiana
Catahoula, Concordia, Madison, Tensas

Mississippi
Adams, Alcorn, Amite, Attala, Calhoun, Carroll, Chickasaw, Choctaw, Claiborne, Clarke, Clay, Copiah, Covington, Forrest, Franklin, George, Greene, Grenada, Hancock, Harrison, Hinds, Holmes, Itawamba, Jackson, Jasper, Jefferson, Jefferson Davis, Jones, Kemper, Lamar, Lauderdale, Lawrence, Leake, Lee, Lincoln, Lowndes, Madison, Marion, Monroe, Montgomery, Neshoba, Newton, Noxubee, Oktibbeha, Pearl River, Perry, Pike, Pontotoc, Prentiss, Rankin, Scott, Simpson, Smith, Stone, Tippah, Tishomingo, Union, Walthall, Warren, Wayne, Webster, Wilkinson, Winston, Yazoo

North Carolina
Cherokee, Clay, Graham, Jackson, Macon

South Carolina
Abbeville, Aiken, Allendale, Anderson, Bamberg, Barnwell, Beaufort, Edgefield, Greenwood, Hampton, Jasper, McCormick, Oconee

Tennessee
Bledsoe, Bradley, Franklin, Giles, Hamilton, Hardin, Lawrence, Lincoln, Marion, McMinn

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29. Section 90.615 is amended to read as follows to reflect the General Category after band reconfiguration.

§ 90.615 Individual channels available in the General Category in 806-824/851-869 MHz band.

The General Category will consist of channels 231-260 at locations farther then 110 km (68.4 miles) from the U.S./Mexico border and 140 km (87 miles) from the U.S./Canadian border.

(a) Channels 231-260 will be available only to eligible applicants in the Public Safety Category until **[Three years from effective date of *Report and Order*].** These same channels will be available only to eligible applicants in the Public Safety or Critical Infrastructure Industry Categories from **[Three years from effective date of *Report and Order*]** until **[Five years from effective date of *Report and Order*].**

(b) All entities will be eligible for licensing on Channels 231-260 after **[Five years from effective date of *Report and Order*]**.

30. Section 90.617 is amended to read as follows to reflect the channels available after band reconfiguration.

§ 90.617 Frequencies in the 809.750-824/854.750-869 MHz, and 896-901/935-940 MHz bands available for trunked, conventional or cellular system use in non-border areas.

Except for the counties and parishes listed in § 90.614(c), the following channels will be available at locations farther then 110 km (68.4 miles) from the U.S./Mexico border and 140 km (87 miles) from the U.S./Canadian border ("non-border areas"). The channels in the counties and parishes listed in § 90.614(c) will be available in accordance with an agreement between Southern LINC and Nextel Communications, Inc. The agreement will be approved by the Chief of the Wireless Telecommunications Bureau.

(a) The channels listed in Table 1 and paragraph (a)(1) of this section are available for non-cellular operations to eligible applicants in the Public Safety Category which consists of licensees eligible in the Public Safety Pool of subpart B of this part. 800 MHz cellular systems as defined in § 90.7 are prohibited on these channels. These frequencies are available in non-border areas. Specialized Mobile Radio Systems will not be authorized in this category. These channels are available for intercategory sharing as indicated in §90.621(e).

TABLE 1 – PUBLIC SAFETY POOL 806-816/851-861 MHZ BAND CHANNELS (70 CHANNELS)

Group No.	Channel Nos.
269	269-289-311-399-439
270	270-290-312-400-440
279	279-299-319-339-359
280	280-300-320-340-360
309	309-329-349-369-389
310	310-330-350-370-390
313	313-353-393-441-461
314	314-354-394-448-468
321	321-341-361-381-419
328	328-348-368-388-420

351	351-379-409-429-449
332	352-380-410-430-450
Single Channels	391, 392, 401, 408, 421, 428, 459, 460, 469, 470

(1) Channels numbers 1–230 are also available to eligible applicants in the Public Safety Category in non-border areas. The assignment of these channels will be done in accordance with the policies defined in the Report and Order of Gen. Docket No. 87–112 (See §90.16).

(b) Unless otherwise specified, the channels listed in Table 2 are available for non-cellular operations to applicants eligible in the Industrial/Business Pool of subpart C of this part but exclude Special Mobilized Radio Systems as defined in §90.603(c). 800 MHz cellular systems as defined in § 90.7 are prohibited on these channels. These frequencies are available in non-border areas. Specialized Mobile Radio (SMR) systems will not be authorized on these frequencies. These channels are available for inter-category sharing as indicated in § 90.621(e).

TABLE 2 – BUSINESS/INDUSTRIAL/LAND TRANSPORTATION POOL 806-816/851-861 MHZ BAND CHANNELS (100 CHANNELS)

Group No.	Channel Nos.
322	322-362-402-442-482
323	323-363-403-443-483
324	324-364-404-444-484
325	325-365-405-445-485
326	326-366-406-446-486
327	327-367-407-447-487
342	342-382-422-462-502
343	343-383-423-463-503
344	344-384-424-464-504
345	345-385-425-465-505
346	346-386-426-466-506
347	347-387-427-467-507
Single Channels	261, 271, 281, 291, 301, 262, 272, 282, 292, 302, 263, 273, 283, 293, 303, 264, 274, 284, 294, 304, 265, 275, 285, 295, 305, 266, 276, 286, 296, 306, 267, 277, 287, 297, 307, 268, 278, 288, 298, 308

(c) The channels listed in Table 3 are available to applicants eligible in the Industrial/Business Pool of subpart C of this part but exclude Special Mobilized Radio Systems as defined in §90.603(c). These frequencies are available in non-border areas. Specialized Mobile Radio (SMR) systems will not be authorized on these frequencies. These channels are available for intercategory sharing as indicated in §90.621(e).

TABLE 3 – BUSINESS/INDUSTRIAL/LAND TRANSPORTATION POOL 896-901/935-940 MHZ BAND CHANNELS 199 CHANNELS

For multi-channel systems, channels may be grouped vertically or horizontally as they appear in

the below table.

Channel Nos.

11-12-13-14-15	211-212-213-214-215
16-17-18-19-20	216-217-218-219-220
31-32-33-34-35	231-232-233-234-235
36-37-38-39-40	236-237-238-239-240
51-52-53-54-55	251-252-253-254-255
56-57-58-59-60	256-257-258-259-260
71-72-73-74-75	271-272-273-274-275
76-77-78-79-80	276-277-278-279-280
91-92-93-94-95	291-292-293-294-295
96-97-98-99-100	296-297-298-299-300
111-112-113-114-115	311-312-313-314-315
116-117-118-119-120	316-317-318-319-320
131-132-133-134-135	331-332-333-334-335
136-137-138-139-140	336-337-338-339-340
151-152-153-154-155	351-352-353-354-355
156-157-158-159-160	356-357-358-359-360
171-172-173-174-175	371-372-373-374-375
176-177-178-179-180	376-377-378-379-380
191-192-193-194-195	391-392-393-394-395
196-197-198-199-200	396-397-398-399

(d) Unless otherwise specified, the channels listed in Tables 4A and 4B are available for non-cellular operations only to eligibles in the SMR category – which consists of Specialized Mobile Radio (SMR) stations and eligible end users. 800 MHz cellular systems as defined in § 90.7 are prohibited on these channels. These frequencies are available in non-border areas. The spectrum blocks listed in Table 4A are available for EA-based services (as defined by § 90.681 of this chapter) prior to **[Effective date of *Report and Order*]**. No new EA-based services will be authorized after **[Effective date of *Report and Order*]**. EA-based licensees who operate non-cellular systems prior to **[Effective date of *Report and Order*]** may choose to remain on these channels in the non-cellular portion of the 800 MHz band (as defined in § 90.614 of this chapter.) These licensees may continue to operate non-cellular systems and will be grandfathered indefinitely. The channels listed in Table 4B will be available for site-base licensing after **[Effective date of *Report and Order*]** in any Economic Area where no EA-based licensee is authorized for these channels.

TABLE 4A – EA-BASED SMR CATEGORY 806-816/851-861 MHZ BAND CHANNELS FOR CELLULAR OPERATIONS AVAILABLE PRIOR TO **[Effective date of *Report and Order*]** (80 CHANNELS.)

Spectrum Block	Channel Nos.
G	311-351-391-431-471
H	312-352-392-432-472
I	313-353-393-433-473
J	314-354-394-434-474
K	315-355-395-435-475
L	316-356-396-436-476
M	317-357-397-437-477

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N	318-358-398-438-478
O	331-371-411-451-491
P	332-372-412-452-492
Q	333-373-413-453-493
R	334-374-414-454-494
S	335-375-415-455-495
T	336-376-416-456-496
U	337-377-417-457-497
V	338-378-418-458-498

TABLE 4B – SMR CATEGORY 806-816/851-861 MHZ BAND CHANNELS FOR CELLULAR OPERATIONS AVAILABLE FOR SITE-BASED LICENSING AFTER **[Effective date of *Report and Order*]** (80 CHANNELS.)

Group No.	Channel Nos.
315	315-355-395-435-475
316	316-356-396-436-476
317	317-357-397-437-477
318	318-358-398-438-478
331	331-371-411-451-491
332	332-372-412-452-492
333	333-373-413-453-493
334	334-374-414-454-494
335	335-375-415-455-495
336	336-376-416-456-496
337	337-377-417-457-497
338	338-378-418-458-498
Single Channels	431, 432, 433, 434, 471, 472, 473, 474, 479, 480, 481, 488, 489, 490, 499, 500, 501, 508, 509, 510

(e) The Channels listed in § 90.614(b) and (c) of this chapter are available to eligibles in the SMR category – which consists of Specialized Mobile Radio (SMR) stations and eligible end users. ESMR licensees which employ an 800 MHz cellular system as defined in § 90.7 are permitted to operate on these channels in non-border areas. ESMR licensees authorized prior to **[Effective date of *Report and Order*]** may continue to operate, if they so chose, on the channels listed in Table 5. These licensees will be grandfathered indefinitely.

TABLE 5 – ESMR CATEGORY 816-821/861-866 MHZ BAND CHANNELS FOR CELLULAR OPERATIONS IN NON-BORDER AREAS AVAILABLE PRIOR TO **[Effective date of *Report and Order*]**. (200 CHANNELS)

Spectrum Block	Channel Nos.
A	511 through 530
B	531 through 590
C	591 through 710

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(f) The channels listed in Tables 6 are available for operations only to eligibles in the SMR category – which consists of Specialized Mobile Radio (SMR) stations and eligible end users. These frequencies are available in non-border areas. The spectrum blocks listed below are available for EA-based services according to § 90.681.

TABLE 6 – SMR CATEGORY 896-901/935-940 MHZ BAND CHANNELS (200 CHANNELS)

Block	Channel Nos.
A	1-2-3-4-5-6-7-8-9-10
B	21-22-23-24-25-26-27-28-29-30
C	41-42-43-44-45-46-47-48-49-50
D	61-62-63-64-65-66-67-68-69-70
E	81-82-83-84-85-86-87-88-89-90
F	101-102-103-104-105-106-107-108-109-110
G	121-122-123-124-125-126-127-128-129-130
H	141-142-143-144-145-146-147-148-149-150
I	161-162-163-164-165-166-167-168-169-170
J	181-182-183-184-185-186-187-188-189-190
K	201-202-203-204-205-206-207-208-209-210
L	221-222-223-224-225-226-227-228-229-230
M	241-242-243-244-245-246-247-248-249-250
N	261-262-263-264-265-266-267-268-269-270
O	281-282-283-284-285-286-287-288-289-290
P	301-302-303-304-305-306-307-308-309-310
Q	321-322-323-324-325-326-327-328-329-330
R	341-342-343-344-345-346-347-348-349-350
S	361-362-363-364-365-366-367-368-369-370
T	381-382-383-384-385-386-387-388-389-390

(g) Channels below 470 listed in Tables 2 and 4B which are vacated by ESMR licensees after **[Effective date of *Report and Order*]** are available only to eligible applicants in the Public Safety Category until **[Three years from effective date of *Report and Order*].** These same channels will be available only to eligible applicants in the Public Safety or Critical Infrastructure Industry Categories from **[Three years from effective date of *Report and Order*]** until **[Five years from effective date of *Report and Order*].** After **[Five years from effective date of *Report and Order*]** these channels will revert back to their original pool categories.

(h) Channels below 470 listed in Tables 2 and 4B which are vacated by licensees relocating to Channels 511-550 after **[Effective date of *Report and Order*]** are available only to eligible applicants in the Public Safety Category until **[Three years from effective date of *Report and Order*].** These same channels will be available only to eligible applicants in the Public Safety or Critical Infrastructure Industry Categories from **[Three years from effective date of *Report and Order*]** until **[Five years from effective date of *Report and Order*].** After **[Five years from effective date of *Report and Order*]** these channels will revert back to their original pool categories.

(i) Special Mobilized Radio Systems licensees who operate non-cellular systems on any of the public safety channels listed in Table 1 prior to **[Effective date of *Report and Order*]** are grandfathered and may continue to operate on these channels indefinitely. These grandfathered licensees will be prohibited from operating 800 MHz cellular systems as defined in § 90.7. Site-based licensees who are grandfathered on any of the public safety channels listed in Table 1 may modify

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their license only if they obtain concurrence from a certified public safety coordinator in accordance with § 90.175(c). Grandfathered EA-based licensees, however, are exempt from any of the frequency coordination requirements of § 90.175 as long as their operations remain within the Economic Area defined by their license in accordance with the requirements of § 90.683(a).

(j) Licensees operating ESMR systems in the non-cellular portion of the band (as defined in § 90.614) prior to **[Effective date of *Report and Order*]** may elect to continue operating in the non-cellular portion of the band. These licensees will be permitted to continue operating 800 MHz cellular systems (as defined in § 90.7) in the non-cellular portion of the band. These licensees will be grandfathered indefinitely subject to the provisions of §§ 90.673, 90.674 and 90.675.

(k) Licensees may operate systems other than 800 MHz cellular systems (as defined in § 90.7) on Channels 511-550 at any location vacated by an EA-based SMR licensee. For operations on these channels, unacceptable interference (as defined in §§ 22.970 & 90.672) will be deemed to occur only at sites where the following median desired signals are received (rather than those specified in §§ 22.970(a)(1)(i) & 90.672(a)(1)(i)). The minimum required median desired signal, as measured at the R.F. input of the receiver, will be as follows:

(1) Mobile units:

(i) For channels 511 to 524 – the minimum median desired signal levels specified in §§ 22.970(a)(1)(i) & 90.672(a)(1)(i) shall apply;

(ii) For channels 524 to 534 – the minimum median desired signal level shall increase linearly from the values specified in §§ 22.970(a)(1)(i) & 90.672(a)(1)(i) to -70 dBm;

(iii) For channels 534 to 550 – the minimum median desired signal level shall increase linearly from -70 dBm to -65 dBm.

(2) Portable units:

(i) For channels 511 to 524 – the minimum median desired signal levels specified in §§ 22.970(a)(1)(i) & 90.672(a)(1)(i) shall apply;

(ii) For channels 524 to 530 – the minimum median desired signal level shall increase linearly from the values specified in §§ 22.970(a)(1)(i) & 90.672(a)(1)(i) to -80 dBm;

(iii) For channels 530 to 534 – the minimum median desired signal level shall increase linearly from -80 dBm to -70 dBm;

(iv) For channels 534 to 550 – the minimum median desired signal level shall increase linearly from -70 dBm to -65 dBm.

31. Section 90.619 is amended to read as follows.

§ 90.619 Operations within the U.S./Mexico and U.S./Canada border areas.

(a) *Use of Frequencies in 800 MHz Band in Mexico Border Region.* All operations in the 806-824/851-869 MHz band within 110 km (68.4 miles) of the U.S./Mexico border ("Mexico border region") shall be in accordance with international agreements between the U.S. and Mexico. Channels 231-710 are offset 12.5 kHz lower in frequency than those specified in the table in §90.613. Stations located on Mt. Lemmon, serving the Tucson, AZ area, will only be authorized offset frequencies.

(b) *Use of Frequencies in 900 MHz Band in Mexico Border Region.* All operations in the 896-

901/935-940 MHz band within the Mexico border region shall be in accordance with international agreements between the U.S. and Mexico.

(1) The channels listed in Table 1 below are available to applicants eligible in the Industrial/Business Pool of subpart C of this part but exclude Special Mobilized Radio Systems as defined in §90.603(c). These frequencies are available within the Mexico border region. Specialized Mobile Radio (SMR) systems will not be authorized on these frequencies.

TABLE 1 – UNITED STATES/MEXICO BORDER AREA, BUSINESS/INDUSTRIAL/LAND TRANSPORTATION POOL 896-901/935-940 MHZ BAND (199 CHANNELS)

For multi-channel systems, channels may be grouped vertically or horizontally as they appear in the following table. Channels numbered above 200 may be used only subject to the power flux density limits stated in paragraph (a)(2) of this section:

Channels Nos.

11-12-13-14-15	131-132-133-134-135
16-17-18-19-20	136-137-138-139-140
31-32-33-34-35	231-232-233-234-235
36-37-38-39-40	236-237-238-239-240
51-52-53-54-55	171-172-173-174-175
56-57-58-59-60	176-177-178-179-180
71-72-73-74-75	271-272-273-274-275
76-77-78-79-80	276-277-278-279-280
91-92-93-94-95	211-212-213-214-215
96-97-98-99-100	216-217-218-219-220
111-112-113-114-115	311-312-313-314-315
116-117-118-119-120	316-317-318-319-320
151-152-153-154-155	351-352-353-354-355
156-157-158-159-160	356-357-358-359-360
191-192-193-194-195	391-392-393-394-395
196-197-198-199-200	396-397-398-399
251-252-253-254-255	331-332-333-334-335
256-257-258-259-260	336-337-338-339-340
291-292-293-294-295	371-372-373-374-375
296-297-298-299-300	376-377-378-379-380

(2) The channels listed in Table 2 below are available for operations only to eligibles in the SMR category – which consists of Specialized Mobile Radio (SMR) stations and eligible end users. These frequencies are available in the Mexico border region. The spectrum blocks listed below are available for EA-based services according to § 90.681.

TABLE 2 – UNITED STATES-MEXICO BORDER AREA, SMR CATEGORY 896-901/935-940 MHZ BAND (200 CHANNELS)

Block	Channel Nos.
Channels numbered above 200 may only be used subject to the power flux density limits at or beyond the Mexico border as stated in paragraph (4) of this section.	
A	1-2-3-4-5-6-7-8-9-10
B	21-22-23-24-25-26-27-28-29-30

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C	41-42-43-44-45-46-47-48-49-50
D	61-62-63-64-65-66-67-68-69-70
E	81-82-83-84-85-86-87-88-89-90
F	101-102-103-104-105-106-107-108-109-110
G	121-122-123-124-125-126-127-128-129-130
H	141-142-143-144-145-146-147-148-149-150
I	161-162-163-164-165-166-167-168-169-170
J	181-182-183-184-185-186-187-188-189-190
K	201-202-203-204-205-206-207-208-209-210
L	221-222-223-224-225-226-227-228-229-230
M	241-242-243-244-245-246-247-248-249-250
N	261-262-263-264-265-266-267-268-269-270
O	281-282-283-284-285-286-287-288-289-290
P	301-302-303-304-305-306-307-308-309-310
Q	321-322-323-324-325-326-327-328-329-330
R	341-342-343-344-345-346-347-348-349-350
S	361-362-363-364-365-366-367-368-369-370
T	381-382-383-384-385-386-387-388-389-390

(3) The specific channels that are available for licensing in the band 896–901/935–940 MHz within the Mexico border region are subject to Effective Radiated Power (ERP) and Antenna Height limitations as indicated in Table 3 below.

TABLE 3 – LIMITS OF EFFECTIVE RADIATED POWER (ERP) CORRESPONDING TO ANTENNA HEIGHTS OF BASE STATIONS IN THE 896-901/935-940 MHZ BANDS WITHIN 110 KILOMETERS (68.4 MILES) OF THE MEXICAN BORDER

Antenna height above mean sea level		ERP
Meters	Feet	Watts (maximum)
0-503……..	0-1650……	500
504-609……..	1651-2000……	350
610-762……..	2001-2500……	200
763-914……..	2501-3000……	140
915-1066……	3001-3500……	100
1067-1219……..	3501-4000……	75
1220-1371……..	4001-4500……	70
1372-1523……..	4501-5000……	65
Above 1523……	Above 5000……..	5

(4) All channels in the 896–901/935–940 MHz band are available for assignment to U.S. stations within the Mexico border region if the maximum power flux density (pfd) of the station's transmitted signal at any point at or beyond the border does not exceed −107 dB(W/m^2). The spreading loss must be calculated using the free space formula taking into account any antenna discrimination in the direction of the border. Authorizations for stations using channels allotted to Mexico on a primary basis will be secondary to Mexican operations and conditioned to require that licensees take immediate action to eliminate any harmful interference resulting from the station's transmitted signal exceeding −107 dB(W/m^2).

(c) *Use of 800 MHz Band in Canada Border Region.* All operations in the 806-824/851-869 MHz band within 140 km (87 miles) of the U.S./Canada border ("Canada border region") shall be in accordance with international agreements between the U.S. and Canada.

(d) *Use of 900 MHz Band in Canada Border Region.* All operations in the 896–901/935–940 MHz band within the Canada border region shall be in accordance with international agreements between the U.S. and Canada. The following criteria shall govern the assignment of frequency pairs (channels) in the 896–901/935–940 MHz band for stations located in the U.S./Canada border area. They are available for assignments for conventional or trunked systems in accordance with applicable sections of this subpart. * * *

32. Paragraphs (a), (b), (c), (e), (f), (g) and (h) of Section 90.621 are amended to reflect the combining of the Business and Industrial/Land Transportation categories into one pool; to allow CMRS operations on 900 MHz PLMR channels; to allow 900 MHz PLMR licensees to transfer their licenses to CMRS licensees; to reflect the new channel numbers after band reconfiguration and to remove all references to spectrum blocks D through F1 which will no longer exist after band reconfiguration.

§ 90.621 Selection and assignment of frequencies.

(a) Applicants for frequencies in the Public Safety and Business/Industrial/Land Transportation Categories must specify on the application the frequencies on which the proposed system will operate pursuant to a recommendation by the applicable frequency coordinator. Applicants for frequencies in the SMR Category must request specific frequencies by including in their applications the frequencies requested.

* * * * *

(b) Stations authorized on frequencies listed in this subpart, except for those stations authorized pursuant to paragraph (g) of this section and EA-based and MTA-based SMR systems, will be assigned frequencies solely on the basis of fixed distance separation criteria. The separation between co-channel systems will be a minimum of 113 km (70 mi) with one exception. For incumbent licensees in Channel Blocks G through V, that have received the consent of all affected parties or a certified frequency coordinator to utilize an 18 dBμV/m signal strength interference contour (see §90.693), the separation between co-channel systems will be a minimum of 173 km (107 mi). The following exceptions to these separations shall apply:

(1) Except as indicated in paragraph (b)(4) of this section, no station in Channel Blocks A through V shall be less than 169 km (105 mi) distant from a co-channel station that has been granted channel exclusivity and authorized 1 kW ERP on any of the following mountaintop sites: Santiago Peak, Sierra Peak, Mount Lukens, Mount Wilson (California). Except as indicated in paragraph (b)(4) of this section, no incumbent licensee in Channel Blocks G through V that has received the consent of all affected parties or a certified frequency coordinator to utilize an 18 dBμV/m signal strength interference contour shall be less than 229 km (142 mi) distant from a co-channel station that has been granted channel exclusivity and authorized 1 kW ERP on any of the following mountaintop sites: Santiago Peak, Sierra Peak, Mount Lukens, Mount Wilson (California).

* * * * *

(3) Except as indicated in paragraph (b)(4) of this section, stations in Channel Blocks A through V that have been granted channel exclusivity and are located in the State of Washington at the locations listed below shall be separated from co-channel stations by a minimum of 169 km (105 mi). Except as indicated in paragraph (b)(4) of this section, incumbent licensees in Channel Blocks G through V that have received the consent of all affected parties or a certified frequency coordinator to utilize an 18

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dBµV/m signal strength interference contour, have been granted channel exclusivity and are located in the State of Washington at the locations listed below shall be separated from co-channel stations by a minimum of 229 km (142 mi). Locations within one mile of the geographical coordinates listed in the table below will be considered to be at that site.

Note: Coordinates are referenced to North American Datum 1983 (NAD83).

Site Name	North Latitude	West Longitude
Mount Constitution……	48° 40’ 47.4”	122° 50’ 28.7”
Lyman Mountain……	48° 35’ 41.4”	122° 09’ 39.6”
Cultus Mountain……	48° 25’ 30.4”	122° 08’ 58.5”
Gunsite Ridge……	48° 03’ 22.4”	121° 51’ 41.5”
Gold Mountain……..	47° 32’ 51.3”	122° 46’ 56.5”
Buck Mountain……	47° 47’ 05.3”	122° 59’ 34.6”
Cougar Mountain……	47° 32’ 39.4”	122° 06’ 34.4”
Squak Mountain…….	47° 30’ 14.4”	122° 03’ 34.4”
Tiger Mountain……..	47° 30’ 13.4”	121° 58’ 32.4”
Devils Mountain……	48° 21’ 52.4”	122° 16’ 06.6”
McDonald Mountain…….	47° 20’ 11.3”	122° 51’ 30.5”
Maynard Hill…….	48° 00’ 58.3”	122° 55’ 35.6”
North Mountain……	47° 19’ 07.3”	123° 20’ 48.6”
Green Mountain……	47° 33’ 40.3”	122° 48’ 31.5”
Capitol Peak……	46° 58’ 21.3”	123° 08’ 21.5”
Rattlesnake Mountain……	47° 28’ 09.4”	121° 49’ 17.4”
Three Sisters Mountain…….	47° 07’ 19.4”	121° 53’ 34.4”
Grass Mountain…….	47° 12’ 14.1”	121° 47’ 42.4”
Spar Pole Hill……	47° 02’ 51.4”	122° 08’ 39.4”

* * * * *

(c) Conventional systems authorized on frequencies in the Public Safety (except for those systems that have participated in a formal regional planning process as described in §90.16) and Business/Industrial/Land Transportation categories which have not met the loading levels necessary for channel exclusivity will not be afforded co-channel protection.

* * * * *

(e) Frequencies in the 809–817/854–862 MHz bands listed as available for eligibles in the Public Safety and Business/Industrial/Land Transportation Categories are available for inter-category sharing under the following conditions:

(1) Channels in the Public Safety and Business/Industrial/Land Transportation categories will be available to eligible applicants in those categories only if there are no frequencies in their own category and no public safety systems are authorized on those channels under consideration to be shared.

(2) Notwithstanding paragraph (e)(5) of this section, licensees of channels in the Business/Industrial/Land Transportation category may request a modification of the license, see §1.947 of this part, to authorize use of the channels for commercial operation. The licensee may also, at the same time or thereafter, seek authorization to transfer or assign the license, see §1.948 of this part, to any person eligible for licensing in the General or SMR categories. Applications submitted pursuant to this paragraph must be filed in accordance with the rules governing other applications for

commercial channels, and will be processed in accordance with those rules. Grant of requests submitted pursuant to this paragraph is subject to the following conditions:

(i) A licensee that modifies its license to authorize commercial operations will not be authorized to obtain additional 800 MHz Business/Industrial/Land Transportation category channels for sites located within 113 km (70 mi.) of the station for which the license was modified, for a period of one year from the date the license is modified. This provision applies to the licensee, its controlling interests and their affiliates, as defined in §1.2110 of this chapter.

(ii) With respect to licenses the initial application for which was filed on or after November 9, 2000, requests submitted pursuant to paragraph (e)(2) of this section may not be filed until five years after the date of the initial license grant. In the case of a license that is modified on or after November 9, 2000 to add 800 MHz Business/Industrial/Land Transportation frequencies or to add or relocate base stations that expand the licensee's the interference contour, requests submitted pursuant to paragraph (e)(2) of this section for these frequencies or base stations may not be filed until five years after such modification.

* * * * *

(f) Licensees of channels in the Business/Industrial/Land Transportation Categories in the 896–901/935-940 MHz bands may request a modification of the license, *see* § 1.947 of this part, to authorize use of the channels for commercial operation. The licensee may also, at the same time, or thereafter, seek authorization to transfer or assign the license, *see* § 1.948 of this part, to any person eligible for licensing in the General or SMR categories. Applications submitted pursuant to this paragraph must be filed in accordance with the rules governing other applications for commercial channels, and will be processed in accordance with those rules.

(g) Applications for Public Safety systems (both trunked and conventional) in the 806–809/851–854 MHz bands will be assigned and protected based on the criteria established in the appropriate regional plan. See §90.16 and the Report and Order in General Docket 87–112.

(h) Channel numbers 511–520, 551–560, 591–600, 631–640, and 671–680 are allocated for Basic Exchange Telecommunications Radio Service as described in § 22.757 of this chapter. NOTE: the FCC has proposed to remove these channels from the rural radiotelephone service in WT Docket No. 03-103 (FCC 03-95) released April 28, 2003 (68 FR 4403) which is pending.

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33. The text in paragraph (d) of Section 90.629 is removed because the Business and Industrial/Transportation categories have been combined into one pool.

§ 90.629 Extended implementation period.

* * * * *

(d) [Reserved]

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34. Paragraph (b) of Section 90.631 is amended to reflect the interleaved portion of the 800 MHz band after band reconfiguration and to remove references to Spectrum Block D which will no longer exist after band reconfiguration.

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§ 90.631 Trunked systems loading, construction and authorization requirements.

* * * * *

(b) Each applicant for a non-SMR trunked system must certify that a minimum of seventy (70) mobiles for each channel authorized will be placed into operation within five (5) years of the initial license grant. Except for SMR systems licensed in the 809–816/854–861 MHz band and as indicated in paragraph (i) of this section, if at the end of five (5) years a trunked system is not loaded to the prescribed levels and all channels in the licensee's category are assigned in the system's geographic area, authorizations for trunked channels not loaded to seventy (70) mobile stations cancels automatically at a rate that allows the licensee to retain one channel for every one hundred (100) mobiles loaded, plus one additional channel. If a trunked system has channels from more than one category, General Category channels are the first channels considered to cancel automatically. All non-SMR licensees initially authorized before June 1, 1993, that are within their original license term, or SMR licensees that are within the term of a two-year authorization granted in accordance with paragraph (i) of this section, are subject to this condition. A licensee that has authorized channels cancelled due to failure to meet the above loading requirements will not be authorized additional channels to expand that same system for a period of six months from the date of cancellation.

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35. Paragraph (g) of Section 90.645 is amended to reflect the interleaved portion of the 800 MHz band after band reconfiguration.

§ 90.645 Permissible operations.

* * * * *

(g) Up to five (5) contiguous 809–816/854–861 band channels as listed in §§90.615, 90.617, and 90.619 may be authorized after justification for systems requiring more than the normal single channel bandwidth. If necessary, licensees may trade channels amongst themselves in order to obtain contiguous frequencies. Notification of such proposed exchanges shall be made to the appropriate frequency coordinator(s) and to the Commission by filing an application for license modification.

* * * * *

36. The following sections are added immediately after the text of Section 90.671:

PROCEDURES AND PROCESS - UNACCEPTABLE INTERFERENCE

§ 90.672 Unacceptable interference to non-cellular 800 MHz licensees from ESMR or Part 22 Cellular Radiotelephone systems.

(a) *Definition.* Except as provided in 47 C.F.R. §90.617(k), unacceptable interference to non-cellular licensees in the 800 MHz band will be deemed to occur when the below conditions are met:

(1) A transceiver at a site at which interference is encountered:

(i) Is in good repair and operating condition, and is receiving:

(A) A median desired signal of -104 dBm or higher, as measured at the R.F. input of the receiver of a mobile unit; or

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(B) A median desired signal of -101 dBm or higher, as measured at the R.F. input of the receiver of a portable *i.e.* hand-held unit; and, either

(ii) Is a voice transceiver:

(A) with manufacturer published performance specifications for the receiver section of the transceiver equal to, or exceeding, the minimum standards set out in Section (b), below; and;

(B) Receiving an undesired signal or signals which cause the measured Carrier to Noise plus Interference (C/(I+N)) ratio of the receiver section of said transceiver to be less than 20 dB, or,

(iii) Is a non-voice transceiver receiving an undesired signal or signals which cause the measured bit error rate (BER) (or some comparable specification) of the receiver section of said transceiver to be more than the value reasonably designated by the manufacturer**.**

(2) Provided, however, that if the receiver section of the mobile or portable voice transceiver does not conform to the standards set out in paragraph (b), below, then that transceiver shall be deemed subject to unacceptable interference only at sites where the median desired signal satisfies the applicable threshold measured signal power in paragraphs (a)(1)(i) after an upward adjustment to account for the difference in receiver section performance. The upward adjustment shall be equal to the increase in the desired signal required to restore the receiver section of the subject transceiver to the 20 dB C/(I+N) ratio of paragraph (a)(1)(iv)(a) above. The adjusted threshold levels shall then define the minimum measured signal power(s) in lieu of paragraphs (a) (1) (i) at which the licensee using such non-compliant transceiver is entitled to interference protection.

(b) *Minimum Receiver Requirements*. Voice transceivers capable of operating in the 806-824 MHz portion of the 800 MHz band shall have the following minimum performance specifications in order for the system in which such transceivers are used to claim entitlement to full protection against unacceptable interference. (See paragraph (a) (2) above.)

(1) Voice units intended for mobile use: 75 dB intermodulation rejection ratio; 75 dB adjacent channel rejection ratio; -116 dBm reference sensitivity.

(2) Voice units intended for portable use: 70 dB intermodulation rejection ratio; 70 dB adjacent channel rejection ratio; -116 dBm reference sensitivity.

§ 90.673 Obligation to abate unacceptable interference.

(a) *Strict Responsibility*. Any licensee who, knowingly or unknowingly, directly or indirectly, causes or contributes to causing unacceptable interference to a non-cellular licensee in the 800 MHz band, as defined in this chapter, shall be strictly accountable to abate the interference, with full cooperation and utmost diligence, in the shortest time practicable. Interfering licensees shall consider all feasible interference abatement measures, including, but not limited to, the remedies specified in the interference resolution procedures set forth in this chapter. This strict responsibility obligation applies to all forms of interference, including out-of-band emissions and intermodulation

(b) *Joint and Several Responsibility*. If two or more licensees knowingly or unknowingly, directly or indirectly, cause or contribute to causing unacceptable interference to a non-cellular licensee in the 800 MHz band, as defined in this chapter, such licensees shall be jointly and severally responsible for abating interference, with full cooperation and utmost diligence, in the shortest practicable time. This joint and several responsibility rule requires interfering licensees to consider all

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feasible interference abatement measures, including, but not limited to, the remedies specified in the interference resolution procedures set forth in this chapter. This joint and several responsibility rule applies to all forms of interference, including out-of-band emissions and intermodulation

(1) This joint and several responsibility rule requires interfering licensees to consider all feasible interference abatement measures, including, but not limited to, the remedies specified in the interference resolution procedures set forth in § 90.674(c) of this chapter. This joint and several responsibility rule applies to all forms of interference, including out-of-band emissions and intermodulation.

(2) Any licensee that can show that its signal does not directly or indirectly, cause or contribute to causing unacceptable interference to a non-cellular licensee in the 800 MHz band, as defined in this chapter, shall not be held responsible for resolving unacceptable interference. Notwithstanding, any licensee that receives an interference complaint from a public safety/CII licensee shall respond to such complaint consistent with the interference resolution procedures set forth in this chapter.

§ 90.674 Interference resolution procedures before, during and after band reconfiguration.

(a) *Initial Notification.* Any non-cellular licensee operating in the 806-824/851-869 MHz band who reasonably believes it is receiving harmful interference, as described in § 90.672, shall provide an initial notification of the interference incident. This initial notification of an interference incident shall be sent to all Part 22 Cellular Radiotelephone licensees and ESMR licensees who operate cellular base stations ("cell sites") within 1,524 meters (5,000 feet) of the interference incident.

(1) The initial notification of interference shall include the following information on interference:

(i) the specific geographical location where the interference occurs, and the time or times at which the interference occurred or is occurring;

(ii) a description of its scope and severity, including its source, if known;

(iii) the relevant Commission licensing information of the party suffering the interference; and

(iv) a single point of contact for the party suffering the interference.

(2) ESMR licensees, in conjunction with Part 22 Cellular Radiotelephone licensees, shall establish an electronic means of receiving the initial notification described in subsection (a)(1) above. The electronic system must be designed so that all appropriate 800 MHz ESMR and Part 22 Cellular Radiotelephone licensees can be contacted about the interference incident with a single notification. The electronic system for receipt of initial notification of interference complaints must be operating no later than **[Thirty days after effective date of *Report and Order*]**.

(3) ESMR licensees must respond to the initial notification described in paragraph (a)(1) of this section, as soon as possible and no later than 24 hours of receipt of notification from a public safety/CII licensee. This response time may be extended to 48 hours after receipt from other non-cellular licensees provided affected communications on these systems are not safety related.

(b) *Interference Analysis.* ESMR licensees – who receive an initial notification described in paragraph (a) above – shall perform a timely analysis of the interference to identify the possible source. Immediate on-site visits may be conducted when necessary to complete timely analysis. Interference analysis must be completed and corrective action initiated within 48 hours of the initial complaint from a public safety/CII licensee. This response time may be extended to 96 hours after the

initial complaint from other non-cellular licensees provided affected communications on these systems are not safety related. Corrective action may be delayed if the affected licensee agrees in writing (which may be, but is not required to be, recorded via e-mail or other electronic means) to a longer period.

(c) *Mitigation Steps.* (1) All ESMR and Part 22 Cellular Radiotelephone licensees who are responsible for causing unacceptable interference shall take all affirmative measures to resolve such interference. ESMR licensees found to contribute to harmful interference, as defined in § 90.672, shall resolve such interference in the shortest time practicable. ESMR and Part 22 Cellular Radiotelephone licensees must provide all necessary test apparatus and technical personnel skilled in the operation of such equipment as may be necessary to determine the most appropriate means of timely eliminating the interference. However, the means whereby interference is abated or the cell parameters that may need to be adjusted is left to the discretion of involved ESMR and/or Part 22 Cellular Radiotelephone licensees, whose affirmative measures may include, but not be limited to, the following techniques:

(i) increasing the desired power of the public safety signal;

(ii) decreasing the power of the ESMR and/or Part 22 Cellular Radiotelephone signal;

(iii) modifying the ESMR and/or Part 22 Cellular Radiotelephone systems antenna height;

(iv) modifying the ESMR and/or Part 22 Cellular Radiotelephone system antenna characteristics;

(iv) incorporating filters into ESMR and/or Part 22 Cellular Radiotelephone system transmission equipment;

(v) permanently changing ESMR and/or Part 22 Cellular Radiotelephone system frequencies; and

(vi) supplying interference-resistant receivers to the affected public safety licensee(s). If this technique is used, in all circumstances, the ESMR and/or Part 22 Cellular Radiotelephone licensees shall be responsible for all costs thereof.

(2) Whenever short-term interference abatement measures prove inadequate, the affected licensee shall, consistent with but not compromising safety, make all necessary concessions to accepting interference until a longer-term remedy can be implemented.

(3) *Discontinuing operations when clear and imminent danger exists.* When a public safety licensee determines that a continuing presence of interference constitutes a clear and imminent danger to life or property, the licensee causing the interference must discontinue the associated operation immediately, until a remedy can be identified and applied. The determination that a continuing presence exists that constitutes a clear and imminent danger to life or property, must be made by written statement that:

(i) is in the form of a declaration, notarized affidavit, or statement under penalty or perjury, from an officer or executive of the affected public safety licensee;

(ii) thoroughly describes the basis of the claim of clear and imminent danger;

(iii) was formulated on the basis of either personal knowledge or belief after due diligence;

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(iv) is not proffered by a contractor or other third party; and

(v) has been approved by the Chief of the Wireless Telecommunication Bureau or other designated Commission official. Prior to the authorized official making a determination that a clear and imminent danger exists, the associated written statement must be served by hand-delivery or receipted fax on the applicable offending licensee, with a copy transmitted by the fastest available means to the Washington, D.C. office of the Commission's Wireless Telecommunications Bureau.

§ 90.675 Information exchange.

(a) *Prior Coordination.* Public safety/CII licensees may notify an ESMR or Part 22 Cellular Radiotelephone licensee that they wish to receive prior notification of the activation or modification of ESMR or Part 22 Cellular Radiotelephone cell sites in their area. Thereafter, the ESMR or Part 22 Cellular Radiotelephone licensee must provide the following information to the public safety/CII licensee at least 10 business days before a new cell site is activated or an existing cell site is modified:

(1) location;

(2) effective radiated power;

(3) antenna height;

(4) channels available for use.

(b) *Purpose of Prior Coordination*. The coordination of cell sites is for informational purposes only: public safety/CII licensees are not afforded the right to accept or reject the activation of a proposed cell or to unilaterally require changes in its operating parameters. The principal purposes of notification are to: (a) allow a public safety/CII licensee to advise the ESMR or Part 22 Cellular Radiotelephone licensee whether it believes a proposed cell will generate unacceptable interference; (b) permit ESMR or Part 22 Cellular Radiotelephone licensees to make voluntary changes in cell parameters when a public safety licensee alerts them to possible interference; and (c) rapidly identify the source if interference is encountered when the cell is activated.

(c) *Public Safety Information Exchange.* (1) Upon request by an ESMR or Part 22 Cellular Radiotelephone licensee, public safety/CII licensees who operate radio systems in the 806-824/851-869 MHz shall provide the operating parameters of their radio system to the ESMR or Part 22 Cellular Radiotelephone licensee.

(2) Public safety licensees who perform the information exchange described above must notify the appropriate ESMR and Part 22 Cellular Radiotelephone licensees prior to any technical changes to their radio system.

§ 90.676 Transition administrator for reconfiguration of the 806-824/851-869 MHz band in order to separate cellular systems from non-cellular systems.

The Transition Administrator will be an independent party with no financial interest in any 800 MHz licensee; and will be selected by a committee representative of 800 MHz licensees. The Transition Administrator will serve both a ministerial role and a function similar to a special master in a judicial proceeding.

(a) The duties of the Transition Administrator will include, but not be limited to:

(1) Obtaining estimates from licensees regarding the cost of reconfiguring their systems and ensuring that estimates contain a firm work schedule. The Transition Administrator will retain copies of all estimates and make them available to the Commission on request.

(2) Mediating disputes regarding cost estimates for reconfiguring a system.

(3) Issuing the Draw Certificate to authorize and instruct the Letter of Credit Trustee to draw down on the Letter of Credit to pay relocation costs in connection with reconfiguring a licensee's system.

(4) Establishing a relocation schedule on a NPSPAC region-by-region basis, prioritizing the regions on the basis of population. However, should a given region be encountering unusually severe amounts of unacceptable interference, that region may be moved up in priority. Any party disputing such a change in priority may refer the matter to the Chief of the Public Safety and Critical Infrastructure Division, who hereby is delegated the authority to resolve such disputes. The Transition Administrator may direct that adjoining regions be reconfigured simultaneously when conditions so require.

(5) The Transition Administrator will coordinate relocation of a NPSPAC Region's NPSPAC channels with the relevant Regional Planning Committee(s) prior to commencing band reconfiguration in a NPSPAC Region.

(b) Once band reconfiguration commences in a given NPSPAC Region, the Transition Administrator will;

(1) Monitor the retuning schedule and resolve any schedule delays or refer same to the Public Safety and Critical Infrastructure Division for resolution;

(2) Coordinate with adjoining NPSPAC Regions to ensure that interference is not being caused to their existing facilities from relocated stations;

(3) Provide quarterly progress reports to the Commission in such detail as the Commission may require and include, with such reports, certifications by Nextel and the relevant licensees that relocation has been completed and that both parties agree on the amount received from the letter of credit proceeds in connection with relocation of the licensees' facilities. The report shall include description of any disputes that have arisen and the manner in which they were resolved. These quarterly reports need not be audited;

(4) Provide to the Public Safety and Critical Infrastructure Division, on the anniversary of **[Effective date of *Report and Order*]**, an audited statement of relocation funds expended to date, including salaries and expenses of Transition Administrator;

(5) Facilitate resolution of disputes by mediation; or referral of the parties to alternative dispute resolution services;

(c) The Transition Administrator may not serve as the repository of funds used in band reconfiguration, excepting such sums as Nextel may pay for the Transition Administrator's services. Moreover, the Transition Administrator will not be certified by the Commission as a frequency coordinator.

§ 90.677 Reconfiguration of the 806-824/851-869 MHz band in order to separate cellular systems from non-cellular systems.

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In order to facilitate reconfiguration of the 806-824/851-869 MHz band ("800 MHz band") to separate cellular systems from non-cellular systems, Nextel Communications, Inc. (Nextel) may relocate incumbents within the 800 MHz band by providing "comparable facilities." For the limited purpose of band reconfiguration, the provisions of § 90.157 shall not apply and inter-category sharing will be permitted under all circumstances. Such relocation is subject to the following provisions:

(a) Within thirty days of Commission approval of the Transition Administrator, the Transition Administrator described in § 90.676 will provide the Commission with a schedule detailing when band reconfiguration shall commence for each NPSPAC Region. The plan should also detail – by NPSPAC Region – which relocation option each non-Nextel ESMR licensees has chosen. The Chief of the Public Safety and Critical Infrastructure Division of the Wireless Telecommunications Bureau will finalize and approve such a plan. The schedule shall provide for completion of band reconfiguration in no more than thirty-six months following release of a Public Notice announcing the start date of reconfiguration in the first NPSPAC region. Relocation will commence according to the schedule set by the Transition Administrator but all systems must have commenced reconfiguration within thirty months of release of a Public Notice announcing the start date of reconfiguration in the first NPSPAC region.

(b) *Voluntary negotiations.* Thirty days before the start date for each NPSPAC region, the Chief of the Public Safety and Critical Infrastructure Division of the Wireless Telecommunications Bureau will issue a Public Notice initiating a three-month voluntary negotiation period. During this voluntary negotiation period, Nextel and all incumbents may negotiate any mutually agreeable relocation agreement. Nextel and relocating incumbents may agree to conduct face-to-face negotiations or either party may elect to communicate with the other party through the Transition Administrator.

(c) *Mandatory negotiations.* If no agreement is reached by the end of the voluntary period, a three-month mandatory negotiation period will begin during which both Nextel and the incumbents must negotiate in "good faith." Nextel and relocating incumbents may agree to conduct face-to-face negotiations or either party may elect to communicate with the other party through the Transition Administrator. All parties are charged with the obligation of utmost "good faith" in the negotiation process. Among the factors relevant to a "good-faith" determination are: (i) whether the party responsible for paying the cost of band reconfiguration has made a *bona fide* offer to relocate the incumbent to comparable facilities; (ii) the steps the parties have taken to determine the actual cost of relocation to comparable facilities; and (iii) whether either party has unreasonably withheld information, essential to the accurate estimation of relocation costs and procedures, requested by the other party. The Transition Administrator may schedule mandatory settlement negotiations and mediation sessions and the parties must conform to such schedules.

(d) *Transition Administrator.* If no agreement is reached during either the voluntary or mandatory negotiating periods, all disputed issues shall be referred to the Transition Administrator who shall mediate and attempt to resolve them within thirty working days. If disputed issues remain thirty days after the end of the mandatory negotiation period; the Transition Administrator shall forward the record to the Chief of the Public Safety and Critical Infrastructure Division, together with advice on how the matter(s) may be resolved. The Chief of the Public Safety and Critical Infrastructure Division is hereby delegated the authority to rule on disputed issues, *de novo*.

(e) *Waiver Requests.* Incumbents who wish not to relocate according to the schedule may petition the Commission for a waiver of the relocation obligation. Such a waiver would only be granted on a strict non-interference basis.

(f) *Comparable Facilities.* The replacement system provided to an incumbent must be at least equivalent to the existing 800 MHz system with respect to the four factors described in § 90.699(d).

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(g) *Information Exchange.* Absent agreement between parties, the Transition Administrator will be responsible for determining the information that relocating incumbents must supply in support of a relocation agreement.

(h) The relevant Regional Planning Committee shall be informed of any proposed changes to any NPSPAC channel.

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37. The heading above Section 90.681 is amended to describe the portion of the band where EA-based SMR systems may occupy after band reconfiguration. The cross reference in Section 90.681 is updated as follows:

POLICIES GOVERNING THE LICENSING AND USE OF EA-BASED SMR SYSTEMS IN THE 809–824/851–869 MHZ BAND

Source: 61 FR 6158, 6159, Feb. 16, 1996, unless otherwise noted.

§ 90.681 EA-based SMR service areas.

EA licenses in for channels 711 through 830 and Spectrum Blocks A through V listed in Tables 4 and 5 of §90.617 are available in 175 Economic Areas (EAs) as defined in §90.7.

38. Paragraph (a) of Section 90.683 is amended to reflect the portion of the band where EA-based SMR systems may occupy after band reconfiguration.

§ 90.683 EA-based SMR system operations.

(a) EA-based licensees authorized in the 809–824/854–869 MHz band pursuant to §90.681 may construct and operate base stations using any of the base station frequencies identified in their spectrum block anywhere within their authorized EA, provided that:

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39. Paragraphs (a) and (b) of Section 90.685 are amended to reflect the portion of the band where EA-based SMR systems may occupy after band reconfiguration. References to EA Block D are also removed since this block will no longer exist after band reconfiguration.

§ 90.685 Authorization, construction and implementation of EA licenses.

(a) EA licenses in the 809–824/854–869 MHz band will be issued for a term not to exceed ten years. Additionally, EA licensees generally will be afforded a renewal expectancy only for those stations put into service after August 10, 1996.

(b) EA licensees in the 809–824/854–869 MHz band must, within three years of the grant of their initial license, construct and place into operation a sufficient number of base stations to provide coverage to at least one-third of the population of its EA-based service area. Further, each EA licensee must provide coverage to at least two-thirds of the population of the EA-based service area within five years of the grant of their initial license. Alternatively, EA licensees in Channel blocks G through V in the 809–824/854–869 MHz band must provide substantial service to their markets within five years of the grant of their initial license. Substantial service shall be defined as: "Service which is sound, favorable, and substantially above a level of mediocre service."

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40. Section 90.687 is updated to reflect the portion of the band where incumbent SMR licensees may remain after band reconfiguration. Cross references are also updated.

§ 90.687 Special provisions regarding assignments and transfers of authorizations for incumbent SMR licensees in the 809–824/854–869 MHz band.

An SMR license initially authorized on any of the channels listed in Table 4 and 5 of §90.617 of this part may transfer or assign its channel(s) to another entity subject to the provisions of §1.948 of this chapter and §90.609(b) of this part. If the proposed transferee or assignee is the EA licensee for the spectrum block to which the channel is allocated, such transfer or assignment presumptively will be deemed to be in the public interest. However, such presumption will be rebuttable.

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41. Paragraphs (a), (c), and (d)(2) of Section 90.693 are updated to reflect the portion of the band where grandfathered licensees may remain after band reconfiguration. References to spectrum blocks which will no longer exist after band reconfiguration are also removed.

§ 90.693 Grandfathering provisions for incumbent licensees.

(a) *General provisions*. These provisions apply to "incumbent licensees," all 800 MHz licensees authorized in the 809–821/854–866 MHz band who obtained licenses or filed applications on or before December 15, 1995.

* * * * *

(c) *Special provisions for spectrum blocks G through V.* Incumbent licensees that have received the consent of all affected parties or a certified frequency coordinator to utilize an 18 dBμV/m signal strength interference contour shall have their service area defined by their originally-licensed 36 dBμV/m field strength contour and their interference contour shall be defined as their originally-licensed 18 dBμV/m field strength contour. The "originally-licensed" contour shall be calculated using the maximum ERP and the actual HAAT along each radial. Incumbent licensees seeking to utilize an 18 dBμV/m signal strength interference contour shall first seek to obtain the consent of affected co-channel incumbents. When the consent of a co-channel licensee is withheld, an incumbent licensee may submit to any certified frequency coordinator an engineering study showing that interference will not occur, together with proof that the incumbent licensee has sought consent. Incumbent licensees are permitted to add, remove or modify transmitter sites within their original 18 dBμV/m field strength contour without prior notification to the Commission so long as their original 18 dBμV/m field strength contour is not expanded and the station complies with the Commission's short-spacing criteria in §§90.621(b)(4) through 90.621(b)(6). Incumbent licensee protection extends only to its 36 dBμV/m signal strength contour. Pursuant to the minor modification notification procedure set forth in 1.947(b), the incumbent licensee must notify the Commission within 30 days of any changes in technical parameters or additional stations constructed that fall within the short-spacing criteria. See 47 CFR 90.621(b).

* * * * *

(d) * * *

(2) *Special Provisions for Spectrum Blocks G through V.* Incumbent licensees that have received the consent of all affected parties or a certified frequency coordinator to utilize an 18 dBμV/m signal strength interference contour operating at multiple sites may, after grant of EA licenses has been completed, exchange multiple site licenses for a single license. This single site license will authorize

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operations throughout the contiguous and overlapping 36 dBμV/m field strength contours of the multiple sites. Incumbents exercising this license exchange option must submit specific information on Form 601 for each of their external base sites after the close of the 800 SMR auction. The incumbent's geographic license area is defined by the contiguous and overlapping 18 dBμV/m contours of its constructed and operational external base stations and interior sites that are constructed within the construction period applicable to the incumbent. Once the geographic license is issued, facilities that are added within an incumbent's existing footprint and that are not subject to prior approval by the Commission will not be subject to construction requirements.

* * * * *

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APPENDIX D: ENHANCED BEST PRACTICES

A. Introduction

1. Enhanced Best Practices have been an effective tool in the voluntary interference abatement efforts undertaken to date. The term Enhanced Best Practices has no precise definition but can be understood to mean all effective means of abating unacceptable interference other than "channel swaps" or wholesale reconfiguration of the band. The effort to develop Enhanced Best Practices began in 2000 when a team of ESMR and Cellular Telephone licensees, public safety organizations, private radio organizations, equipment manufacturers and others produced the Best Practices Guide. Those best practices have been added to and enhanced in the intervening years, leading us to characterize them today as Enhanced Best Practices. We commend those parties that urge that a new Enhanced Best Practices Guide be prepared to update the original document. Below, we discuss the principal techniques comprehended by Enhanced Best Practices and discuss their relative advantages and disadvantages as reflected by our analysis of the record.

B. Interference Abatement at the Cell Site

2. *Modification of Antenna Pattern, Height and Orientation.* Commenting parties have observed that the ESMR and Cellular Telephone licensees often employ cell antennas with significant minor lobes in their vertical patterns mounted at very low elevations—*e.g.,* twenty-five feet—and tilted down so that the main lobe of the antenna is directed "on the street," as opposed to the horizon.[836] Use of such antennas results in a very strong, *e.g.,* -25 dBm, signal in the immediate vicinity and creates high levels of OOBE and intermodulation interference to nearby public safety receivers. ESMR and Cellular Telephone interests claim that this "low-site" cell configuration is necessary to prevent a cell from interfering with nearby cells operating on the same frequency, *i.e.,* that the ESMR or Cellular Telephone operator uses low-site cell configuration in order to avoid interference internal to its own system and to improve in-building coverage from the cell.[837] However this low-site cell configuration also greatly increases the potential for the cell to cause interference to nearby public safety radios.[838] REMEC, an antenna manufacturer, contends that ESMR and Cellular Telephone licensees could substantially reduce interference if the vertical patterns of their antennas distributed R.F. energy evenly on the ground as a function of the distance from the cell site.[839] Use of such "smooth pattern" antennas is an Enhanced Best Practices that could contribute to abatement of unacceptable interference.

3. *Effective Radiated Power Limitation.* Several parties noted the correlation between the effective radiated power (ERP) of a cell and the level of interference that cell creates.[840] These parties contend that reducing ERP, either system wide or on a case-by-case basis, to levels as low as ten watts

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[836] *See* Undated Letter from Allen Rosenzweig, REMEC, Inc.; Motorola Comments at 20.

[837] *See Best Practices* Guide at 7, Technical Appendix to Island Cellular Comments at 7.

[838] *See* Nextel Oct. 31, 2003 *ex parte* submission at 9. *See also* Motorola Comments at 20; C&M Comments at 3.

[839] REMEC claims that antennas could generate these patterns by approximating a cosecant squared function. *See* Undated Letter from Allen Rosenzweig, REMEC, Inc.

[840] *See, e.g.*, Project 39, Interference to Public Safety 800 MHz Radio Systems, *Interim Report to the FCC,* December 24, 2001 at 12-21, *Best Practices* at 7-8; Motorola Comments at 20. *See also* Alltel, *et al.,* Comments at 14; Alltel, *et al.,* Reply Comments at 31; Delmarva P&L Reply Comments at 22.

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would remedy intermodulation interference and, to a lesser extent, OOBE interference.[841] However, ESMR interests contend that significantly reducing ERP at a cell would impair subscriber service and necessitate constructing additional cells in a system to compensate for the reduced coverage of the system's other cells. This, they aver, would only serve to create additional interference in the vicinity of the new cells.[842]

4. ERP reduction can provide significant abatement of intermodulation interference because, for example, when third-order intermodulation interference occurs, a three dB reduction in intermodulation interference can be attained for every one dB reduction in the ERP of a contributing ESMR or Cellular Telephone channel.[843] However an across-the-board reduction of the ERP of ESMR or Cellular Telephone systems to ten watts would have serious consequences in the form of impaired ESMR or Cellular Telephone service in areas in which interference to public safety systems is not being caused; and because it would result in coverage "holes" in existing systems, which holes would have to be filled using additional cells which themselves could be a source of intermodulation or OOBE interference. Accordingly, in our accompanying *Report and Order* we decline to impose ERP limits, recognizing, however, that ESMR or Cellular Telephone carriers may well elect to reduce ERP as an Enhanced Best Practices to abate unacceptable interference occurring at particular cells during band reconfiguration and thereafter.

C. Limitation on Use of Low Sites

5. Low elevation of cell site antennas has been the reported cause of high on-the-street signal levels and several parties argue that licensees should increase antenna height to avoid unacceptable interference.[844] However, it is not the differential path length between high and low sites that causes the problem. For example, the path attenuation difference between a 200 foot antenna height and a 20 foot antenna height is negligible.[845] Instead, the low-site problem most frequently arises from two factors. First, all other things being equal, the vertical "main beam" of a low-site cell will fall closer to the cell than the main beam of a higher antenna,[846] as will minor lobes in the vertical pattern of the antenna. Second, ESMR and cellular licensees make widespread use of mechanical or electrical beam tilt which causes the vertical main beam of the antenna to fall directly "on the street" in the immediate vicinity of the cell.[847]

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[841] *Id*.

[842] *See* PSWN Comments at 18; Consensus Parties' Aug. 7 *Ex Parte* at 40-41.

[843] *See* Motorola Interference Technical Appendix to the Best Practices Guide at 11.

[844] *See, e.g*., Project 39, Interference to Public Safety 800 MHz Radio Systems, *Interim Report to the FCC,* December 24, 2001 at 12-21, Best Practices Guide at 7-8, Motorola Comments at 20.

[845] For example, at a distance of 305 meters (1000) feet from a cell site, the free space loss for antennas mounted at 61 meters (200 feet) AGL and 6 meters (20 feet) AGL differs by only 0.17 dB, calculated as follows: The distance (D) over a straight line from a receiving antenna to the radiation center of the transmitting antenna is defined for particular heights (H) by $(D^2 + H^2)^{0.5}$. The path loss over the distance (D) is defined by $53.3 + 20 \log(D_{meters}) + 20 \log (F_{MHz})$.

[846] Thus, for example, given an antenna having a 10 degree 3 dB beamwidth, the main beam of the antenna will intersect the ground at 1134 feet from the cell when mounted on a 200 foot tower, but only at 113 feet from the cell when mounted on a 20 foot tower.

[847] *See* Motorola Interference Technical Appendix to Best Practices Guide at 11. *See also* Motorola Comments at 20.

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This appears to be a design choice when localized building penetration is important or when the wide coverage characteristic of high-site cells with little or any beam tilt—is either not required or would impair system subscriber capacity by limiting frequency reuse in nearby cells.[848] Thus, given this correlation between low-site cells, especially those with beam tilted antennas, and interference to public safety and other non-cellular radios in the vicinity of the cell it can be concluded that: (1) avoiding low-site cell configurations is an effective Enhanced Best Practice, albeit one that can limit subscriber capacity and building penetration; and (2) the low-site/high-site distinction is useful as one means of defining what constitutes a "cellular system" in the context of 800 MHz technology.[849]

D. Filtering of Cumulative OOBE Interference

6. Several parties have noted that a significant reduction in OOBE interference results when ESMR and Cellular Telephone licensees avoid the use of devices known as hybrid combiners. A combiner, as the name implies, feeds multiple transmitters into a single antenna. Hybrid combiners are not frequency-selective, and thus pass all frequencies fed into them. A cavity combiner, by comparison, uses frequency-selective resonant cavities which pass individual channels, but reject noise that falls outside those channels, *i.e.* OOBE.[850] Hybrid combiners are less expensive than cavity combiners and may be suitable in cases where OOBE is not likely to be a problem, *e.g.* in high-site cells or cells in which external filtering equipment is installed. The use of cavity combiners, alone or in combination with outboard filters is another useful Enhanced Best Practice available to ESMR and Cellular Telephone licensees. Use of cavity combiners and outboard filters is an Enhanced Best Practice that can be made proactive, rather than reactive; *e.g.* by integrating the devices into system design before unacceptable interference develops.

E. Cell Site Channel Selection.

7. Cells may be configured to avoid using channels that can cause intermodulation products to fall on specific public safety and other non-cellular 800 MHz channels. Changing channels was a remedy initially discussed in the *Best Practices Guide* and often has proven effective in addressing intermodulation interference to public safety systems.[851] However, the utility of the technique must be viewed against the fact that restricting channel selection can impair the subscriber capacity of the ESMR or Cellular Telephone system.[852] Moreover, since the channels used at cells change frequently, channel changes sometimes provide only a temporary solution to an interference problem, especially when the intermodulation product is produced by signals from both an ESMR cell and a Cellular Telephone cell. Moreover, as Cellular Telephone licensees convert from analog to digital technology—such as code division multiple access (CDMA)—it may no longer be possible to abate intermodulation interference by changing the channels in a cell or cells.[853]

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[848] *See Best Practices* Guide at 7, Island SMR Comments, Exhibit A at 7.

[849] Thus, we have decided to exclude systems using transmitting antennas 200 feet above ground level or higher from our definition of an 800 MHz cellular system. *See* Section VI.C.2.e *supra.*

[850] *See* UTC Comments at 19-20; Motient Comments at 4-5; Southern LINC Comments at 20.

[851] *See* Consensus Parties' Aug 7 *Ex Parte* at 23.

[852] *Id.*

[853] *See e.g.,* recent articles indicating that Nextel is testing CDMA technology in the 1.9 GHz band: http://phx.corporate-ir.net/phoenix.zhtml?c=63347&p=irol-newsArticle&t=Regular&id=492688&, http://www.flarion.com/newsroom/about_06_14a_02.html and Communications Daily Feb. 9, 2004 at 9.

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F. Proper Operation of Cell Site Transmitters.

8. Motorola included proper operation of base stations as one of the interference mitigation techniques in its *Technical Toolbox*. ESMR and Cellular Telephone base station equipment can malfunction and cause increased interference, notably, excessive OOBE. Any attempt to abate interference through application of Enhanced Best Practices, or otherwise, should consider malfunction of base station transmitters as a possible interference culprit.

G. Increasing the strength of the affected non-cellular signal

9. Improving the signal strength of the desired signal is another Enhanced Best Practice that is frequently difficult to implement. It is clear that most public safety agencies lack the resources to make immediate coverage improvements to their systems. The funding cycle for public safety systems often is measured in multiples of years. It is likewise clear that where coverage improvements are needed most—in areas served by high density ESMR and cellular telephone systems—the requisite additional frequencies are less likely to be available. However, with the appropriate engineering design, otherwise intractable interference problems can sometimes be addressed by use of such technology as simulcasting and the use of signal boosters to provide "spot coverage" in areas affected by unacceptable interference.

10. Unacceptable interference is most frequently a function of the ratio of the desired (non-cellular) signal to the potentially interfering (ESMR or Cellular Telephone) signal. From a strictly technical standpoint, a licensee can achieve meaningful improvements in its signal strength by increasing the base station transmitter power, antenna gain or antenna elevation;[854] or by constructing additional base stations.[855] From a practical standpoint, however, there are several obstacles to improving signal strength; the most serious being cost and the availability of frequencies if base stations are added. A rule requiring licensees to place a minimum predicted service contour, *e.g.* 50 dBμV/m, over their desired coverage area has been advanced as an effective interference abatement Enhanced Best Practice. Under such a scheme stations would be protected against interference within that contour.[856] However, in many circumstances, this could require 800 MHz non-cellular licensees to increase power by a factor of ten or more; or to resort to constructing additional base stations. In the accompanying *Report and Order* substantially the same interference-protection goal has been reached by establishing the measured, rather than predicted, threshold signal level that a public safety signal must attain in areas in which unacceptable interference is encountered or predicted.

[854] *See Best Practices Guide* at 12.

[855] *Id.*

[856] *See* TIA Comments at 4.

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APPENDIX E: ILLUSTRATIVE FORM OF LETTER OF CREDIT

[Subject to Issuing Bank Requirements]

No. _____

[Date of Issuance]

[Trustee]

[Address]

Ladies and Gentlemen:

We hereby establish, at the request and for the account of Nextel Communications, Inc., in your favor, as required under the [Report and Order and Fifth Report and Order and Fourth Memorandum Opinion and Order, and Order dated as of _____, 2004] issued by the Federal Communications Commission ("FCC") in the matter of Improving Public Safety Communications in the 800 MHz Band (the "Order"), our Irrevocable Letter of Credit No. _____, in the amount of $2,500,000,000 (Two Billion Five Hundred Million United States Dollars), expiring at the close of banking business at our office described in the following paragraph, on [the date which is five years from the date of issuance/ or the date which is one year from the date of issuance, provided the Issuing Bank includes an evergreen clause that provides for automatic renewal unless the Issuing Bank gives notice of non-renewal to the Trustee, with a copy to the FCC, at least sixty days but not more than ninety days prior to the expiry thereof], or such earlier date as the Letter of Credit is terminated by the Trustee (the "Expiration Date"). Capitalized terms used herein but not defined herein shall have the meanings accorded such terms in the Order.

Funds under this Letter of Credit are available to you against your draft in the form attached hereto as Annex A, drawn on our office described below, and referring thereon to the number of this Letter of Credit, accompanied by your written and completed certificate signed by you substantially in the form of Annex B-1 attached hereto and, if applicable, the Transition Administrator's written and completed certificate signed by the Transition Administrator substantially in the form of Annex B-2 attached hereto. Such draft and certificates shall be dated the date of presentation or an earlier date, which presentation shall be made at our office located at [BANK ADDRESS] and shall be effected either by personal delivery or delivery by a nationally recognized overnight delivery service. We hereby commit and agree to accept such presentation at such office, and if such presentation of documents appears on its face to comply with the terms and conditions of this Letter of Credit, on or prior to the Expiration Date, we will honor the same not later than the first banking day after presentation thereof in accordance with your payment instructions. Payment under this Letter of Credit shall be made by [check/wire transfer of Federal Reserve Bank of New York funds] to the payee and for the account you designate, in accordance with the instructions set forth in a draft presented in connection with a draw under this Letter of Credit.

Partial drawings are permitted under this Letter of Credit, and the amount of this Letter of Credit shall be reduced by each such partial draw hereunder.

This Letter of Credit shall be subject to automatic amendment by a decrease in the amount available hereunder to the amount specified in a Transition Administrator's certificate purportedly signed by the Transition administrator or, if not an individual, by two authorized representatives of the Transition Administrator, and countersigned by an authorized signatory of the FCC in the form attached as Annex C, which amendment shall automatically become effective upon receipt of such certificate.

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This Letter of Credit shall be canceled and terminated upon receipt by us of the Transition Administrator's certificate purportedly signed by the Transition Administrator or, if not an individual, by two authorized representatives of the Transition Administrator, and in either case countersigned by an authorized signatory of the FCC in the form attached as Annex D.

This Letter of Credit is not transferable or assignable in whole or in part, except that this Letter of Credit may be assigned or transferred to any successor trustee succeeding you upon **[insert Issuing Bank's standard practice language, such as language regarding requirements for timely notification and supplemental documentation.]**

This Letter of Credit sets forth in full the undertaking of the Issuer, and such undertaking shall not in any way be modified, amended, amplified or limited by reference to any document, instrument or agreement referred to herein, except only the certificates and the drafts referred to herein and the ISP (as defined below); and any such reference shall not be deemed to incorporate herein by reference any document, instrument or agreement except for such certificates and such drafts and the ISP.

This Letter of Credit shall be subject to, governed by, and construed in accordance with, the International Standby Practices 1998, International Chamber of Commerce Publication No. 590 (the "ISP"), which is incorporated into the text of this Letter of Credit by this reference, and, to the extent not inconsistent therewith, the laws of the State of New York, including the Uniform Commercial Code as in effect in the State of New York. Communications with respect to this Letter of Credit shall be addressed to us at our address set forth below, specifically referring to the number of this Letter of Credit.

[NAME OF BANK]
[BANK SIGNATURE]

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APPENDIX E–ANNEX A

Form of Draft

To: [Issuing Bank]

DRAWN ON LETTER OF CREDIT No: _____

AT SIGHT

PAY TO THE ORDER OF _____[insert name of Trustee] BY [CHECK/WIRE TRANSFER OF FEDERAL RESERVE BANK OF NEW YORK]

FUNDS TO: _____

_____

_____

Account (_____)

AS 800 MHz RELOCATION and TRANSITION PAYMENTS

[AMOUNT IN WORDS] DOLLARS AND NO/CENTS

$[AMOUNT IN NUMBERS]

[TRUSTEE]

By: _____

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APPENDIX E–ANNEX B-1

Draw Certificate

The undersigned hereby certifies to [Name of Bank] (the "Bank"), with reference to (a) Irrevocable Standby Letter of Credit No. [Number] (the "Letter of Credit") issued by the Bank in favor of the [Trustee] and (b) [paragraph 332] of the [Report and Order and Fifth Report and Order and Fourth Memorandum Opinion and Order, and Order] dated as of _____, 2004] issued by the Federal Communications Commission in the matter of Improving Public Safety Communications in the 800 MHz Band (the "Order"), pursuant to which Nextel Communications, Inc. (the "LC Provider") has provided the Letter of Credit (all capitalized terms used herein but not defined herein having the meaning stated in the Order), that:

[i. The Transition Administrator has certified to the Trustee that pursuant to the Order, a payment in the amount of $_____ is appropriate to be made to the Trustee to hold in trust and disburse in payment of the expenses for _____, and further certifying that the Transition Administrator instructs the Trustee to make such payment via draw on Letter of Credit No. _____; and

ii. A copy of the signed certification referred to in clause (i) above and in the form of Annex B-2 to Letter of Credit No. _____, purportedly signed by or on behalf of the Transition Administrator is attached hereto.]

OR

[The FCC has certified to the Trustee that pursuant to the Order and the Commission's finding that Nextel is in material breach of the terms of the Order, the Trustee is entitled to receive payment of $_____ representing the remaining undrawn amount of Letter of Credit No. _____, to hold in trust and disburse in accordance with the terms of the Order.

OR

[The FCC has certified to the Trustee that given notice of non-renewal of Letter of Credit No. _____ and failure of the account party to obtain a satisfactory replacement thereof, pursuant to the Order, the Trustee is entitled to receive payment of $_____ representing the remaining amount of Letter of Credit No. _____, to hold in trust and disburse pursuant to the Order.]

IN WITNESS WHEREOF, the undersigned has executed this certificate as of [specify time of day] on the ____ day of _____, 200__.

[TRUSTEE]

By: _____
Name:
Title:

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APPENDIX E–ANNEX B-2

Draw Certificate of Transition Administrator

The undersigned hereby certifies to the[Trustee] (the "Trustee"), with reference to [paragraph 332 of the [Report and Order and Fifth Report and Order and Fourth Memorandum Opinion and Order, and Order dated as of _____, 2004] issued by the Federal Communications Commission in the matter of Improving Public Safety Communications in the 800 MHz Band (the "Order"), pursuant to which Nextel Communications, Inc. (the "LC Provider") has provided the Letter of Credit (all capitalized terms used herein but not defined herein having the meaning stated in the Order), that:

i. _____[Name of licensee] is an 800 MHz licensee that has obtained a quotation for [estimated expenses/final expenses] in the amount of $ _____ in connection with transition from _____ [specify spectrum] to _____ [specify spectrum] which are appropriately reimbursable under the Order, and such amount is appropriately payable for relocation expenses on behalf of [Name of licensee], and **[either (i) there has been no dispute regarding the amount of such payment, or (ii) any dispute regarding the amount of such payment has been resolved in accordance with the Order],** and

ii. The undersigned has established and will maintain for [specify time period] a file containing documents and records that demonstrate with reasonable specificity according to industry standards and [financial standards for expense documentation / other standards or standards contained in the Order] conclusions stated in its certification in clause (i) above, and such file shall be available during regular business hours for inspection or audit by [who will audit (or specify auditors for) the Transition Administrator?]

Based on the foregoing, the Transition Administrator hereby directs the Trustee to draw on the Letter of Credit in the amount and for the benefit of the party specified in clause (i) above, payable as follows: [Insert Payment Instruction/payment instructions to follow in separate documentation]

IN WITNESS WHEREOF, the undersigned has executed this certificate as of the ____ day of _____, 200__.

[TRANSITION ADMINISTRATOR]

[TWO SIGNATURES REQUIRED IF TRANSITION ADMINISTRATOR IS AN ENTITY; ONE SIGNATURE REQUIRED IF TRANSITION ADMINISTRATOR IS A NATURAL PERSON]

By: _____
Name:
Title:

[By: _____]
Name:
Title:

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APPENDIX E–ANNEX C

Certificate Regarding Reduction of Letter of Credit

The undersigned hereby certifies to [Name of Bank] (the "Bank"), with reference to (a) Irrevocable Standby Letter of Credit No. [Number] (the "Letter of Credit") issued by the Bank in favor of the [trustee], and (b) [paragraph 332] of the [Report and Order and Fifth Report and Order and Fourth Memorandum Opinion and Order, and Order] dated as of _____, 2004] issued by the Federal Communications Commission ("FCC") in the matter of Improving Public Safety Communications in the 800 MHz Band (the "Order"), (all capitalized terms used herein but not defined herein having the meaning stated or described in the Order), that:

(1) the undersigned Transition Administrator has documented, pursuant to the Order, that the amount of the Letter of Credit (prior to adjustment as set forth in clause (2) below) exceeds the amount needed to ensure completion of band configuration; and

(2) the amount of the Letter of Credit shall be reduced to the amount equal to $_____ [_____Dollars].

IN WITNESS WHEREOF, the undersigned has executed this certificate as of the ____ day of _____, 200_.

[TRANSITION ADMINISTRATOR]

[TWO SIGNATURES REQUIRED IF TRANSITION ADMINISTRATOR IS AN ENTITY; ONE SIGNATURE REQUIRED IF TRANSITION ADMINISTRATOR IS A NATURAL PERSON]

By: _____
Name:
Title:

[By: _____]
Name:
Title:

COUNTERSIGNED:

Federal Communications Commission

By: _____
Name:
Its Authorized Signatory

APPENDIX E–ANNEX D

Certificate Regarding Termination of Letter of Credit

The undersigned hereby certifies to [Name of Bank] (the "Bank"), with reference to (a) Irrevocable Standby Letter of Credit No. [Number] (the "Letter of Credit") issued by the Bank in favor of the [trustee], and (b) [paragraph 332] of the [Report and Order and Fifth Report and Order and Fourth Memorandum Opinion and Order, and Order] dated as of _____, 2004] issued by the Federal Communications Commission ("FCC") in the matter of Improving Public Safety Communications in the 800 MHz Band (the "Order"), (all capitalized terms used herein but not defined herein having the meaning stated or described in the Order), that:

(1) [include one of the following clauses, as applicable]

(a) The Order has been fulfilled in accordance with the provisions thereof;

(b) Nextel Communications, Inc. has paid to the appropriate parties all amounts it is required to pay pursuant to the terms of the Order; or

(c) Nextel Communications, Inc. has provided a replacement letter of credit satisfactory to the FCC.

(2) By reason of the event or circumstance described in paragraph (1) of this certificate, and effective upon the receipt by the Bank of this certificate (countersigned as set forth below), the Letter of Credit is terminated.

IN WITNESS WHEREOF, the undersigned has executed this certificate as of the ____ day of _____, 200_.

[TRANSITION ADMINISTRATOR]

[TWO SIGNATURES REQUIRED IF TRANSITION ADMINISTRATOR IS AN ENTITY; ONE SIGNATURE REQUIRED IF TRANSITION ADMINISTRATOR IS A NATURAL PERSON]

By: _____
Name:
Title:

[By: _____]
Name:
Title:

COUNTERSIGNED:

Federal Communications Commission

By: _____
Name:
Its Authorized Signatory

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APPENDIX E–ANNEX E

Terms for Documents Establishing the 800 MHz Relocation Trust and the Relationship between Nextel and the Letter of Credit Trustee (the "Trustee")

Basic Terms related to the Establishment of the 800 MHz Relocation Trust. The Letter of Credit trustee (the "Trustee") shall incorporate language to fully effectuate the following summary terms into each item of documentation establishing (i) the trust to receive proceeds of the letter of credit contemplated by the Report and Order (the "800 MHz Relocation Trust") and (ii) the relationship between Nextel and the Trustee of said trust with respect thereto. Each such document shall be subject to Commission review and approval prior to execution.

- acknowledgment of purpose to effect the 800 MHz transition in support of public safety, and agreement to work in good faith with the other parties pursuant to the Report and Order
- representation and warranty by the Trustee that such entity (not an individual) meets the qualifications set forth in the Report and Order (e.g., independence and absence of conflicts of interest)
- designation of the Commission as an intended third-party beneficiary; no other party to be an intended third-party beneficiary
- definition of completion of the reconfiguration
- term—five years, or until the 800 MHz transition is complete, whichever is earlier
- successor Trustee requires approval of the Commission
- replacement of Trustee at Nextel's request—define "cause" and require showing of cause and 14 days advance notice to the parties and to the Commission
- election by Trustee to withdraw from arrangement—requires 14 days advance notice to the parties and to the Commission; may require ongoing monetary obligation or duty of Trustee, as applicable (for example, to support transition)
- change of control of Trustee—requires approval of Nextel (so long as Nextel is not then in Default under the Report and Order) and the Commission, which approval shall not be unreasonably withheld but which may be conditional
- notice procedure - specifies which notices shall be copied to the Commission

Terms Specific to the Establishment of the 800 MHz Relocation Trust. At the option of the Trustee, the following points may be covered in one or more agreements (for example, there may be a separate fee letter).

- corpus of trust to be proceeds of one or more LOCs issued for the account of Nextel pursuant to the Report and Order
- Trustee agrees to hold money as fiduciary for 800 MHz licensees and for the Commission; fiduciary obligations fulfilled via handling of funds according to standards applied to

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corporate trustees, and via disbursement of funds pursuant to instructions issued by the Transition Administrator. The Trustee should be a fiduciary of the Transition Administrator

- specifies record-keeping obligations pursuant to the Report and Order
- specifies reporting obligations pursuant to the Report and Order
- specifies audit and inspection rights of Nextel and the Commission, including allocation of costs thereof
- specifies details concerning fees to be paid by Nextel to the Trustee
- specifies that the trust agreement may not be amended, modified or rescinded without approval of the Commission
- specifies that the corpus of the trust(s) shall be forfeit to the United States Treasury to the extent that Nextel fails to make any of the payments owed to the Treasury by the date specified in the Commission's Report and Order
- specifies additional terms of a customary nature for agreements establishing a corporate trust

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Terms for Tri-Party Agreement among Nextel, the Transition Administrator and the Letter of Credit Trustee (the "Trustee")

Basic Terms. The Tri-Party Agreement among Nextel, the Transition Administrator (sometimes referred to herein as the "TA") and the Trustee shall incorporate language to fully effectuate the following summary terms and shall be subject to Commission review and approval prior to execution:

- acknowledgment of purpose to effect the 800 MHz transition in support of public safety, and agreement to work in good faith with the other parties pursuant to the Report and Order
- representation and warranty by each of the Transition Administrator and the Trustee that such person (individual or entity) meets the qualifications set forth in the Report and Order (e.g., independence and absence of conflicts of interest)
- designation of the Commission as an intended third-party beneficiary; no other party to be an intended third-party beneficiary
- definition of completion of the reconfiguration
- term—five years, or until the 800 MHz transition is complete, whichever is earlier
- successor Transition Administrator/Trustee requires approval of the Commission
- replacement of Transition Administrator/Trustee at Nextel's request—define "cause" and require showing of cause and 14 days advance notice to the parties and to the Commission
- election by Transition Administrator/Trustee to withdraw from arrangement—requires 14 days advance notice to the parties and to the Commission; may require ongoing monetary obligation or duty of Transition Administrator/Trustee, as applicable (for example, to support transition)
- change of control of Transition Administrator/Trustee—requires approval of Nextel (so long as Nextel is not then in Default under the Report and Order) and the Commission, which approval shall not be unreasonably withheld but which may be conditional
- replacement/successor Transition Administrator to be selected by the search committee pursuant to this *Report and Order*
- notice procedure - specifies which notices shall be copied to the Commission
- Note: language to be harmonized as appropriate if the Transition Administrator is a natural person rather than an entity

Terms Specific to Tri-Party Agreement

- tasks the TA with working with the Trustee to set up the trust
- tasks the TA with designing the payment system subject to reasonable approval of Nextel and the Trustee (up front payments vs. progress payments; timing and logistics of payments in conjunction with the LOC system [for example, a draw would be made under the LOC for the estimated amount of a licensee's transition project; at the TA's direction, the Trustee would disburse those proceeds to the appropriate vendors, or to the licensee,

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according to payment criteria such as product delivery or project milestones]; how to handle true-ups [either a payment made in excess of an estimate, or a refund collected if the estimate exceeded actual cost]; logistics for obtaining payment approvals, including the approval of Nextel, and for resolving disputes related to payment amounts)

- states the Transition Administrator will not handle any project funds; specifies procedures for the TA to turn over funds it may receive in connection with the project to the Trustee
- specifies how the Trustee will dispose of any refunds it may receive during or after the relocation process
- specifies the Trustee will follow the details of the payment system devised by the TA pursuant to the Tri-Party Agreement
- tasks the TA with developing a system to ensure vendors are not filing mechanics liens or equipment financing liens against the licensees in connection with the transition (or, in the alternative, tracking the release of liens in connection with payments to vendors)
- tasks the TA, as the project manager, with creating a standardized bid package for use by the municipality licensees—including a standardized scope of project, and a standardized documentation package. NOTE: The standardized documentation package could contain the requirement that the vendor obtain a performance bond, which bond would be paid for via the LOC proceeds as part of the cost of the transition. The standardized bid package would be subject to Nextel's reasonable approval.
- tasks the TA with developing standardized bidding procedures for the municipal licensees to follow
- specifies that neither the Trustee nor the Transition Administrator bears the risk that a particular vendor fails to perform, and allocates such risk between Nextel and the licensees—since the municipality/licensees will have control over the award of the contract, it is reasonable they would bear the risk (and where appropriate, the risk could be managed via the performance bond mentioned above)
- specifies additional terms of a customary nature in agreements for management of a project by a third party Project Administrator
- specifies additional terms of a customary nature in agreements for management of payments by a third party Paying Agent (to the extent not covered in the documentation establishing the trust)
- specifies details of dispute resolution mechanisms, including time frames and escalation procedures
- specifies the rights of Nextel vis-à-vis the relocation process absent an event of default by Nextel under the Report and Order
- during the continuance of an event of default by Nextel under the Report and Order, specifies the remedies of the TA and the Trustee (i.e., the consequences to Nextel, such as Nextel losing veto rights concerning a project's cost)
- specifies record-keeping and reporting obligations of each party pursuant to the Report and Order

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- specifies audit and inspection rights of Nextel and the Commission, including allocation of costs thereof
- specifies details concerning fees and expenses to be paid by Nextel to the TA and to the Trustee; fees and expenses of the Transition Administrator to conform to notification of Search Committee pursuant to the *Report and Order*
- specifies how the TA and Trustee may be paid in the event of a default by Nextel in the payment of fees to the TA and/or the Trustee -- including a mechanism whereby relief may be sought from the Commission authorizing the proceeds of the LOC be applied against such fees
- specifies that the Tri-Party Agreement may not be amended, modified or rescinded without approval of the Commission
- specifies an order of precedence—that the Tri-Party Agreement would govern in the event of a conflict between the terms of the Tri-Party Agreement and the terms of a bilateral agreement among two of the parties
- specifies a procedure and criteria for Transition Administrator to certify that the 800 MHz relocation is complete, which certification shall allow TA, with Commission's concurrence to seek termination of the Letter(s) of Credit. Termination will also trigger early termination of the Trust and Tri-Party Agreement
- specifies items for which the Transition Administrator may properly seek draws under the Letter of Credit, consistent with the *Report and Order*
- specifies items for which the Transition Administrator may not seek draws under the LOC (such as reimbursement of UTAM, relocation of BAS incumbents) consistent with the *Report and Order*
- specifies that the corpus of the trust(s) shall be forfeit to the U.S. Treasury in the event that Nextel fails to make any of the payments to the Treasury specified in the Commission's *Report and Order*
- specifies responsibilities and guidelines for record-keeping, accounting and dispute resolution related to calculation of the offset described in the *Report and Order*.
- specifies responsibilities and timeliness related to certification of project completion by the Transition Administrator and rendering of the final accounting required in the Report and Order.

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APPENDIX F: NPSPAC REGIONS

Region 1: Alabama	Region 2: Alaska
Region 3: Arizona	Region 4: Arkansas
Region 5: Southern California	Region 6: Northern California
Region 7: Colorado	Region 8: Metropolitan, NYC Area (NY, NJ, & CT)
Region 9: Florida	Region 10: Georgia
Region 11: Hawaii	Region 12: Idaho
Region 13: Illinois (except Southern Lake Michigan counties)	Region 14: Indiana (except Southern Lake Michigan counties)
Region 15: Iowa	Region 16: Kansas
Region 17: Kentucky	Region 18: Louisiana
Region 19: New England	Region 20: District of Columbia, Maryland, & Northern VA
Region 21: Michigan	Region 22: Minnesota
Region 23: Mississippi	Region 24: Missouri
Region 25: Montana	Region 26: Nebraska
Region 27: Nevada	Region 28: Eastern Pennsylvania (east of Harrisburg, southern NJ & DE)
Region 29: New Mexico	Region 30: Eastern Upstate New York
Region 31: North Carolina	Region 32: North Dakota
Region 33: Ohio	Region 34: Oklahoma
Region 35: Oregon	Region 36: Western Pennsylvania
Region 37: South Carolina	Region 38: South Dakota
Region 39: Tennessee	Region 40: Texas (Central & Northeast)
Region 41: Utah	Region 42: Virginia
Region 43: Washington	Region 44: West Virginia
Region 45: Wisconsin (except Southern Lake Michigan counties)	Region 46: Wyoming
Region 47: Puerto Rico	Region 48: US Virgin Islands
Region 49: Texas - Central (Austin Area)	Region 50: Texas - West & Central (Midland Area)
Region 51: Texas - East (Houston Area)	Region 52: Texas - Panhandle, High Plains & Northwest (Lubbock Area)
Region 53: Texas - Southern (San Antonio Area)	Region 54: Southern Lake Michigan (Great Lakes inc. WI, IL, & IN)
Region 55: Western Upstate New York	

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APPENDIX G: SOUTHEAST ESMR BAND PLAN

The ESMR band in the following counties and parishes is the band segment 813.5 - 824 MHz / 858.5-869 MHz. The Expansion Band in these areas shall extend from 812.5-813.5 MHz / 857.5-858.5 MHz. All licensees operating in the band segment 806-813.5 MHz / 851-858.5 MHz shall be afforded the same protection against unacceptable interference as specified in the *Report and Order*.

Alabama
Autauga, Baldwin, Barbour, Bibb, Blount, Bullock, Butler, Calhoun, Chambers, Cherokee, Chilton, Choctaw, Clarke, Clay, Cleburne, Coffee, Colbert, Conecuh, Coosa, Covington, Crenshaw, Cullman, Dale, Dallas, DeKalb, Elmore, Escambia, Etowah, Fayette, Franklin, Geneva, Greene, Hale, Henry, Houston, Jackson, Jefferson, Lamar, Lauderdale, Lawrence, Lee, Limestone, Lowndes, Macon, Madison, Marengo, Marion, Marshall, Mobile, Monroe, Montgomery, Morgan, Perry, Pickens, Pike, Randolph, Russell, Shelby, St Clair, Sumter, Talladega, Tallapoosa, Tuscaloosa, Walker, Washington, Wilcox, Winston

Florida
Bay, Calhoun, Escambia, Franklin, Gadsden, Gulf, Holmes, Jackson, Jefferson, Leon, Liberty, Madison, Nassau, Okaloosa, Santa Rosa, Taylor, Wakulla, Walton, Washington

Georgia
Appling, Atkinson, Bacon, Baker, Baldwin, Banks, Barrow, Bartow, Ben Hill, Berrien, Bibb, Bleckley, Brantley, Brooks, Bryan, Bulloch, Burke, Butts, Calhoun, Camden, Candler, Carroll, Catoosa, Charlton, Chatham, Chattahoochee, Chattooga, Cherokee, Clarke, Clay, Clayton, Clinch, Cobb, Coffee, Colquitt, Columbia, Cook, Coweta, Crawford, Crisp, Dade, Dawson, Decatur, DeKalb, Dodge, Dooly, Dougherty, Douglas, Early, Echols, Effingham, Elbert, Emanuel, Evans, Fannin, Fayette, Floyd, Forsyth, Franklin, Fulton, Gilmer, Glascock, Glynn, Gordon, Grady, Greene, Gwinnett, Habersham, Hall, Hancock, Haralson, Harris, Hart, Heard, Henry, Houston, Irwin, Jackson, Jasper, Jeff Davis, Jefferson, Jenkins, Johnson, Jones, Lamar, Lanier, Laurens, Lee, Liberty, Lincoln, Long, Lowndes, Lumpkin, Macon, Madison, Marion, McDuffie, McIntosh, Meriwether, Miller, Mitchell, Monroe, Montgomery, Morgan, Murray, Muscogee, Newton, Oconee, Oglethorpe, Paulding, Peach, Pickens, Pierce, Pike, Polk, Pulaski, Putnam, Quitman, Rabun, Randolph, Richmond, Rockdale, Schley, Screven, Seminole, Spalding, Stephens, Stewart, Sumter, Talbot, Taliaferro, Tattnall, Taylor, Telfair, Terrell, Thomas, Tift, Toombs, Towns, Treutlen, Troup, Turner, Twiggs, Union, Upson, Walker, Walton, Ware, Warren, Washington, Wayne, Webster, Wheeler, White, Whitfield, Wilcox, Wilkes, Wilkinson, Worth

Louisiana
Catahoula, Concordia, Madison, Tensas

Mississippi
Adams, Alcorn, Amite, Attala, Calhoun, Carroll, Chickasaw, Choctaw, Claiborne, Clarke, Clay, Copiah, Covington, Forrest, Franklin, George, Greene, Grenada, Hancock, Harrison, Hinds, Holmes, Itawamba, Jackson, Jasper, Jefferson, Jefferson Davis, Jones, Kemper, Lamar, Lauderdale, Lawrence, Leake, Lee, Lincoln, Lowndes, Madison, Marion, Monroe, Montgomery, Neshoba, Newton, Noxubee, Oktibbeha, Pearl River, Perry, Pike, Pontotoc, Prentiss, Rankin, Scott, Simpson, Smith, Stone, Tippah, Tishomingo, Union, Walthall, Warren, Wayne, Webster, Wilkinson, Winston, Yazoo

North Carolina
Cherokee, Clay, Graham, Jackson, Macon

South Carolina
Abbeville, Aiken, Allendale, Anderson, Bamberg, Barnwell, Beaufort, Edgefield, Greenwood, Hampton,

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Jasper, McCormick, Oconee

Tennessee
Bledsoe, Bradley, Franklin, Giles, Hamilton, Hardin, Lawrence, Lincoln, Marion, McMinn

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STATEMENT OF
CHAIRMAN MICHAEL K. POWELL

Re: Improving Public Safety Communications in the 800 MHz Band (WT Docket No. 02-55), et al., Report and Order and Fourth Report and Order

Congress has imposed many important obligations on the Commission. One of the Commission's most important commitments is to promote safety of life and property using wire and radio communications. Today, it is more important than ever before that public safety agencies have access to reliable, robust, interference-free communications systems. To protect our communities, our citizens, and our Nation, we must take every action at our disposal to achieve the seamless communications necessary for emergency preparedness and response.

The 800 MHz band has become increasingly crucial to public safety communications. Because of the interleaved nature of the band and the close proximity of incompatible technologies, over the years, these systems have encountered escalating amounts of interference from commercial cellular systems. In response, the Commission released a Notice of Proposed Rulemaking to reconfigure the 800 MHz band to abate the interference caused to public safety systems. This proceeding's extensive record of over 2,200 filings depicts the complexity of the issue and difficulty in constructing a solution that is technically sound, effective and equitable to all parties. Although today's Order incorporates proposals and suggestions from various parties on record, it is a Commission-derived solution that represents the most comprehensive and effective means of solving the 800 MHz public safety interference problem.

Our decision fulfills our mandate to promote public safety by reconfiguring the 800 MHz public safety band to segregate systems causing unacceptable levels of interference to public safety communications. Without these measures, countless lives are at risk because our Nation's first responders cannot rely on their radios in emergencies. In the short term, the Order establishes technical rules and procedures that define and alleviate "unacceptable interference" to public safety systems. Longer term, the Order adopts a restructuring plan that spectrally separates incompatible technologies to maximize interference protection for present and future public safety systems and provides a smooth transition to the new band with minimal disruption to public safety systems and other affected parties.

The Commission-derived plan requires Nextel to relinquish spectrum and reband 800 MHz and relocate incumbents in 800 MHz and 1.9 GHz. Nextel must also complete the reconfiguration within three years and obtain a letter of credit to guarantee its completion for public safety licensees. It is important to emphasize that Nextel is responsible for all costs of relocating public safety licensees.

This decision is by far one of the most complex matters to come before the Commission; however, it is unquestionably one of the most important decision affecting public safety and the American people. We will carefully monitor the progress of public safety relocation and will take all necessary steps to ensure full compliance of the plan we adopt today.

STATEMENT OF
COMMISSIONER KATHLEEN Q. ABERNATHY

Re: Improving Public Safety Communications in the 800 MHz band,
WT Docket No. 02-55

For three years we have struggled to identify the best way to resolve public safety interference problems in the 800 MHz band. After reviewing the voluminous record it became clear to me that: 1) the adoption of enhanced best practices alone would be inadequate to protect critical public safety communications; and 2) any rebanding solution would be costly, complex and controversial. I embrace today's decision because it puts public safety's interests first. While I recognize that the rebanding plan is costly, complex and, in some respects, controversial, it is the only the solution that adequately addresses the needs of public safety while realigning other uses of the 800 MHz band.

When we initiated this proceeding, I stated that there were four key considerations which would likely guide my analysis. First, the plan must aggressively attack the public safety interference issues. Second, our approach should strive to minimize costs. Third, if possible, we should attempt to minimize the disruption to other bands. And fourth, if we were to consolidate public safety into a contiguous band and there is a demonstrated need in the record, we should identify additional interoperability channels for public safety. Today's order addresses each of these considerations.

As an initial step we adopt mandatory best practices that will diminish, but not eliminate, the potential for harmful interference to public safety. Over the longer term, we are implementing a rebanding plan that completely eliminates harmful interference and provides additional spectrum for public safety. Rebanding will be paid for by Nextel, thus ensuring that public safety does not incur any new costs, and the processes we have adopted will minimize service disruptions.

Because of the importance of achieving a workable solution for public safety and the American public, and the complex technical issues, this has not been an easy proceeding to resolve. I believe, however, that the plan we are adopting is the best mechanism available to us to solve the public safety interference problem in the 800 MHz band and I appreciate all of the time, effort and brain power devoted to this proceeding by public safety, industry and the FCC staff.

STATEMENT OF
COMMISSIONER MICHAEL J. COPPS

RE: Improving Public Safety Communications in the 800 MHz Band, WT Docket No. 02-55.

Today we take a giant leap forward to protect public safety. Title I of our enabling statute charges the Federal Communications Commission to promote the national defense and the safety of life and property through the wise use of our country's communications systems. Indeed, a public servant has no higher obligation than tending to the safety of the people.

It took a long time and a lot of hard work to get us here today. Along the way we discovered that no plan is perfect, no plan is supported by all parties, and no plan is guaranteed to deliver everything that it promises. Challenging technical questions were accompanied by equally challenging questions of policy and of law. At the end of two years of study, analysis and stakeholder input, we have now come to a decision that can fix the problems it addresses, advance public safety and serve the public interest.

Today we approve a reconfiguration of the 800 MHz band so that public safety spectrum is insulated from interference from Nextel operations and public safety is given access to additional spectrum to do its job. We mandate that Nextel pay all relocation costs, even if they are above the $850 million figure that the company has discussed. We mandate that Nextel secure an irrevocable letter of credit for $2.5 billion so that the public safety community knows that it will have the money it needs to relocate. We establish a transition manager that will be independent of any one interest, and that I hope will work to make the transition serve the public interest of minimizing interference and getting public safety operations to a stable place as soon as possible. We state that upon receiving the Comptroller General's analysis of appropriations statutes, we can stay relevant portions of the Order if appropriate. And finally, we establish a mechanism to protect tax-payers against private sector windfall.

It's a good day for public safety, a good day for America. I think the citizens of our country now are looking to us—all of us—to get on with the job of putting this plan into action. Time and delay are not our friends here.

I want to express my thanks to my colleagues, particularly the Chairman, to the Bureau and to our hard-working staffs for the extraordinary time, skill and energy they put into this long-running proceeding. And I want to express my deep thanks to the public safety community that worked so hard, traveled so far and thought so creatively to bring us to where we are today. The perseverance of all is certainly appreciated by this Commissioner.

STATEMENT OF
COMMISSIONER JONATHAN S. ADELSTEIN

Re: Improving Public Safety Communications in the 800 MHz Band; WT Docket No. 02-55

The interference situation in the 800 MHz band is one of the most challenging wireless issues the Commission has ever faced. We are trying to untangle years of actions that have created unacceptable and dangerous interference problems for our nation's first responders. I am pleased to support today's item because it puts in place the necessary components to greatly minimize, and hopefully eliminate, the interference currently experienced by our nation's first responders who communicate on land mobile radio systems in the 800 MHz band, particularly during times of emergency. This interference is an unacceptable crisis that must be fixed. Today we give our licensees what they asked for – the regulatory tools to solve the problem both through rebanding and enhanced best practices.

The urgent needs of the public safety community is one of the top priorities of the Commission, and certainly this Commissioner. Public safety officials put their lives on the line for all of us every day, and their situation commands the highest level of attention and priority at the Commission. The very first paragraph of the Communications Act charges the Commission to promote "the safety of life and property through the use of wire and radio communication."

Today we step up to that responsibility, and it is important that in doing so we speak with one voice as a Commission. The stakes here are as high as in any proceeding we consider. We simply have to get this right. Throughout this proceeding, I have worked very hard with my colleagues to explore all aspects of rebanding, including different mechanisms for funding and a variety of spectrum configuration options. We worked tirelessly through countless options to find the approach that met the concerns of public safety while remaining within the bounds of the authority granted to us by Congress.

I know that some may say that the Commission moved too slowly to take this action. But I want to emphasize that the time has been very well spent. Since early this year, my staff and I, in conjunction with some of the other Commissioner offices, have worked extensively with the Commission staff to ensure that this item provides the best blueprint possible for 800 MHz rebanding. There simply is too much at stake to get this wrong. It is especially important that we put in place an appropriate mechanism to ensure that all necessary resources are provided to meet the needs of public safety agencies, and that any incentives to limit assistance are minimized. I also am pleased that the item puts in place procedures to minimize as much as possible the impact of our decision on 800 MHz licensees not directly implicated by the interference problem.

Finally, while this proceeding likely impacted every Bureau and Office in the Commission, I want to acknowledge the extraordinary efforts of the staff of the Wireless Telecommunications Bureau in tackling this once in a lifetime challenge. I want to specifically thank Michael Wilhelm, who managed this project from the beginning, and the staff of the Public Safety and Critical Infrastructure Division for their outstanding work on this project – it truly has been a fine performance of government service.

This decision's primary goal is to protect the nation's police, fire and emergency medical personnel who are on the front lines of our country's public safety efforts. Our decision today puts that priority front and center, right where it belongs.