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

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| In the Matter of | ) | |
| | ) | |
| Service Rules for the 698-746, 747-762 and 777-792 MHz Bands | ) | WT Docket No. 06-150 |
| | ) | |
| Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems | ) | CC Docket No. 94-102 |
| | ) | |
| Section 68.4(a) of the Commission's Rules Governing Hearing Aid-Compatible Telephones | ) | WT Docket No. 01-309 |

# NOTICE OF PROPOSED RULE MAKING, FOURTH FURTHER NOTICE OF PROPOSED RULE MAKING, AND SECOND FURTHER NOTICE OF PROPOSED RULE MAKING

**Adopted: August 3, 2006** **Released: August 10, 2006**

**Comment Date: (30 days after publication in the Federal Register)**
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By the Commission: Chairman Martin; and Commissioners Copps, Adelstein, Tate and McDowell issuing separate statements.

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## I. INTRODUCTION

1. In this Notice of Proposed Rulemaking ("Notice"), we seek comment on possible changes to the Part 27 service rules governing wireless licenses in the 698-746, 747-762, and 777-792 MHz bands (herein, the "700 MHz Band") currently occupied by television (TV) broadcasters and being made available for new services as a result of the digital television (DTV) transition. More than four years have passed since the Commission adopted its initial band plans and service rules governing these licenses.[1] During that time, Congress enacted significant statutory changes to the DTV transition in the Digital Television and Public Safety Act of 2005 ("DTV Act").[2] The DTV Act could affect the Commission's existing regulatory approach to the 698-806 MHz Band, which had envisioned "early" recovery of TV Channels 60-69 ("Upper 700 MHz Band"),[3] but had anticipated recovery of TV Channels 52-59 ("Lower 700 MHz Band") after the DTV transition was complete.[4] In addition, during the past four years, U.S. consumers have been introduced to a variety of innovative wireless services and technologies at the same time that the number of subscribers for mobile telephony services has increased by

[1] *See* Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59), GN Docket No. 01-74, *Memorandum Opinion and Order*, 17 FCC Rcd 11613 (2002) (*Lower 700 MHz MO&O*).

[2] *See* Deficit Reduction Act of 2005, Pub. L. No. 109-171, 120 Stat. 4 (2006) ("DRA"). Title III of the DRA is the DTV Act.

[3] In the *Lower 700 MHz Notice*, the Commission stated that "[t]he DTV Table also, *inter alia*, facilitates the early recovery of Channels 60-69 by minimizing the use of these channels for DTV purposes." Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59), GN Docket No. 01-74, *Notice of Proposed Rulemaking*, 16 FCC Rcd 7278, 7282-83 ¶ 6 (2001) (*Lower 700 MHz Notice*) (footnote omitted); *accord* Reallocation of Television Channels 60-69, the 746-806 MHz Band, ET Docket No. 97-157, *Notice of Proposed Rulemaking*, 12 FCC Rcd 14141, 14142 ¶ 3 (1997). Thus, the Commission's DTV channel allocation plan for the simultaneous transmission of digital and analog broadcast signals placed as few channels as possible in the Upper 700 MHz Band. *See Lower 700 MHz Notice*, 16 FCC Rcd at 7282-83 ¶ 6.

[4] For example, prior to enactment of the DTV Act, there was an expectation that the Lower 700 MHz Band would remain encumbered by analog broadcasters for much longer than the Upper 700 MHz Band. *See, e.g.*, Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59), GN Docket No. 01-74, *Report and Order*, 17 FCC Rcd 1022, 1025 ¶ 4 (2002) (*Lower 700 MHz Report and Order*). In the *Lower 700 MHz Report and Order*, the Commission stated that "[t]he reclamation of television spectrum has been addressed in two parts, primarily as a result of different statutory requirements applicable to the two bands and differing degrees of incumbency in the two bands." *Id.* (footnote omitted). The Commission also acknowledged that "[b]oth Congress and the Commission initially expected to license the Lower 700 MHz Band after the auction of the Upper 700 MHz Band." *Id.* (footnote omitted). The expectation was that the Lower 700 MHz Band would remain a home for significant analog broadcasting for some period of time. *Cf. Lower 700 MHz Report and Order*, 17 FCC Rcd at 1025 ¶ 4 (stating that "[e]arly recovery of additional spectrum beyond the Upper 700 MHz Band was not contemplated in the DTV transition plan") (footnote omitted).

approximately 50 percent.[5] We therefore are revisiting various of the Commission's earlier decisions regarding these 700 MHz Band licenses.[6]

2. In this Notice, we seek comment on potential changes to several of the Commission's initial determinations applicable to 700 MHz Band licenses. This includes licenses yet to be auctioned in 30 megahertz of spectrum in the Upper 700 MHz Band and in 30 megahertz of spectrum in the Lower 700 MHz Band, as well as licenses that already have been auctioned in 18 megahertz in the Lower 700 MHz Band. We first seek comment on possible revisions to the size of service areas for the unauctioned spectrum in the 700 MHz Band. We ask whether additional licenses should be created over service area sizes other than Economic Area Groupings (EAGs), including over small areas such as the 734 Cellular Market Areas (CMAs) composed of Metropolitan Statistical Areas (MSAs) and Rural Service Areas (RSAs).[7] Second, we consider the possibility of revising the size and pairing of the 20-megahertz spectrum block in the Upper 700 MHz Band,[8] including seeking comment on dividing it into blocks of smaller bandwidth. We also ask whether there should be any changes to the size and location of spectrum blocks in the Lower 700 MHz Band.[9] Third, we seek comment on whether it would be appropriate to add or revise performance requirements and/or rules on spectrum access (*e.g.*, spectrum leasing, partitioning, *etc.*) in the secondary market to potentially promote construction in rural areas, as well as whether these policies should be tailored to promote service on tribal lands. Fourth, we seek comment on whether to amend existing rules, as they apply to these 700 MHz Band licensees, requiring demonstrations of "substantial service" for renewal applicants in comparative hearings.[10] Fifth, we seek comment on possible revisions to the license terms for licensees, including whether to extend 700 MHz Band licenses beyond the 2015 date established previously. Sixth, we seek comment on whether the applicable power limits in these bands should be modified. Finally, in this Notice, as well as the Fourth Further Notice of Proposed Rulemaking and Second Further Notice of Proposed Rulemaking,[11] we seek comment on our

[5] During the past four years, the number of U.S. subscribers to mobile telephone services has increased from approximately 141.8 million to approximately 208 million. This has produced an increase in nationwide mobile penetration from 49 percent to 69 percent.

[6] This Notice addresses many of the rules applicable to certain spectrum in the "Upper 700 MHz Band" (Television Channels 60-69 in the 746-806 MHz band) and the "Lower 700 MHz Band" (TV Channels 52-59 in the 698-746 MHz band), as specified herein. Rules applicable to spectrum currently occupied by television Channels 63-64 (764-776 MHz band) and 68-69 (794-806 MHz band) are not considered in this Notice because that spectrum has been allocated to public safety (and thus is not included within the term of the "700 MHz Band" as defined in this Notice). Also, the rules applicable to the Guard Band spectrum at 746-747/776-777 MHz and 762-764/792-794 MHz (which also are not included within the definition of the 700 MHz Band) are not considered in this Notice except insofar as it is a Part 27 service to which 911 and enhanced 911 (E911) and hearing aid compatibility rules may potentially be applied. Finally, in this Notice we do not seek comment on the allocation or service rules for broadcasting or other legacy operations in these bands.

[7] CMAs are the smallest geographic service areas that have been licensed by the Commission. *See* Facilitating the Provision of Spectrum-Based Services to Rural Areas and Promoting Opportunities for Rural Telephone Companies to Provide Spectrum-Based Services, WT Docket No. 02-381, 2000 Biennial Regulatory Review Spectrum Aggregation Limits for Commercial Mobile Radio Services, WT Docket No. 01-14, Increasing Flexibility to Promote Access to and the Efficient and Intensive Use of Spectrum and the Widespread Deployment of Wireless Services, and to Facilitate Capital Formation, WT Docket No. 03-202, *Report and Order and Further Notice of Proposed Rulemaking*, 19 FCC Rcd 19078, 19089 n.60 (2004) (*Rural Report and Order* and *Rural Further Notice*, respectively).

[8] This is Block D (752-762/782-792 MHz) in the Upper 700 MHz Band.

[9] Although we believe we should retain the current band plan in the Lower 700 MHz Band, we nevertheless seek comment on potential changes to the size of the spectrum blocks in the Lower 700 MHz Band.

[10] *See* 47 C.F.R. § 27.14(b).

[11] The Fourth Further Notice of Proposed Rule Making is issued in CC Docket No. 94-102. *See* Revision of the Commission's Rules to Ensure Compatibility With Enhanced 911 Emergency Calling Systems, CC Docket No. 94-

(continued....)

tentative conclusion that services provided in the 700 MHz Band, and in other bands subject to Part 27, including the Advanced Wireless Services in the 1710-1755 MHz and 2110-2155 MHz bands ("AWS-1"),[12] should be subject to requirements concerning 911 and enhanced 911 (collectively, "911/E911") and hearing aid-compatible handsets to the extent that they meet certain criteria, and on changes to the Commission's rules or industry standards related to implementing our tentative conclusion.

## II. BACKGROUND

3. *Overview.* As background, we first briefly discuss the DTV transition, which has envisioned since at least 1997 the reclamation of the 698-806 MHz Band (Television Channels 52-69) for new uses, including commercial and public safety services. Then, we separately describe the Upper 700 MHz Band and Lower 700 MHz Band plans and size of service areas for geographic licensing. We next turn to the major technical and service rules in Part 27 that govern operations in both of these bands. We then discuss the Commission's requirements pertaining to 911/E911 and hearing aid-compatible handsets. Next, we describe recent filings that the Commission has received pertaining to the assignment of unauctioned licenses in the 700 MHz Band.

4. *DTV Transition and Reclamation of the 698-806 MHz Band.* In connection with the transition from analog television broadcasting to DTV, the 698-806 MHz Band will be available on a primary basis for new public safety and other wireless services once it is relinquished by broadcasters on TV Channels 52-69. Because DTV transmissions are more spectrally efficient than analog transmissions, only spectrum occupied currently by Channels 2-51 (*i.e.*, the "core" TV broadcast spectrum) will be needed for broadcast television service after the DTV transition is complete. By the end of the transition, all analog television service will have terminated, and temporary DTV assignments on Channels 52-69 will be relocated into the core TV channels.[13] At the same time, the 698-806 MHz Band will be made available for new uses, including public safety, commercial, and other new radio services.[14] The 698-806 MHz Band is set forth in Table 1 below.

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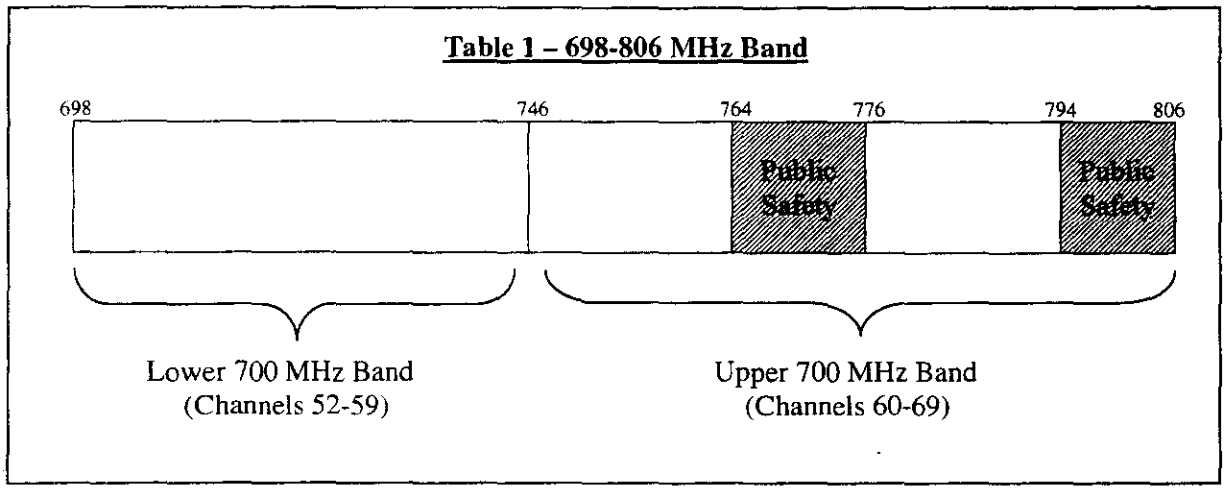
(...continued from previous page)
102, Amendment of Parts 2 and 25 to Implement the Global Mobile Personal Communications by Satellite (GMPCS) Memorandum of Understanding and Arrangements; Petition of the National Telecommunications and Information Administration to Amend Part 25 of the Commission's Rules to Establish Emissions Limits for Mobile and Portable Earth Stations Operating in the 1610-1660.5 MHz Band, IB Docket No. 99-67, *Further Notice of Proposed Rulemaking*, 17 FCC Rcd 25576 (2002) (*E911 Scope NPRM*); Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, CC Docket No. 94-102, RM-8143, *Further Notice of Proposed Rulemaking*, 16 FCC Rcd 11491 (2001); Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, CC Docket No. 94-102, *Report and Order and Further Notice of Proposed Rulemaking*, 11 FCC Rcd 18676 (1996) (*E911 Report and Order and Further Notice*). The Second Further Notice of Proposed Rule Making is issued in WT Docket No. 01-309. *See* Section 68.4(a) of the Commission's Rules Governing Hearing Aid-Compatible Telephones, WT Docket No. 01-309, *Order on Reconsideration and Further Notice of Proposed Rulemaking*, 20 FCC Rcd 11221 (2005).

[12] *See* 47 C.F.R. § 27.5.

[13] *See* Advanced Television Systems and Their Impact upon the Existing Television Broadcast Service, MM Docket No. 87-268, *Memorandum Opinion and Order on Reconsideration of the Sixth Report and Order*, 13 FCC Rcd 7418, 7435-36 ¶ 42 (1998) (*DTV MO&O of the Sixth Report and Order*). Channel 37 is not included because it is reserved exclusively for radio astronomy. *See* 47 C.F.R. §§ 2.106, 73.603(c); Advanced Television Systems and Their Impact Upon the Existing Television Broadcast Service, MM Docket No. 87-268, *Sixth Report and Order*, 12 FCC Rcd 14588, 14608 n.75 (1997).

[14] This recovery of spectrum from existing, analog broadcast use is an important objective of the DTV transition. *See* Advanced Television Systems and Their Impact upon the Existing Television Broadcast Service, MM Docket No. 87-268, *Sixth Further Notice of Proposed Rule Making*, 11 FCC Rcd 10968, 10977 ¶ 18 (1996).




5. Prior to passage of the DTV Act early this year, the Commission had addressed the reallocation of the 698-806 MHz Band in separate proceedings due to different statutory requirements.[15] With respect to the 60 megahertz of spectrum in the Upper 700 MHz Band (746-806 MHz), the Balanced Budget Act of 1997 ("Balanced Budget Act") added Section 337 to the Communications Act of 1934, as amended ("Communications Act" or "Act"), requiring the Commission to reallocate this band no later than January 1, 1998.[16] Specifically, the Balanced Budget Act mandated that the Commission allocate 24 megahertz of spectrum for public safety services and the remaining 36 megahertz of spectrum for commercial use to be assigned by competitive bidding.[17] As a result, in late 1997, the Commission allocated the 764-776 MHz (Channels 63 and 64) and 794-806 MHz (Channels 68 and 69) portions of the Upper 700 MHz Band on a primary basis to fixed and mobile public safety radio services, and it allocated the remaining 746-764 MHz (Channels 60-62) and 776-794 MHz (Channels 65-67) portions on a primary basis to fixed, mobile, and broadcast services for new commercial use.[18]

6. In the Balanced Budget Act, Congress recognized that additional spectrum beyond the Upper 700 MHz Band could be recovered from analog TV broadcasters, and it directed the Commission to "reclaim and organize" such spectrum "in a manner consistent with the objectives" of Section 309(j)(3) of the Act.[19] While Congress did not specify the amount of spectrum to be reclaimed beyond the Upper 700 MHz Band, the Commission determined that all broadcasters using digital transmission systems could be accommodated in core TV Channels 2-51. As a result, the 48 megahertz of spectrum in the Lower 700 MHz Band (698-746 MHz) would become available for new services through competitive

[15] *See, e.g.*, *Lower 700 MHz Notice*, 16 FCC Rcd at 7282 ¶ 6; *Lower 700 MHz Report and Order*, 17 FCC Rcd at 1025 ¶ 4.

[16] *See* Balanced Budget Act of 1997 § 3004 (adding new § 337 of the Communications Act); Reallocation of Television Channels 60-69, the 746-806 MHz Band, ET Docket No. 97-157, *Report and Order*, 12 FCC Rcd 22953, 22955 ¶ 5 (1998), *recon.*, 13 FCC Rcd 21578 (1998) (*Upper 700 MHz Reallocation Order*).

[17] *See* 47 U.S.C. § 337(a) (enacted by the Balanced Budget Act of 1997, Pub. L. No. 105-33, § 3004, 111 Stat. 251, 266 (adding new Section 337(a) and establishing initial timetable for conducting auctions)).

[18] *Upper 700 MHz Reallocation Order*, 12 FCC Rcd at 22953 ¶ 1. For the 24 megahertz of spectrum in the Upper 700 MHz designated for public safety services, the Commission adopted the following band plan: 12.5 megahertz for General Use; 2.6 megahertz for Interoperability; 2.4 megahertz for State Licenses; 0.3 megahertz for Low Power Operations; 0.2 megahertz for Secondary Trunking; and 6.0 for Reserve. *See* The Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communication Requirements Through the Year 2010, WT Docket No. 96-86, *Fourth Memorandum Opinion and Order*, 17 FCC Rcd 4736, 4763 app. D (2002). The channelization of the public safety spectrum is not addressed in this Notice.

[19] *See* 47 U.S.C. § 309(j)(14)(C)(i)(II) (2005).

bidding.[20] While the end of the DTV transition was originally targeted for December 31, 2006, the Communications Act required (prior to the DTV Act and Auction Reform Act of 2002[21]) the Commission to auction excess television spectrum by September 30, 2002.[22] As a result, in late 2001, the Commission adopted an order allocating the entire Lower 700 MHz Band (Channels 52-59) on a primary basis to new fixed, mobile, and broadcast services.[23]

7. Under this statutory scheme for the Upper and Lower 700 MHz Bands,[24] new wireless licenses had to be assigned and revenues from competitive bidding reported to Congress prior to September 30, 2002, despite the fact that TV broadcasters could continue to operate on Channels 52-69 until the indefinite end of the DTV transition. Although analog broadcasters were required to cease operation by December 31, 2006, the Commission was required to extend the end of the transition in certain circumstances.[25] Under the Communications Act, the Commission was required to grant extensions at the request of individual broadcast licensees on a market-by-market basis if one or more of the four largest network stations or affiliates were not broadcasting in digital, digital-to-analog converter technology was not generally available, or 15 percent or more of television households were not receiving a digital signal.[26]

8. In 2002, Congress eliminated the September 30, 2002 auction deadline for the Upper and Lower 700 MHz Bands and provided the Commission with a level of discretion on the timing and deadlines for issuing licenses through competitive bidding.[27] The Auction Reform Act of 2002 directed the Commission to delay competitive bidding for the 30 megahertz of remaining Upper 700 MHz Band commercial spectrum,[28] as well as for 30 of the 48 megahertz of Lower 700 MHz Band spectrum. The Auction Reform Act of 2002 mandated, however, that the Commission proceed with competitive bidding for 18 megahertz of spectrum in the Lower 700 MHz Band.[29]

9. In passing the DTV Act early this year, Congress set forth a number of changes to the reclamation of the 108 megahertz of spectrum in the 698-806 MHz Band. Most importantly, its provisions accelerate the DTV transition by providing a date certain for the end of the transition. Specifically, the DTV Act amends Section 309(j)(14) of the Communications Act to eliminate December

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[20] *See DTV MO&O of the Sixth Report and Order*, 13 FCC Rcd at 7435-36 ¶ 42. The Commission stated that expanding the DTV core spectrum would permit recovery of 108 megahertz of spectrum at the end of the DTV transition period. *Id.* at 7436 ¶ 45.

[21] *See infra* para. 8.

[22] Balanced Budget Act of 1997 §§ 3003, 3007; *see* Auction Reform Act of 2002, *Report to Congress*, 18 FCC Rcd 12556, 12561 ¶ 8 (2003) (*Auction Reform Act Report to Congress*) (explaining requirement to auction excess television spectrum by September 30, 2002).

[23] *See Lower 700 MHz Report and Order*, 17 FCC Rcd at 1024 ¶ 2.

[24] *See supra* note 22 (auction deadline amendments applied to both Upper and Lower bands).

[25] 47 U.S.C. § 309(j)(14)(A)-(B) (2005).

[26] 47 U.S.C. § 309(j)(14)(B)(i)-(iii) (2005).

[27] 47 U.S.C. § 309(j)(15) (2005), as added by the Auction Reform Act (authorizing the Commission to "take such action under [Section 309(j) of the Communications Act of 1934, as amended], including the timing of, and deadlines for, qualifying for bidding; conducting auctions; collecting, depositing, and reporting revenues; and completing licensing processes and assigning licenses.").

[28] As explained below, in 2000 and 2001, the Commission assigned Guard Band licenses through competitive bidding for 6 of the 36 megahertz of Upper 700 MHz commercial spectrum. *See infra* note 36.

[29] 47 U.S.C. § 309(j)(15)(C)(iii), as enacted by the Auction Reform Act. The Auction Reform Act also directed the Commission to delay its then-scheduled auction of certain licenses in the Upper 700 MHz band (Auction No. 31).

31, 2006 and establish February 17, 2009 as a new firm deadline for the end of the DTV transition.[30] In so doing, Congress eliminated the provisions authorizing market-specific extensions of the DTV transition.[31] Congress also unified the timing of auctions for the assignment of remaining spectrum from TV Channels 52-69. The Communications Act now requires the Commission to commence the auction of recovered analog broadcast spectrum no later than January 28, 2008[32] and deposit the proceeds of such auction in the Digital Television Transition and Public Safety Fund no later than June 30, 2008.[33] These statutory changes effectively clear the spectrum in the 698-806 MHz Band for the period following the firm deadline of February 17, 2009,[34] and as a result, eliminate uncertainty regarding the timeframe when this spectrum will be fully available for public safety, commercial, and other wireless services.

10. *Upper 700 MHz Band Plan and Service Areas.* Table 2 below depicts the current band plan and service area sizes adopted for the Upper 700 MHz Band in January 2000.[35] The Commission has already held auctions for Guard Band licenses in Blocks A and B.[36] The Auction Reform Act directed the Commission to delay the auction of licenses for the remaining commercial spectrum in the Upper 700 MHz Band.[37]

[30] DTV Act § 3002.

[31] The DTV Act provides a number of significant changes to the former DTV transition. One is the elimination of provisions that had permitted the extension of the DTV transition based on several factors, including the extent of market penetration of digital broadcast capabilities. *See* DTV Act § 3002(a)(2).

[32] DTV Act § 3003. "Recovered analog spectrum" is defined in the DTV Act to include the frequencies between 698 and 806 MHz "other than – . . . the spectrum auctioned prior to the date of the enactment" of the legislation. *See id.* Public safety spectrum required by 47 U.S.C. § 337 also is excluded in the Act. *Id.* Congress also extended the Commission's auction authority to September 30, 2011. *Id.*

[33] DTV Act §§ 3003(a), 3004 (establishing a Digital Television and Public Safety Fund).

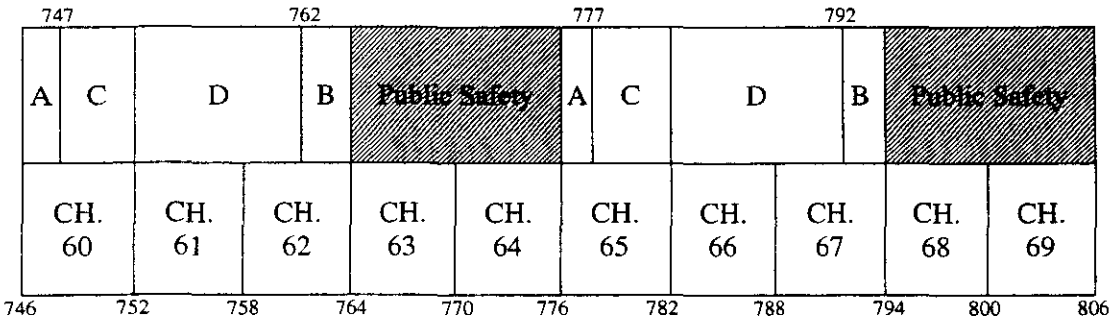
[34] *See* H.R. Conf. Rep. No. 109-362 (2005), *reprinted in* 2006 U.S.C.C.A.N. 3 (conference report for DTV Act).

[35] When this band plan was adopted, the Consolidated Appropriations Act of 2000 required that all proceeds of competitive bidding for such spectrum be deposited prior to September 30, 2000. Consolidated Appropriations Act, 2000, Pub. L. No. 106-113, 113 Stat. 2502, Appendix E, Sec. 213(a)(3), *reprinted in* 47 U.S.C.A. § 337 Note at Sec. 213(a)(3).

[36] These auctions were completed prior to the enactment of the Auction Reform Act. *See* 700 MHz Guard Bands Auction Closes, *Public Notice*, 15 FCC Rcd 18026 (2000) (announcing winning bidders in Auction 33); 700 MHz Guard Bands Auction Closes, *Public Notice*, 16 FCC Rcd 4590 (2001) (announcing winning bidders in Auction 38).

[37] *See Auction Reform Act Report to Congress*, 18 FCC Rcd at 12575 ¶ 50 (2003).

**Table 2 – Upper 700 MHz Band**




| Block | Frequencies | Bandwidth | Pairing | Area Type | Licenses |
|---|---|---|---|---|---|
| A | 746-747, 776-777 | 2 MHz | 2 x 1 MHz | MEA | 52* |
| B | 762-764, 792-794 | 4 MHz | 2 x 2 MHz | MEA | 52* |
| C | 747-752, 777-782 | 10 MHz | 2 x 5 MHz | 700 MHz EAG | 6 |
| D | 752-762, 782-792 | 20 MHz | 2 x 10 MHz | 700 MHz EAG | 6 |

*Blocks have been auctioned.

11. In the Upper 700 MHz Band, the Commission divided the 36 megahertz of commercial spectrum between Guard Band spectrum[38] and spectrum available for new fixed, mobile and broadcast services. The 6 megahertz of Guard Band spectrum was established to minimize any interference that might be caused to the 24 megahertz of public safety radio spectrum by commercial operations[39] on the remaining 30 megahertz of Upper 700 MHz Band spectrum. The 30 megahertz portion, in turn, was divided into two blocks: (1) a 10-megahertz paired block consisting of two 5-megahertz segments (Block C); and (2) a 20-megahertz paired block consisting of two 10-megahertz segments (Block D).[40] In establishing the size of these two blocks, the Commission found that Block C's 5-megahertz segments would accommodate third-generation (3G) technologies, such as wideband code-division multiple access (W-CDMA),[41] but also adopted Block D's wider, 10-megahertz segments to enable a greater range of broadband services.[42]

12. In determining the size of geographic service areas for Upper 700 MHz Band Blocks C and D, the Commission found that the six EAGs were the most efficiently sized geographic areas for initial licenses. The Commission ruled out nationwide licenses and chose large, regional EAGs after

[38] *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 (2000) ("*Upper 700 MHz First Report and Order*"). The service and auction rules for the Guard Band spectrum were established later in 2000. *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) (*700 MHz Guard Band Service Rules Order*).

[39] *See Upper 700 MHz First Report and Order*, 15 FCC Rcd at 478 ¶¶ 2-3 (adopting new subpart in Part 27 for the Guard Bands).

[40] *Id.* at 491 ¶ 35.

[41] *Upper 700 MHz First Report and Order*, 15 FCC Rcd at 491 ¶ 36. Wideband CDMA is the 3G technology employed by Global System for Mobile Communications (GSM) carriers.

[42] *Id.* at 492 ¶ 38.

considering a number of factors, including: (1) the positions of the majority of commenting parties; (2) the geographic size that it estimated would best facilitate rapid deployment of the likely use or uses of the spectrum; (3) the avoidance of excessive concentration of licenses and the dissemination of licenses among a wide variety of applicants; and (4) the then-applicable statutory deadline to deposit auction proceeds.[43] The Commission acknowledged that an important factor to its decision to assign Blocks C and D on the same geographic basis was its desire to enable the aggregation of spectrum into one 30 megahertz block within any particular geographic area,[44] an amount of spectrum comparable to 25-megahertz Cellular Radiotelephone Service ("cellular") licenses and 30-megahertz broadband Personal Communications Services (PCS) licenses. The Commission also noted the risks and costs associated with attempting to aggregate service areas at auction, particularly when there are a large number of small geographic areas. It recognized that if EAGs were not the optimally sized initial areas for certain bidders, post-auction partitioning and aggregation in the secondary market would be permitted.[45]

13. *Lower 700 MHz Band Plan and Service Areas.* Table 3 below depicts the current band plan and service area sizes adopted for the Lower 700 MHz Band in December 2001.[46] The Auction Reform Act directed the Commission to delay the auction of licenses for the Lower 700 MHz Band, but it made an exception for the spectrum from 710-722 and 740-746 MHz and specifically required the Commission to proceed with an auction of licenses for the "C-block of licenses" and "the D-block of licenses."[47]

[43] *Id.* at 500 ¶ 57.The Commission's experience also showed that simultaneous multiple round auctions for a larger number of licenses take longer to complete than similar auctions involving fewer licenses. *Id.*

[44] *Id.* at 500 ¶ 56.

[45] *Id.* at 500 ¶ 57.

[46] At that time, Section 309(j)(14)(C)(ii) required that the Commission assign such spectrum and report to Congress the total revenues from competitive bidding for such licenses by September 30, 2002. 47 U.S.C. § 309(j)(14)(C)(ii) (2001).

[47] 47 U.S.C. § 309(j)(15)(C)(iii), as enacted by the *Auction Reform Act.* As a result, a total of 740 licenses in Blocks C (734 licenses) and D (6 licenses) have been made available in auctions beginning in 2002. *See* Lower 700 MHz Band Auction Closes, *Public Notice*, 17 FCC Rcd 17272 (2002) (announcing winning bids in Auction 44); Lower 700 MHz Band Auction Closes, *Public Notice*, 18 FCC Rcd 11873 (2003) (announcing winning bids in Auction 49); Auction of Lower 700 MHz Band Licenses Closes, *Public Notice*, 2005 WL 1861795 (2005) (announcing winning bids in Auction 60).

**Table 3 – Lower 700 MHz Band**

| 698–704 | 704–710 | 710–716 | 716–722 | 722–728 | 728–734 | 734–740 | 740–746 |
|---|---|---|---|---|---|---|---|
| A | B | C | D | E | A | B | C |
| CH. 52 | CH. 53 | CH. 54 | CH. 55 | CH. 56 | CH. 57 | CH. 58 | CH. 59 |

| Block | Frequencies | Bandwidth | Pairing | Area Type | Licenses |
|---|---|---|---|---|---|
| A | 698-704, 728-734 | 12 MHz | 2 x 6 MHz | 700 MHz EAG | 6 |
| B | 704-710, 734-740 | 12 MHz | 2 x 6 MHz | 700 MHz EAG | 6 |
| C | 710-716, 740-746 | 12 MHz | 2 x 6 MHz | MSA/RSA | 734* |
| D | 716-722 | 6 MHz | unpaired | 700 MHz EAG | 6* |
| E | 722-728 | 6 MHz | unpaired | 700 MHz EAG | 6 |

*Blocks have been auctioned.

14. In the Lower 700 MHz Band, the Commission divided the 48 megahertz of spectrum into several blocks of both paired and unpaired spectrum to accommodate a potential range of new fixed, mobile and broadcast services and technologies. Specifically, the spectrum was divided into five blocks based on two different pairing architectures: (1) three 12-megahertz paired blocks consisting of two 6-megahertz segments (Blocks A, B, and C); and (2) two 6-megahertz unpaired blocks consisting of contiguous spectrum (Blocks D and E).[48] Unlike the commercial spectrum in the Upper 700 MHz Band, the Commission established multiple Lower 700 MHz Band blocks based on units of 6 megahertz given the specific support in the record by broadcast interests and time-division-duplex (TDD) advocates,[49] as well as the preference of the majority of commenters for "multiple blocks" based on licenses that aligned with TV Channels 52-59.[50]

15. The Commission determined that the band plan in the Lower 700 MHz Band should include a combination of licenses to be assigned over small geographic areas and large regional areas. In contrast to the Commission's experience in establishing service area sizes for Blocks C and D in the Upper 700 MHz Band, many commenters in the Lower 700 MHz Band proceeding, including smaller business and rural-based providers, favored small geographic areas, including CMAs.[51] As a result, the Commission decided to assign the 12-megahertz Block C ("25 percent of the . . . Lower 700 MHz Band

[48] *See Lower 700 MHz Report and Order*, 17 FCC Rcd at 1053-54 ¶ 76.

[49] *Id.* at 1055 ¶ 80. At that time, 6 megahertz blocks aligned with incumbent broadcasters and were intended to minimize incumbency problems that have become moot as a result of the DTV Act.

[50] *Id.* at 1055 ¶¶ 80-81. Many commenters did not specify a particular unit and only stated that they supported "multiple blocks" of sufficient bandwidth to permit a variety of services.

[51] CMAs were found to correspond to the needs of many customers, including customers of small regional and rural providers. *Lower 700 MHz Report and Order*, 17 FCC Rcd at 1061 ¶¶ 95- 96.

spectrum"[52]) over CMAs. The Commission determined that using CMAs for one out of the three 12-megahertz paired blocks would afford meaningful opportunities to interested parties seeking licenses with smaller initial geographic scope, including small and rural wireless providers.[53] In addition, the Commission declined to adopt nationwide licenses,[54] and it chose to assign the two remaining 12-megahertz paired blocks (and the two 6-megahertz unpaired blocks) over the large, regional EAGs for many of the same reasons cited in its proceeding for the Upper 700 MHz Band.[55] For example, the Commission noted that the advantages of EAGs include: (1) providing optimum opportunity to aggregate spectrum, which may be particularly useful for services that require nationwide footprints; (2) making it easier for providers to take advantage of economies of scale, allowing existing technologies to grow and new technologies to develop; (3) reducing the potential transaction costs to both auction participants seeking adjoining smaller geographic areas and carriers seeking to consolidate such areas post-auction; and (4) helping to address problems due to incumbent TV stations.[56] In adopting EAGs for two of the three paired blocks, the Commission acknowledged that one of its main goals was "making it possible to aggregate 24 megahertz of paired spectrum within the same EAG,"[57] an amount of spectrum comparable to 25-megahertz cellular licenses and 30-megahertz broadband PCS licenses.

16. *700 MHz Band Performance Requirements*. The Commission adopted "substantial service," specified in Section 27.14(a) of the Commission's rules, as the only performance requirement for the Upper 700 MHz Band in 2000.[58] Two years later, in 2002, the Commission adopted an identical requirement for the Lower 700 MHz Band.[59] In these bands, substantial service means service that is "sound, favorable, and substantially above a level of mediocre service which just might minimally warrant renewal."[60] In addition, the Commission established safe harbors that provide examples of what

[52] *See Lower 700 MHz MO&O*, 17 FCC Rcd at 11619 ¶ 14 n.32 (noting that one 12 megahertz block of spectrum "is significant" in that it equals 25 percent of the 48 megahertz of spectrum in the Lower 700 MHz Band).

[53] *Lower 700 MHz Report and Order*, 17 FCC Rcd at 1061 ¶ 95. *See Lower 700 MHz MO&O*, 17 FCC Rcd at 11619 ¶ 14. The Commission specified the definition of the service areas with respect to the Gulf of Mexico. *See Lower 700 MHz Report and Order*, 17 FCC Rcd at 1059 ¶ 90 & n.258.

[54] *Lower 700 MHz Report and Order*, 17 FCC Rcd at 1060-61 ¶ 94.

[55] *Id.* at 1059-60 ¶¶ 91, 93. The Commission used the definition of EAGs as defined in the Upper 700 MHz Band proceeding, which included a particular definition concerning the division of the Gulf of Mexico between two EAGs. *See id.* at 1059 ¶ 90 & n.257.

[56] Incumbent TV stations in the Lower 700 MHz Band were also considered in determining the size of geographic areas, and EAGs were found to offer licensees significant flexibility to address issues associated with the protection of incumbent TV stations. *Lower 700 MHz Report and Order*, 17 FCC Rcd at 1060 ¶ 92. The Commission did not accept an argument that licensing across large geographic areas might increase interference issues relating to TV broadcasting. *Id.* The Commission stated that any such risk of interference is offset by avoiding the need for complicated agreements that could arise if spectrum were licensed in smaller areas where several geographic service areas could overlap a TV protection zone. *Id. See also* Comments of the National Association of Broadcasters, Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59), Docket No. GN 01-74, (May 14, 2001) at 6-7 (commenting on interference risk in connection with very large geographic areas).

[57] *Lower 700 MHz MO&O*, 17 FCC Rcd at 11619 ¶ 15. *Cf. id.* ("[T]he ability to aggregate spectrum may offer important benefits. In order to provide additional opportunities for firms seeking to aggregate paired spectrum within the same EAG, this Commission had to designate either Blocks A and B or Blocks B and C as the EAG blocks. Using Block B for MSA/RSA licenses would result in the two EAG blocks being split, frustrating this objective.").

[58] *Upper 700 MHz First Report and Order*, 15 FCC Rcd at 505 ¶ 70.

[59] *Lower 700 MHz Report and Order*, 17 FCC Rcd at 1079 ¶ 149.

[60] 47 C.F.R. § 27.14(a). *See also, e.g.*, 47 C.F.R. §§ 22.503(k)(3), 90.685(b), 95.831, 101.527(a), 101.1011(a).

would be considered substantial service in the 700 MHz Band.[61] With one of the available safe harbors, a licensee that chooses to offer fixed, point-to-point services is deemed to be providing substantial service if it has constructed four permanent links per one million people in its licensed service area at the license-renewal mark. With another safe harbor, a licensee that chooses to offer either mobile services or fixed, point-to-multipoint services is considered to be providing substantial service if it can demonstrate coverage for 20 percent of the population of its licensed service area at the license-renewal mark.[62]

17. *700 MHz Band Renewal Criteria.* In addition to the "substantial service" performance requirement specified in Section 27.14(a) of the Commission's rules, the Commission provided in Section 27.14(b) that a renewal applicant involved in a comparative renewal proceeding must submit a showing explaining why it should receive a renewal expectancy, and that a renewal applicant involved in a comparative renewal would receive a renewal expectancy if its past record for the relevant license period demonstrates that it has "provided 'substantial' service during its past license term."[63] In adopting these provisions for the Lower 700 MHz Band and the Upper 700 MHz Band,[64] however, the Commission did not discuss in detail how these provisions are to be implemented.[65] For both bands, the Commission generally stated only that in the event that a license is partitioned or disaggregated: (1) a partitionee or disaggregatee is permitted "to hold its license for the remainder of the original licensee's license term and obtain a renewal expectancy on the same basis as other 700 MHz licensees"; and (2) to the extent a licensee meets the substantial service performance requirement (discussed above[66]), it "will be deemed to have met this element of the renewal expectancy requirement regardless of which of the construction options . . . the licensee has chosen."[67]

18. *700 MHz Band License Terms.* The Communications Act does not impose a time limit on licenses issued by the Commission, other than those for broadcast services, which are limited to an eight-year term.[68] To provide a sufficient duration of time for 700 MHz Band licensees to commence new services while the DTV transition advanced, the Commission generally adopted January 1, 2015 as the expiration date for 700 MHz Band licenses.[69] In its *Upper 700 MHz First Report and Order*, the

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[61] The Commission also established options available to parties to partitioning and disaggregation agreements for complying with the substantial service requirement. *See* 47 C.F.R. § 27.15; *see also Upper 700 MHz First Report and Order*, 15 FCC Rcd at 507-08 ¶¶ 76-78.

[62] *Upper 700 MHz First Report and Order*, 15 FCC Rcd at 505 ¶ 70; *Lower 700 MHz Report and Order*, 17 FCC Rcd at 1079 ¶ 151.

[63] *See* 47 C.F.R. § 27.14(b). We note that these provisions setting forth renewal expectancy criteria in comparative hearings under Section 27.14(b) apply only to non-broadcast services. *See, e.g., Lower 700 MHz Report and Order*, 17 FCC Rcd at 1077 ¶ 146.

[64] *Compare Lower 700 MHz Report and Order*, 17 FCC Rcd at 1076-78 ¶¶ 143-46 *with Upper 700 MHz First Report and Order*, 15 FCC Rcd at 503-04 ¶¶ 66-68.

[65] For example, in the Lower 700 MHz proceeding, the Commission provided no more than a statement that "[t]o claim a renewal expectancy, a Lower 700 MHz Band renewal applicant *involved in a comparative renewal proceeding* must demonstrate, at a minimum, the showing required in Section 27.14(b) of the Commission's rules." *Lower 700 MHz Report and Order*, 17 FCC Rcd at 1077-78 ¶ 146 (emphasis added); *see also Upper 700 MHz First Report and Order*, 15 FCC Rcd at 504 ¶ 68.

[66] *See supra* para. 16.

[67] *See Lower 700 MHz Report and Order*, 17 FCC Rcd at 1078 ¶ 146 (footnote omitted); *Upper 700 MHz First Report and Order*, 15 FCC Rcd at 504 ¶ 68; *see also supra* note 61.

[68] *See* 47 U.S.C. § 307(c)(1); *see also* 47 C.F.R. § 73.1020(a).

[69] *See Upper 700 MHz First Report and Order*, 15 FCC Rcd at 504 ¶ 67 (adopting license terms for 747-762/777-792 MHz) (modified by Errata, 15 FCC Rcd 4560 (WTB 2000) (correcting license termination date from January 1, 2014, to January 1, 2015)); 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, 5331 ¶ 73 (2000) (*700*

(continued....)

Commission decided that an average of eight years was a reasonable time to comply with the performance requirements for the spectrum,[70] and thus determined that the license term for new commercial licenses should extend eight years beyond the 2006 target date for the DTV transition existing at the time.[71] Because the licenses that would be auctioned in the Upper 700 MHz Band were encumbered by a number of broadcasters, the Commission determined that the use of a definite termination date, *e.g.*, January 1, 2015, was preferable to a discrete term of years following the end of the DTV transition, which at that time was subject to extension based on a number of circumstances.[72] The Commission also directed that a licensee commencing broadcast operations on or before January 1, 2006, would be required to seek renewal of its license at the end of the eight-year term following commencement of such broadcast operations.[73] The Commission applied the same license terms that were adopted in the *Upper 700 MHz First Report and Order* to licenses in the Lower 700 MHz Band.[74]

19. *700 MHz Band Power Limits and Related Requirements.* For the Upper 700 MHz Band, the Commission adopted a power limit for base and fixed stations in all services of 1 kilowatt (kW) effective radiated power (ERP).[75] For the Lower 700 MHz Band, the Commission adopted a power limit of 50 kW ERP subject to specific requirements regarding non-interference.[76] Specifically, for those licenses operating base or fixed stations at power levels greater than 1 kW ERP in the Lower 700 MHz Band, the Commission required a power flux density ("PFD") limit of 3 milliwatts/$m^2$ at all locations on the ground within one kilometer of the stations as a way to address potential adjacent channel interference.[77] To facilitate licensees' use of spectrum and prevent harmful interference, in the *Lower 700 MHz Report and Order* the Commission amended the rules to also require Lower 700 MHz Band licensees intending to operate base or fixed stations in excess of 1 kW ERP to file notifications with the Commission and provide notifications to all Part 27 licensees authorized on adjacent blocks in their area of operation.[78] This notification requirement was not applied to Lower 700 MHz Band licensees operating at or below 1 kW ERP.

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*MHz Guard Band Service Rules Order*) (adopting license terms for 746-747/776-777 and 762-764/792-794 MHz); *Lower 700 MHz Report and Order*, 17 FCC Rcd at 1077 ¶ 145 (adopting license terms for 698-746 MHz); *see also* 47 C.F.R. § 27.13(b).

[70] Construction requirements for the 700 MHz Band require licensees to make a showing of "substantial service" within the prescribe license term. 47 C.F.R. § 27.14(a).

[71] *See Upper 700 MHz First Report and Order*, 15 FCC Rcd at 504 ¶ 67.

[72] *Id.* at 504 ¶ 67 n.161, *on recon.* 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, *Memorandum Opinion and Order and Further Notice of Proposed Rulemaking*, 15 FCC Rcd 20845, 20862-63 ¶ 45 (2000) (*Upper 700 MHz MO&O and FNPRM*); *see also* 47 U.S.C. 309(j)(14)(B)(i)-(iii) (2005).

[73] *See Upper 700 MHz First Report and Order,* 15 FCC Rcd at 504 ¶ 67; *see also* 47 C.F.R. § 27.13(b).

[74] *See Lower 700 MHz Report and Order*, 17 FCC Rcd at 1077 ¶ 145; *700 MHz Guard Band Service Rules Order*, 15 FCC Rcd at 5331 ¶ 73.

[75] *See Upper 700 MHz First Report and Order*, 15 FCC Rcd at 521-22 ¶ 111; *see also Upper 700 MHz MO&O and FNPRM*, 15 FCC Rcd at 20851 at ¶ 10. The Commission also adopted limits of 30 watts ERP for control and mobile transmitters and 3 watts ERP for portable or hand-held devices. *See Upper 700 MHz First Report and Order*, 15 FCC Rcd at 521-22 ¶ 111; 47 C.F.R. § 27.50(b)(2),(3).

[76] *See Lower 700 MHz Report and Order*, 17 FCC Rcd at 1063-64 ¶ 102. As with the rules for the Upper 700 MHz Band, the Commission adopted for the Lower 700 MHz Band a maximum power limit of 30 watts ERP for mobile and control stations, and 3 watts ERP for portable (hand-held) devices. *Id.*; 47 C.F.R. § 27.50(c)(2),(3).

[77] *See Lower 700 MHz Report and Order*, 17 FCC Rcd at 1064 ¶ 104.

[78] *Id.* at 1077 ¶ 110; 47 C.F.R. § 27.50(c)(5) (applying advanced notice requirement to stations transmitting in the 698-746 MHz band).

20. *911/E911 and Hearing Aid-Compatibility Requirements.* The Commission has adopted rules to ensure that wireless carriers provide basic 911 and E911 services to 911 call centers, or Public Safety Answering Points (PSAPs).[79] In 2003, the Commission developed and applied criteria for assessing whether services and devices are subject to the E911 requirements.[80] Under those criteria, the service is analyzed based on whether: (1) it offers real-time, two-way voice service that is interconnected to the public switched network on either a stand-alone basis or packaged with other telecommunications services; (2) the customers using the service or device have a reasonable expectation of access to 911 and E911 services; (3) the service competes with traditional Commercial Mobile Radio Services (CMRS) or wireline local exchange service; and (4) it is technically and operationally feasible for the service or device to support E911.[81]

21. The Commission also has required digital wireless handset manufacturers and digital wireless service providers to take the steps necessary to increase the number of hearing aid-compatible handset models available to their customers. In addition to adopting technical standards for digital wireless phones' compatibility with hearing aids,[82] the Commission established phased-in deployment benchmark dates for digital wireless handset manufacturers and service providers to offer hearing aid-compatible digital wireless handsets,[83] and adopted certain labeling requirements for hearing aid

[79] *See* 47 C.F.R § 20.18; *E911 Report and Order and Further Notice*, 11 FCC Rcd 18676. The Commission's E911 requirements, which require wireless carriers to provide PSAPs with specific information (including location) relating to a 911 call, consist of two phases. Pursuant to E911 Phase I rules, wireless carriers are required to provide a callback number for the handset placing the 911 call and report the location of the cell tower that received the call. The Phase I rules require compliance within six months of a PSAP request. *See* 47 C.F.R. § 20.18(d). Under the E911 Phase II rules, wireless carriers are required to provide the location of the 911 caller, by latitude and longitude, beginning within six months of a PSAP request. *See* 47 C.F.R. §§ 20.18(f), (g).

[80] *See* Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, *Report and Order and Second Further Notice of Proposed Rulemaking*, 18 FCC Rcd 25340, 25346 ¶ 15 (2003) (*E911 Scope Order* and *Second FNPRM*, respectively).

[81] *E911 Scope Order*, 18 FCC Rcd at 25347 ¶ 18. The Commission also may use other factors in making its determination. *Id.* at 25347 ¶ 19.

[82] A handset is deemed hearing aid-compatible if it is certified as U3-rated under the ANSI C63.19 standard. Section 20.19(b)(1) of the Commission's rules provides that a wireless handset is deemed hearing aid-compatible if, at minimum, it receives a U3 rating "as set forth in the standard document ANSI C63.19-2001[,] 'American National Standard for Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids.'" 47 C.F.R. § 20.19(b)(1). ANSI-C63.19-2001 established uniform methods of measurement and parametric requirements for the electromagnetic and operational compatibility and accessibility of hearing aids used with wireless communications devices, including cordless, cellular, and Personal Communications Service (PCS) phones, operating in the range of 800 MHz to 3 GHz. Focused on existing services which were in common use, ANSI C63.19-2001 provides tests for services in the 800-950 MHz and 1.6-2.0 GHz bands. On April 25, 2005, the Commission's Office of Engineering and Technology (OET) announced that it also would certify handsets as hearing aid-compatible based on the revised draft version of the standard, ANSI C63.19-2005. *See* OET Clarifies Use of Revised Wireless Phone Hearing Aid Compatibility Standard Measurement Procedures and Rating Nomenclature, *Public Notice*, 20 FCC Rcd 8188 (OET 2005). On June 6, 2006, moreover, OET and the Wireless Telecommunications Bureau announced that applicants also may certify handsets as hearing aid-compatible based on version 3.12 of that standard (ANSI C63.19-2006), reflecting further revisions adopted and released in 2006. *See* Wireless Telecommunications Bureau and Office of Engineering and Technology Clarify Use of Revised Wireless Phone Hearing Aid Compatibility Standard, *Public Notice*, 2006 WL 1541044 (WTB/OET 2006). ANSI C63.19-2006 provides tests for services in the 800-950 MHz and 1.6-2.5 GHz bands. Thus, while applicants for certification may rely on the 2001, 2005 or 2006 version of the ANSI C63.19 standard, none of these versions of the ANSI standard presently address services provided in the 700 MHz Band.

[83] *See* Section 68.4(a) of the Commission's Rules Governing Hearing Aid-Compatible Telephones, *Report and Order*, 18 FCC Rcd 16753, 16780 ¶ 65 (2003) (*Hearing Aid Compatibility Report and Order*); 47 C.F.R. § 20.19(c).

compatible phones.[84] The Commission required each of these classes of entities that do not fall within the *de minimis* exception[85] to begin to offer hearing aid-compatible digital wireless handset models by September 16, 2005.[86] The Commission's Part 20 rules presently specify the scope of the 911/E911 and hearing aid compatibility requirements as being applicable to service providers within certain enumerated radio services.[87]

22. *Recent Filings Seeking Assignment of Additional 700 MHz Band Licenses over Smaller Service Areas.* On July 29, 2005, the Rural Cellular Association (RCA) filed a petition requesting that the Commission institute a review to consider assigning additional 700 MHz Band licenses over smaller geographic service areas.[88] RCA requests that additional CMAs be made available in both the unauctioned portions of the Upper and Lower 700 MHz Bands, contending that the use of smaller license areas will accelerate the delivery of broadband services in rural areas where the Commission did not anticipate that "demand . . . would be as compelling as it is today."[89] RCA claims that small entities are unable to compete effectively for licenses that combine rural and major metropolitan areas, and it argues that the availability of RSAs (as opposed to other small units) is especially important to small and rural carriers given their potential greater interest in serving these high-cost areas than large regional and nationwide carriers.[90]

23. Several parties have submitted comments and notices supporting the RCA petition, including the Rural Telecommunications Group (RTG), RVW, Inc. (RVW), and U.S. Cellular Corporation (USCC).[91] All of these filings support a reevaluation of the remaining unauctioned portions of the 700 MHz Band and point out changed regulatory circumstances and industry developments. RTG in particular cites the "allocation and anticipated auction" of AWS spectrum as a factor supporting the need to assign additional spectrum over CMAs. RTG states that the Commission's decision to assign 20

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[84] The Commission required entities to label the subject handsets with the appropriate technical rating, and to explain the technical rating system in the owner's manual or as part of the packaging material for the handset. *See Hearing Aid Compatibility Report and Order*, 18 FCC Rcd at 16785-86 ¶¶ 83, 85-86. *See also* 47 C.F.R. § 20.19(f).

[85] *See* 47 C.F.R. § 20.19(e)(1)-(2). The *de minimis* exception applies on a per air interface basis, and provides, *inter alia*, that manufacturers or mobile service providers that offer two or fewer digital wireless handsets in the U.S. are exempt from the requirements of the hearing aid compatibility rules.

[86] *See Hearing Aid Compatibility Report and Order*, 18 FCC Rcd at 16780 ¶ 65. *See also* 47 C.F.R. § 20.19(c)(1)-(3).

[87] *See* 47 C.F.R. §§ 20.18(a), 20.19(a). The 700 MHz Band is not among the radio services listed in these rules.

[88] *See* Petition to Institute Review and Modification of the Size of Service Areas for Geographic Licensing for the Lower and Upper Bands of 700 MHz Spectrum Not Yet Auctioned, Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59), GN Docket No. 01-74, 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, Rural Cellular Association, (filed July 29, 2005) (RCA Petition).

[89] RCA Petition at 4.

[90] *See id.* at 3-4.

[91] Comments of Rural Telecommunications Group, Inc. in Support of Modification of License Area Sizes for 700 MHz Spectrum, Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59), GN Docket No. 01-74, 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, Rural Telecommunications Group, Inc. (filed September 27, 2005) (RTG Comments); Comments of RVW, Inc., Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59), GN Docket No. 01-74, 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, RVW, Inc. (filed October 4, 2005) (RVW Comments); *Ex Parte* Filings by USCC, WT Docket No. 99-168, GN Docket No. 01-74 (filed February 3 and 13, 2006). The Commission did not seek public comment on RCA's petition, but RTG and RVW filed comments in support of the petition.

megahertz of AWS spectrum over CMAs, in addition to the 12 megahertz of Lower 700 MHz Band spectrum over CMAs, is an approach that should be followed by assigning an additional 22 megahertz of 700 MHz Band spectrum (for 54 megahertz total of 700 MHz Band/AWS spectrum) over CMAs to continue to promote the rapid development of new technologies and services in rural areas.[92] RVW and USCC both endorse RCA's and RTG's positions; however, USCC also supports a reconfiguration of the Upper 700 MHz Band to assign a 10-megahertz paired block over Economic Areas (EAs) in addition to assigning 22 megahertz of Lower and Upper 700 MHz Band spectrum over CMAs.[93]

24. *Evolution of the CMRS Industry*. When, under direction by Congress, the Commission first addressed the reallocation of the 700 MHz Band, it established rules that would allow for fixed, mobile, and broadcasting services, and it noted that these rules should allow for the emergence of a wide range of advanced wireless services. In the seven years that have passed since the Commission first initiated a proceeding on the 700 MHz Band, the number of U.S. subscribers to mobile telephone services has more than doubled from approximately 86 million to more than 208 million subscribers.[94] This has produced an increase in nationwide mobile penetration from 32 percent to 69 percent during the period. In addition, the average monthly minutes of use by consumers has quadrupled from 185 minutes to 740 minutes.[95] This period also saw the introduction of mobile high-speed data networks by mobile telephony carriers including but not limited to Verizon Wireless, Sprint PCS, and Cingular. Today more than 93 percent of the U.S. population has access to at least one mobile high-speed data provider.[96] Text messaging usage has also greatly increased during this time. In December 2003, the first month for which statistics were kept, a reported 2 billion text messages were made, compared to nearly five times that amount, or 9.8 billion, text messages in December 2005.[97] Industry structure has also seen changes during this time including the expansion and consolidation of the number of nationwide carriers. In 1999, there were three operators with emerging nationwide footprints.[98] The number went up to six nationwide carriers in 2003.[99] By late 2005, there were four nationwide carriers.[100] Furthermore, as the Commission concluded last year, the market behaved and performed in a competitive manner.[101] These industry developments demonstrate the demands placed on carriers to offer more services to more consumers, which in turn has created increased demand for valuable spectrum, such as the 700 MHz Band.

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[92] RTG Comments at 5, 7. RTG requests that MSA/RSA licenses be provided for Lower Band Block B and Upper Band Block C, totaling 22 megahertz of spectrum.

[93] USCC *Ex Parte* at 3-4 (Feb. 13, 2006).

[94] CTIA, *Background on CTIA's Semi-Annual Wireless Industry Survey*, http://www.ctia.org/research_statistics/statistics/index.cfm/AID/10030 (Annualized Wireless Industry Survey Results - December 1985 To December 2005: Reflecting Domestic U.S. Commercially-Operational Cellular, ESMR and PCS Providers) (*CTIA Industry Surveys*).

[95] *Id.*

[96] *See* Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, WT Docket No. 05-71, *Tenth Report*, 20 FCC Rcd 15908 (2005) (*Tenth CMRS Competition Report*).

[97] *See CTIA Industry Surveys* (December 2003 and 2005 data).

[98] Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, *Fifth Report*, 15 FCC Rcd 17660, 17670 (2000).

[99] Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, WT Docket No. 04-111, *Ninth Report*, 19 FCC Rcd 20597, 20613 (2004).

[100] *See* Applications of Nextel Communications, Inc. and Sprint Corporation for Consent to Transfer Control of Licenses and Authorizations, *Memorandum Opinion and Order*, 20 FCC Rcd 13967 (2005); Applications of AT&T Wireless Services, Inc., Transferor, and Cingular Wireless, Corp., Transferee, *Memorandum Opinion and Order*, 19 FCC Rcd 21522 (2004).

[101] *See Tenth CMRS Competition Report*, 20 FCC Rcd at 15985.

## III. DISCUSSION

25. Given that seven years have passed since the Commission first initiated a proceeding on the 700 MHz Band, we seek to evaluate whether changes to the existing service rules pertaining to 700 MHz Band licenses – including 48 megahertz of Lower 700 MHz Band spectrum (Blocks A-E), and the 30 megahertz of Upper 700 MHz Band spectrum (Blocks C and D) – may ultimately permit more effective use of this spectrum to better meet the needs of today's consumers.[102] To the extent the Commission's past decisions no longer reflect the best approach with regard to the size of geographic areas,[103] the size of spectrum blocks, performance requirements, renewal criteria, length of license terms, power limits, and 911/E911 and hearing aid-compatibility requirements,[104] we seek comment below on the possibility of making appropriate adjustments that serve the public interest.

26. First, we solicit comment on the possibility of revising the size of service areas for the unauctioned licenses in the 700 MHz Band. Under the Commission's existing rules, each of the five blocks of unauctioned spectrum is to be licensed over large service areas defined by EAGs. Although we request comment on whether we should assign more of this spectrum over smaller license areas, including EAs, CMAs, or other small and/or rural areas, we also seek comment generally on the possible use of a range of service area sizes and the existing spectrum block(s) to which they should be assigned. Second, we seek comment on possibly increasing the overall number of blocks of 700 MHz Band licenses by reconfiguring a portion of the Upper 700 MHz Band or the Lower 700 MHz Band, or both, to provide additional opportunities for a variety of applicants to access 700 MHz Band spectrum. Third, we seek comment on the Commission's "substantial service" performance standard with regard to these licenses, as well as whether there are other means that may facilitate access to spectrum and deployment of service, including whether these policies should be tailored to promote service on tribal lands. Fourth, we request comment on whether to amend our rules to clarify the requirements and procedures of the renewal process for 700 MHz Band licenses, particularly as they relate to existing rules requiring demonstrations of "substantial service" for renewal applicants involved in comparative proceedings. Fifth, we invite comment on extending the license terms of 700 MHz Band licenses to an expiration date beyond 2015 in order to afford licensees a sufficient period of time for deployment of new 700 MHz Band services once the DTV transition is complete. Sixth, we seek comment on whether the power limits in the existing rules for the 700 MHz Band spectrum should be revised. Finally, we seek comment on our tentative conclusion that services provided in the 700 MHz Band and in other bands subject to Part 27, including the AWS-1 Band,[105] should be subject to requirements concerning 911/E911 and hearing aid-compatible handsets to the extent that they meet certain criteria.

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[102] During this seven year period, the number of U.S. subscribers to mobile telephone services has more than doubled from approximately 86 million to more than 208 million subscribers. *See CTIA Industry Surveys* (December 1998 and 2005 data). This has produced an increase in nationwide mobile penetration from 32 percent to 69 percent during the period. *See supra* para. 24.

[103] With respect to the size of geographic service areas, comment is sought only with respect to the unauctioned portions of the 700 MHz Band.

[104] In the last seven years, advancements have occurred in wireless technologies and service offerings, the Commission has issued orders to facilitate spectrum access in rural areas, and there has been a greater awareness of the 700 MHz Band's near-term suitability for deployment of broadband voice, data, and video services.

[105] *See generally* 47 C.F.R. § 27.5. The AWS-1 band is composed of the two 45-megahertz blocks of spectrum at 1710-1755 MHz and 2110-2155 MHz. In November 2002, as part of the *AWS Allocation Second Report and Order*, the Commission identified and allocated the two 45-megahertz blocks of spectrum at 1710-1755 MHz and 2110-2155 MHz for the provision of advanced wireless services for AWS-1. *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, *Second Report and Order*, 17 FCC Rcd 23193 (2002) (*AWS Allocation Second Report and Order*).

### A. Size of Service Areas

27. In the section below, we seek comment on whether to auction additional spectrum in the 700 MHz Band over service area sizes other than EAGs. We first seek comment on whether there is a need for additional small geographic service area licenses, such as EAs, CMAs, or other small and/or rural areas, as opposed to larger areas. We ask commenters to consider such factors as the amount of spectrum that will have been assigned over CMAs by the conclusion of the AWS auction this year and assess how much additional spectrum over small areas may (or may not) be needed from the existing EAG blocks in the Upper 700 MHz Band, Lower 700 MHz Band, or both. To the extent there is a need demonstrated to change the *status quo*, we then solicit comment on what the optimal service area size, or combination of sizes both large and small, may be for the 700 MHz Band. We then seek comment on which particular 700 MHz Band block(s) would be most appropriate for licensing in such areas. In addressing these issues, commenters should present specific, factual support that would warrant the adoption of specific-sized service areas for one or more blocks of licenses in the 700 MHz Band, including any evidence based on changed legal circumstances, the state of technology, the demand in rural areas, spectrum access constraints, the fungibility of 700 MHz Band spectrum with other bands, and relevant costs such as those related to acquiring spectrum.

#### 1. Need for Additional Access to Spectrum Licensed over Small Service Areas

28. We seek comment on whether, in order to further enhance access to spectrum in rural areas, the service areas sizes of the licenses to be auctioned should be smaller than the EAGs provided for under existing rules. In deciding to employ EAGs in the Upper and Lower 700 MHz Bands, the Commission listed several factors in support of these larger geographic areas.[106] On this question of what amount of additional 700 MHz Band spectrum, if any, may be needed over small service areas, parties should address the relationship between spectrum access and the provision of service. In this regard, we seek comment on the extent to which the assignment of spectrum over smaller service areas could lead to increased and better service in these areas. In addition, parties should comment on possible transaction costs associated with the assignment of additional spectrum over small service areas on those service providers with business plans to provide service to rural areas as part of regional or national footprints. We seek comment on the factors that the Commission should use in balancing the needs of small and rural carriers as well as large and national carriers as they seek to provide service to their rural customers.

29. When addressing whether to license additional 700 MHz Band spectrum over small service areas, commenting parties should address the relationship between their ability to obtain licenses at auction and their ultimate deployment of service in rural areas. For example, we seek comment on whether certain areas may continue to have high costs of providing service that are unrelated to spectrum acquisition costs. As the Commission has noted, "[e]ven where spectrum access is not a barrier to entry, there will be certain rural areas that are very difficult to serve because of high equipment costs, low population density, or other economic factors."[107] In their comments, parties should address the factors or challenges to rural deployment regardless of whether they have access to spectrum. We seek comment on whether certain areas may continue to have high costs of providing service that are unrelated to spectrum acquisition costs and whether or not there is a point at which the advantages of assigning additional small-area licenses diminish relative to the disadvantages.

30. In assessing any particular need and/or amount of spectrum, commenters should consider the 700 MHz Band's potential suitability for more rapid deployment of mobile and other advanced

[106] These factors included facilitating construction of a nationwide footprint by providers, allowing existing technologies to grow while also encouraging development of new technologies, providing economies of scale, addressing problems associated with incumbent TV stations, and facilitating completion of the auction in a timely manner. *See Upper 700 MHz First Report and Order*, 15 FCC Rcd at 501 ¶ 59, *Lower 700 MHz Report and Order*, 17 FCC Rcd at 1059-1061 ¶¶ 91-94.

[107] *Rural Report and Order*, 19 FCC Rcd at 19089 ¶14.

services in high-cost areas given its propagation and other technical characteristics. In its comments on RCA's petition, for example, RVW states that it is seeing "typical system reach of 5 to 10 miles or more with some signal penetration through foliage."[108] We seek comment on whether the benefits due to the propagation characteristics of this spectrum make it appropriate to assign an additional amount of 700 MHz Band spectrum over small areas, or whether other considerations support licensing the bands over EAGs or other large areas. We are interested in any specific examples demonstrating that 700 MHz Band spectrum has unique spectral advantages that would help to lower the costs of construction in rural or high-cost areas.

31. As compared to other bands, we seek comment on the potential of 700 MHz Band spectrum to support broadband and other new applications. Commenters should explain how much additional 700 MHz Band spectrum licensed over areas other than EAGs may be necessary to support spectrum-based broadband applications in rural areas. In this regard, we seek information on the extent to which the 700 MHz Band is fungible with PCS, AWS, and other spectrum that is capable of supporting advanced services. Commenting parties should also present examples of the differences in costs of deployment of services over cellular, Specialized Mobile Radio (SMR), PCS, AWS, and any other bands that support (or do not support) the need for licensing additional 700 MHz Band spectrum over smaller sized areas in order to deploy broadband and other new services in rural areas.

32. We seek comment on the need for greater access to 700 MHz Band spectrum on a smaller-area basis.[109] As discussed above, in 2005, the Commission increased the amount of AWS spectrum to be assigned over CMAs due to market developments and the support of several commenters, including parties representing small and larger carriers.[110] Commenters should also consider the Commission's decision to assign 12 megahertz of 700 MHz Band spectrum over CMAs.[111] To the extent we decide not to assign additional 700 MHz spectrum over small areas, we seek comment on whether at some point in the future (*e.g.*, five years, ten years, twenty years) consumer demand and spectrum-intensive applications and technologies could exhaust the capacity of spectrum in rural areas that is currently assigned over CMAs.

### 2. Optimal Service Area Size(s) for Remaining Licenses

33. In the event we decide that there is a need for license sizes other than EAGs for the 700 MHz Band licenses that have yet to be auctioned, we must determine the appropriate initial service area size, or combination of sizes, for those licenses. For instance, we could modify the current service area designations for the 700 MHz Band to include one or more license sizes other than EAGs, or a combination thereof, or as discussed above keep in place the service areas currently reflected in our

[108] RVW Comments at 2.

[109] The Commission has allocated 82 megahertz of spectrum on a CMA basis: 20 megahertz of AWS spectrum, *see* 47 C.F.R. § 27.6(h)(1); Service Rules for the Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands, WT Docket No. 02-353, *Order on Reconsideration*, FCC 05-149, 2005 WL 1964113, at *7 ¶ 20 (rel. Aug. 15, 2005) (*AWS-1 Order on Reconsideration*); 50 megahertz for cellular service, *see* 47 C.F.R. § 22.909; *Tenth CMRS Competition Report*, 20 FCC Rcd at 15934-3 ¶ 70; and the 12 megahertz in paired Block C in the Lower 700 MHz Band, *see* 47 C.F.R. § 27.6(c)(2).

[110] *See supra* para. 23. In that proceeding, RCA stated that its members for the most part hold 25-megahertz cellular RSA licenses to provide voice services, but that 10 megahertz of AWS spectrum over CMAs would not be sufficient for deploying anticipated forms of advanced wireless services in rural areas. *AWS-1 Order on Reconsideration*, 2005 WL 1964113, at *5 ¶ 13.

[111] In its comments on RCA's petition, RTG states that it "applauds the FCC's recent . . . use of smaller geographic license areas in the Lower 700 MHz and AWS bands," RTG Comments at 7, but it states that 12 megahertz of 700 MHz spectrum over CMAs is insufficient and will be exhausted as the demand for broadband grows in these areas. *Id.* at 8

rules.[112] We therefore seek comment on the license size or combination of license sizes that should be provided.

34. First, we seek general comment on the costs associated with the initial service area sizes the Commission adopts in the 700 MHz Band. We recognize that consumer needs and geographic coverage will change over time, and we anticipate that there will be a need for providers to aggregate or disaggregate spectrum holdings as they address these evolving needs and market demands. Accordingly, we seek comment on the transaction costs associated with pre- and post-auction aggregation and disaggregation. Both large nationwide providers as well as small regional and rural providers may be able to make use of this spectrum, yet the optimal size of geographic service area is different for these two types of providers, and licenses for areas that are larger or smaller than desired will impose transaction costs on those parties that wish to acquire them. Thus, we consider here the degree and likelihood of such costs as 700 MHz Band spectrum is licensed in the future, and the extent to which the transaction costs of aggregating, disaggregating, or partitioning spectrum are a significant concern for those parties that most highly value this spectrum. Parties should compare the costs of arranging bidding consortia, as well as post-auction disaggregation and partitioning, to the costs imposed by aggregating spectrum and license areas at auction or in the secondary market. Parties should also address any costs resulting from the unwillingness to divide spectrum and service areas due to a lack of license marketability or other financial considerations.

35. Licensing areas could include large, regional licenses in addition to, or in lieu of, EAGs. Thus, in addition to seeking comment above on the continued use of the EAGs in the band, which consist of six geographic service areas,[113] we seek comment on whether to license the unauctioned spectrum, for example, by using the twelve Regional Economic Area Groupings (REAGs), the 52 Major Economic Areas (MEAs),[114] or some other large regional licensing area.[115] To the extent the Commission adopts large geographic service areas for the 700 MHz Band other than EAGs, we seek comment on whether REAGs may have advantages over EAGs. Commenters should address whether the potential combination of spectrum in the 700 MHz Band with spectrum from another band or bands would be suitable for wireless broadband services and offer enhanced opportunities for the provision of such services. On the other hand, we request comment on whether substituting REAGs for EAGs may have disadvantages. In particular, comments are invited on whether making 700 MHz Band licenses available

[112] The Commission has utilized a wide variety of geographic service areas to license spectrum, including nationwide, regional and local licensing, as well as a combination of these approaches. Cellular markets comprise MSAs/RSAs, and broadband PCS licenses are based on 493 Basic Trading Areas (BTAs) and 51 Major Trading Areas (MTAs). For Wireless Communications Service (WCS) licenses, geographic areas based on 12 Regional Economic Area Groupings (REAGs) and 52 Major Economic Areas (MEAs) are used. *See* 47 C.F.R. §§ 27.5(a), 27.6(a). AWS licenses in the 1710-1755 MHz and 2110-2155 MHz Bands are to be based on three geographic area sizes – REAGs, EAs, and MSAs/RSAs – to meet the needs of a variety of prospective bidders and service providers. *Id.* § 27.6(h).

[113] For both the Upper and the Lower 700 MHz Bands, the Commission used a specific definition concerning the division of the Gulf of Mexico between two EAGs. *See Lower 700 MHz Report and Order,* 17 FCC Rcd at 1059 ¶¶ 90-91.

[114] Where the Gulf of Mexico has been included as a separate license areas, there have been 52 MEAs. *Compare, e.g.*, 47 C.F.R. § 27.6(a)(1) (MEA 52 for WCS service is the Gulf of Mexico) *with* 47 C.F.R. § 22.503(b)(3) (51 MEAs for paging service without a license area for Gulf of Mexico).

[115] We note that the Commission has adopted REAGs for three license blocks over 40 megahertz for AWS. *See AWS-1 Order on Reconsideration*, 2005 WL 1964113, at *7 ¶ 20. The twelve REAGs adopted for AWS consist of six areas covering the continental U.S., plus six additional areas for: Alaska; Hawaii; Guam and the Northern Mariana Islands; Puerto Rico and the U.S. Virgin Islands; American Samoa; and the Gulf of Mexico. Besides treating these areas outside the United States as separate license areas, the six EAGs differ geographically from the six REAGs within the continental United States. WCS spectrum, as well as the AWS spectrum, has been made available for licensing on the basis of REAGs. *See* 47 C.F.R. § 27.5(a)(2).

using different service areas than already auctioned in the band might be a cause of concern for certain licensees. For example, we seek comment on whether there would be any particular disadvantages for licensees that may want to combine their use of previously auctioned licenses, *i.e.*, licenses on Block D of the Lower 700 MHz Band which have already been assigned over EAGs, with licenses with newly-defined service areas.

36. If the Commission were to determine that smaller areas should be provided, it could license the spectrum or some part thereof on the basis of local areas, such as MSAs, RSAs, or EAs. We seek comment on the use of smaller, local license areas based on these, or some other small area sizes. In particular, we ask that commenters address the request by RCA, as supported by other parties, that the Commission assign additional CMA-sized licenses in the 700 MHz Band.[116] Finally, we seek comment on whether a combination of different license sizes should be adopted and, if so, what combination should be reflected in our rules for the spectrum.

37. Notwithstanding the flexibility of use that permits 700 MHz Band spectrum to be used for any service consistent with the band's allocation,[117] commenting parties should describe any anticipated 700 MHz Band service offerings that demonstrate a need for greater access to this spectrum on a specific geographic basis. Commenters should explain how certain service area sizes correspond to the business plans of potential licensees and thus avoid the transaction costs that could be associated with aggregation, disaggregation, or partitioning. Commenters should also identify the service area sizes that best suit the anticipated uses for 700 MHz Band spectrum (*e.g.*, mobile broadband services, multi-media services, fixed services, *etc.*) individually and as a whole. Depending on the demand for service areas of different sizes, we could assign all remaining spectrum in the 700 MHz Band using a combination of larger and smaller areas. Alternatively, if it is unclear which services might ultimately dominate in the 700 MHz Band, we could employ medium-sized license areas (*e.g.*, MEAs). In such a case, commenters should consider whether the use of medium-sized initial service areas would be less efficient than a combination of differently sized service areas, given that transaction costs would be potentially incurred by auction winners of both small and large service areas that may have to aggregate, partition, or disaggregate spectrum in order to meet their particular spectrum needs.

38. We seek comment on the type of services that commenters believe will be accommodated in the service areas they favor, the economic advantages of adopting their favored approach, and what sized service area would be most advantageous for the particular service. For example, we note that Qualcomm Inc. ("Qualcomm") has acquired all six of the EAGs in the Lower 700 MHz Band Block D, and plans to deploy and operate (through its wholly-owned subsidiary, MediaFLO) a nationwide mobile multimedia network, delivering video, audio and data content to 3G mobile phones.[118] Certain providers in the 700 MHz Band have focused on smaller sized service areas,[119] and we note that a number of small

[116] *See supra* paras. 22-23.

[117] *See* 47 C.F.R. § 27.2(a).

[118] *See* Press Release, Qualcomm Inc., Qualcomm Names Gina Lombardi to Lead MediaFLO USA, Inc. (Feb. 1, 2006), *available at* http://www.qualcomm.com/press/releases/2006/060201_names_gina_lombardi.html (last visited Aug. 6, 2006). Among the results of this effort are demonstrations of FLO technology, a multicast feature and component of the MediaFLO system, which have featured handsets developed separately by equipment manufacturers. Press Release, Qualcomm Inc., Qualcomm and Samsung Electronics Conduct FLO™ Technology Demonstration at 2006 International CES (Jan. 4, 2006), available at http://www.qualcomm.com/press/releases/2006/060104_samsung_electronics_conduct.html (last visited Aug. 6, 2006); Press Release, Qualcomm Inc., Qualcomm and LG Electronics MobileComm Demonstrate Flo™ Technology on 3G Handsets at 2006 International CES (Jan. 4, 2006), *available at* http://www.qualcomm.com/press/releases/2006/060104_lg_electronics_mobilecomm.html (last visited Aug. 6, 2006).

[119] For example, Aloha Partners LP ("Aloha Partners") acquired 158 CMA licenses in the Lower 700 MHz Block C at auction and an additional 72 licenses in the secondary market in an apparent effort to provide high-speed data and

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providers have acquired Lower 700 MHz Block C spectrum apparently to provide services specifically to rural areas over RSAs.[120] We seek comment on how the size of licensed geographic service area impacts the services that are currently being developed, and which may be developed, for use of the spectrum.

39. We also seek comment on whether changes related to developments in technology should affect the appropriate size of initial service areas.[121] If there are different types of new technologies and services being created for these markets, commenters should address whether such developments support a certain service area size for portions of the 700 MHz Band. For example, we seek comment on the impact that systems employing Orthogonal Frequency Division Multiplexing (OFDM) technology such as 802.16 ("WiMax"),[122] or any other technology, potentially may have on the provision of services in the band, and whether a specific size of service area should be adopted in order to best accommodate any such technology.

40. In addressing the appropriate size(s) of service areas for 700 MHz Band licenses, we seek comment on any impact of using smaller service areas that cannot be used as building blocks to create larger service areas should we adopt a combination of license area sizes for the unauctioned spectrum in the 700 MHz Band. Specifically, under a combination approach, we seek comment on whether it would be preferable to assign licenses over large and small areas that are based on the same geographic unit

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Internet services in most areas of the country. It plans to offer a nationwide wireless Internet service in the 700 MHz band, including service to rural areas. *700 MHz Spectrum Auction a Likely Lure for Players Traditional and Otherwise*, Comm. Daily, Feb. 3, 2006, 2006 WLNR 1875145. Aloha Partners has conducted a market trial of a mobile broadband IP services using Flarion Technologies' ("Flarion") FLASH – OFDM equipment, and plans additional trials. *Digital Television Transition- Hearing II Before the Senate Comm. on Commerce Science and Transportation*, 109th Cong. (2005) (statement of Charles C. Townsend, President, Aloha Partners, LP), *available at* http://commerce.senate.gov/pdf/townsend.pdf (last visited Aug. 6, 2006) (Townsend testimony). *See also*, Lynnette Luna, *Aloha Plans Test of Arizona High-Speed Data Network, Mobile Radio Tech.*, Dec. 1, 2004, 2004 WLNR 14415288; *Flarion Press Release*. Qualcomm has acquired Flarion. *See* Press Release, Qualcomm Inc., Qualcomm Completes Acquisition of Flarion Technologies (Jan. 19, 2006), *available at* http://www.qualcomm.com/press/releases/2006/060119_completes_acquisition_flarion.html (last visited Aug. 6, 2006).

[120] We note that Green Hills Companies (a small licensee in the Lower 700 MHz Block C) has worked with equipment vendor Airspan to develop a fixed wireless service in rural Missouri. *See* Anna Henry, Green Hills Rolls Out 700 MHz Service, Rural Telecommunications, Sept. 1, 2005, 2005 WLNR 16027147. Other Lower 700 MHz licensees have deployed a wireless 700 MHz platform developed by Vyyo Inc in rural portions of the United States. *See* U.S. Government's Rural Utilities Service (RUS) Approves Vyyo's 700 MHz Wireless Broadband Solution, Aug. 10, 2005, Vyyo, News Release *available at* http://www.vyyo.com/Site/news/2005.html (last visited Aug. 6, 2006). In comments supporting RCA's petition, RVW states that seven small entities in Nebraska and Kansas have deployed broadband internet systems in Block C of the Lower 700 MHz Band. RVW Comments at 2.

[121] The Commission anticipated the development of 3G technologies, such as Wideband CDMA, when it adopted the *Upper 700 MHz First Report and Order*. *See Upper 700 MHz First Report and Order*, 15 FCC Rcd at 491 ¶ 36 (discussing the need for 5 MHz spectrum blocks to accommodate Wideband CDMA transmissions). Since that time, Wideband CDMA and 1xEV-DO systems have been implemented by GSM and CDMA carriers, respectively, in the Cellular and PCS bands, thereby making 3G services available in many parts of the country.

[122] Intel describes WiMax as a "standards-based wireless technology that provides high-throughput broadband connections over long distances." *See* Communications *at* http://www.intel.com/technology/comms/index.htm (last visited July 31, 2006); WiMax Broadband Wireless Access Technology *at* http://www.intel.com/netcomms/technologies/wimax/ (last visited Aug. 6, 2006). Qualcomm describes MediaFLO as a "nationwide 'mediacast' network, delivering many channels of high-quality video and audio programming to third-generation mobile phones at mass market prices." *See* Press Release, Qualcomm, "Qualcomm Subsidiary to Support Nationwide Deliver of Mobile Multimedia in 700 MHz Spectrum," (Nov. 1, 2004), *available at* http://www.qualcomm.com/press/releases/2004/041101_mediaflo_700mhz.html (last visited Aug. 6, 2006).

(*e.g.*, MEAs and EAs).[123] We ask that commenters address the benefits of such an approach, and what impact the use of the same geographic unit (as a building block for potential aggregation) would have on transaction costs. Conversely, we seek comment on the costs of aggregation of dissimilar geographic areas, and on the relationship of such costs to any benefits which may be associated with mixing spectrum licenses based on different geographic units.

41. In the 700 MHz Band, the Gulf of Mexico was divided between two EAGs for EAG licensing, whereas it was designated as a separate area for CMA licensing.[124] In the event that we decide to revise our prior determinations regarding license sizes in the 700 MHz Band, we seek comment on including the Gulf of Mexico as part of larger service areas, or whether we should separately license one or more service areas to cover the Gulf of Mexico. Commenters who advocate separate service areas to cover the Gulf of Mexico should discuss what boundaries should be used, and whether special interference protection criteria or performance requirements are necessary due to the unique radio propagation characteristics and antenna siting challenges that exist for Gulf licensees.

### 3. Spectrum Block(s) Suitable for Potential Reassignment

42. In the event that we decide to provide for service area sizes other than EAGs in future 700 MHz Band auctions, we seek comment on which of the spectrum block(s) in the band that have not been auctioned should be re-designated to a different service area size or sizes. Commenters should identify which of the five blocks (Blocks A, B, & E in the Lower 700 MHz Band and Blocks C & D in the Upper 700 MHz Band), or any block in any potential revised band plan,[125] would be best suited for a different service area size given the factors discussed below. We note, for instance, that RTG suggests that the Commission provide CMA licensing in the Lower 700 MHz Band's Block B and in the Upper 700 MHz Band's Block C.[126] In addition to our request for comment on all of the unauctioned spectrum blocks, we seek comment on RTG's proposed use of these two specific blocks for re-designated service area sizes.

43. With respect to the blocks in the Upper 700 MHz Band, we seek comment on the use of CMA or other small service area licenses, and which spectrum block or blocks in that band, if any, should be licensed on that basis. We ask commenters to consider the presence of public safety systems, which, under Commission rules, receive special protection against harmful interference. For example, equipment operating in the Upper 700 MHz Band Blocks C and D must meet strict out-of-band emission (OOBE) limits to protect public safety operations.[127] Due to the relatively small spectral separation between these blocks and the public safety spectrum, such equipment may have to employ enhanced filtering,[128] which

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[123] For example, EAs and EAGs are related to each other. *See Upper 700 MHz First Report and Order,* 15 FCC Rcd at 498 ¶ 54 (stating that in the 220 MHz auction, spectrum was auctioned in six EAGs "which were also based on EAs as defined by the Department of Commerce"). There are six EAGs, *see Lower 700 MHz Report and Order*, 17 FCC Rcd at 1024 ¶ 2, and, where the Gulf of Mexico has been included as a separate area, 176 EAs, *see* Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands, WT Docket No. 02-353, *Report and Order*, 18 FCC Rcd 25162, 25177 ¶ 40 (2003) (*AWS-1 Report and Order*).

[124] *See Lower 700 MHz Report and Order*, 17 FCC Rcd at 1059 ¶ 90 & nn.257-58; *Upper 700 MHz First Report and Order*, 15 FCC Rcd at 500 ¶ 56 & n.137.

[125] *See infra* section III.B.

[126] RTG Comments at 7.

[127] Base station transmitters on Blocks C and D must meet a 76 + 10 log P OOBE limit, and C and D block mobile transmitters must meet a 65 + 10 log P limit, for all emissions into the 764-776 and 794-806 MHz public safety bands. *See* 47 C.F.R. § 27.53.

[128] For example, base transmitters operating in the 752-762 MHz D block must limit emissions to the 76 + 10 log P level in spectrum only two megahertz from the upper edge of the band, and mobile stations operating in the 777-782 MHz C block must limit emissions to the 65 + 10 log P level in spectrum only one megahertz from the lower edge of that band. We note that Pegasus and Access Spectrum have proposed various alternative Upper 700 MHz band

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would likely add to the cost of base and mobile equipment. On the other hand, there may be certain spectrum blocks within the Upper 700 MHz Band that, because they are farther removed from the public safety spectrum, will require less costly equipment than equipment operating in spectrum blocks closer to the public safety bands.[129] Thus, we seek comment on the impact on equipment costs in general if we decide to revise the size of service area for Upper 700 MHz Band spectrum. We seek comment on which spectrum blocks in the current Upper 700 MHz band plan (*i.e.*, Blocks C or D), or in any revised band plan,[130] would incur the greatest and least equipment costs and the extent to which such additional costs could affect the provision of service.

44. Given these possible considerations relating to equipment costs, we also seek comment on whether any new CMA or other small service area licenses should be located in the Lower 700 MHz Band, rather than the Upper 700 MHz Band, if we decide to revise existing band plans to provide for small area licenses. In the event that additional equipment cost issues might make it preferable to locate new small-area licenses in the Lower 700 MHz Band, we seek comment on whether its 6 megahertz spectrum blocks would efficiently facilitate the implementation of 1xEV-DO and Wideband Code Division Multiple Access (CDMA) technologies – the 3G technologies of CDMA and GSM networks – in the Lower 700 MHz Band.[131] We also seek comment on whether WiMax, a possible alternative to 1xEV-DO and Wideband CDMA technologies, would support a variety of bandwidths, including 6 megahertz, and whether WiMax potentially could be readily accommodated on Lower 700 MHz Band spectrum blocks.[132] In addition, we seek comment on the ability of 6 megahertz segments to accommodate high-speed data systems similar to the MediaFLO multi-media system being implemented by Qualcomm on Block D in the Lower 700 MHz Band.

45. In the event we decide to locate additional CMA or other small service area licenses in the Lower 700 MHz Band, we seek comment on which spectrum blocks in that band should be licensed on that basis. We ask that comments address whether any particular spectrum blocks in the Lower 700

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plans. *See* Letters from Kenneth R. Boley, counsel to Access Spectrum, L.L.C., to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 05-157 (Aug. 3, 2005 and Nov. 4, 2005) (appending White Papers *Implementing the Vision for 700 MHz: Rebanding the Upper 700 MHz A and B Blocks For Next-Generation Wireless Broadband* and *Rule Changes to Implement to Proposed Rebanding of the Upper 700 MHz A and B Blocks for Next Generation Wireless Broadband*); Federal Communications Commission Requests Comment on Spectrum Needs of Emergency Response Providers, Input Required for FCC Report Mandated by the Intelligence Reform and Terrorism Prevention Act of 2004, WT Docket 05-157, *Public Notice*, 20 FCC Rcd 7774 (2005). Their proposals would change the spectral separation that currently exists between the C and D blocks and the public safety bands.

[129] For example, as discussed below, *see infra* section III.B., we consider a possible revision to the band plan for the Upper 700 MHz Band, which would provide for three paired 10-megahertz blocks in the current location of Blocks C and D. Under such a revision, equipment operating in the "middle" paired 10-megahertz block, at 752-757/782-787 MHz, would be somewhat removed from the public safety bands, and would therefore not require as much filtering as equipment operating on either of the "outside" paired 10-megahertz blocks, at 747-752/777-782 MHz and 757-762/787-792 MHz.

[130] *See infra* section III.B.

[131] 1xEV-DO transmissions operate on 1.25 MHz bandwidths and Wideband CDMA transmissions operate on 5 MHz bandwidths.

[132] *See* "802.16 Enables Versatile Broadband Wireless Systems – Flexibility & Performance Key for Worldwide Deployment," Matthias Feulner, Texas Instruments, *available at* http://www.openbasestation.org/Newsletters/June2005/TI%20WiMAX%20RF%20article.htm (last visited Aug. 6, 2006) (stating that "the [802.16] standard specifies optionally multiples of 1.25 MHz, 1.5 MHz and 1.75 MHz up to a total bandwidth of 20 MHz."), (last visited July 25, 2006); Stephane Le Dreau, Vice President of CDMA Business Development, Nortel Networks, *Emerging Technologies*, at 8 (Sept. 26, 2004), *available at* http://www.cdg.org/news/events/CDMASeminar/041019_Russia/8-Nortel-CDMA%20Russia%20Industry%20forum%2010.pdf (last visited Aug. 6, 2006).

MHz Band (*i.e.*, Blocks A, B, and/or E) would be better suited for small-area licensing than other blocks, and to state the reasons for supporting the use of any one or more of these spectrum blocks for this purpose.[133]

46. Specifically, we seek comment on the impact of designating the unpaired 6 megahertz Block E in the Lower 700 MHz Band for small-area licensing. If 6 megahertz is sufficient to meet small and/or rural carriers' spectrum needs, commenters should address whether there are broadband technologies that can operate on unpaired spectrum such that the 6 megahertz of spectrum in Block E would be suitable for potential reassignment.[134] On the other hand, we seek comment on what spectrum in the Lower 700 MHz Band should be licensed over CMAs or other small service areas if additional paired spectrum is determined to be necessary and/or appropriate for small service areas. Commenters should consider whether there are particular reasons for selecting either Block A or Block B (or both) for this purpose.

47. We note that if we locate a CMA-based license adjacent to an EAG (or other differently sized area) in the Lower or Upper 700 MHz Band, there may be an impact on aggregation, including on the level of transaction costs. Thus, we seek comment on whether aggregation may be more difficult and complicated to accomplish if spectrum blocks of differing geographic sizes are located adjacent to one another, and what effect those factors should have on our consideration of the current band plan.

48. We also seek comment on whether, and to what extent, there would be an impact on the need to provide protection to TV Channel 51 if we were to provide for licensing areas that are smaller than EAGs in the adjacent Lower 700 MHz Band Block A. Comments should address how any need for small and rural carriers to provide adjacent TV Channel 51 protection might affect their ability to provide service to those areas if Block A were designated for small area licensing.

### B. Size of Spectrum Blocks

49. To the extent we decide to auction and assign additional licenses over service area sizes other than the six EAGs, we also seek comment on whether we could better accommodate such assignments by reconfiguring or sub-dividing existing spectrum blocks in the band plans in the 700 MHz Band. We seek comment generally on whether we should reconfigure the license blocks in the Upper 700 MHz Band, the Lower 700 MHz Band, or both. Although we believe we should retain the current band plan in the Lower 700 MHz Band, we nevertheless seek comment on potential changes to the size of the spectrum blocks in the Lower 700 MHz Band. We also discuss below the possibility of revising the size and pairing of licensed spectrum blocks in the Upper 700 MHz Band. In particular, we seek comment on dividing the 20-megahertz Block D license in the Upper 700 MHz Band into two or more license blocks. In addition, we seek comment on whether and how to make more licenses available to be potentially assigned on a geographic basis or bases smaller than EAGs, and on ways to provide licenses that may better reflect recent developments. Although we seek comment on this issue primarily with respect to unauctioned licenses, there are certain issues which we seek comment on that relate to already auctioned spectrum, *i.e.*, whether to change the size and location of the spectrum blocks in the Lower 700 MHz Band, and the use of a "two-sided auction."

50. We seek comment on whether the spectrum blocks in the Lower 700 MHz Band should be maintained at their current 6 megahertz alignment and sizes. The spectrum comprising Lower 700 MHz Band Blocks C and D, consisting of 18 of the 48 megahertz in the Lower 700 MHz Band, has already been auctioned,[135] and we believe that the location of these auctioned blocks limits our ability to

[133] RTG, in its comments in support of RCA's petition, suggests that the Commission provide CMA licensing in the Lower 700 MHz Band's Block B and in the Upper 700 MHz Band's Block C. RTG Comments at 7-9.

[134] We note that the WiMax standards under development provide for TDD, as well as frequency division duplexed (FDD), transmissions.

[135] *See supra* paras. 13-15. The lower block of Block C is located at 710-716 MHz, and Block D is located at 716-722 MHz. The upper block of Block C is located at 740-746 MHz.

reconfigure the remaining spectrum blocks in the Lower 700 MHz Band.[136] We nevertheless seek comment on whether we should make any changes to the size and location of spectrum blocks in the Lower 700 MHz Band and, if so, what those changes should be.

51. With respect to the Upper 700 MHz Band, we seek comment on USCC's proposal to divide the current 20 megahertz Block D into two separate 10 megahertz blocks.[137] USCC proposes that one of the new 10 megahertz blocks be assigned over EAs, and the other new 10 megahertz block be assigned over EAGs. We seek comment on possibly increasing the overall number of licenses available in any given geographic area by dividing Upper 700 MHz Band Block D into two or more smaller-sized blocks, and thus provide one or more additional licenses.

52. We seek comment on whether the provision of an additional 10 megahertz paired block in the Upper 700 MHz Band (by dividing the current Block D into two such blocks) would facilitate the implementation of a wider variety of technologies in the band. A 10 megahertz paired block can readily accommodate Wideband CDMA and 1xEV-DO technologies, and dividing Block D into two such blocks would, therefore, provide an additional license that could employ one of these technologies.[138] In addition, commenters should address whether 5 megahertz segments accommodate other systems that have recently been developed. For example, Qualcomm's MediaFLO will be deployed on a 6 megahertz block in the Lower 700 MHz Band, but there are indications that this multi-media system can be designed to operate on 5 megahertz blocks as well.[139]

53. We also seek comment on whether to divide the current 20 megahertz paired Block D into more than two smaller paired blocks to better accommodate other new technologies. For example, systems based on 802.16 standards (WiMax) could potentially operate on a variety of bandwidths ranging from 1.25 to 20 megahertz, including a number of bandwidths that are 5 megahertz or smaller.[140] Accordingly, we seek comment on whether a division of the 10 megahertz segments of paired Block D to create two or more smaller blocks – *e.g.*, 1.25, 1.75, and 7 megahertz blocks – might better accommodate

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[136] We are seeking comment in this section on the use of 5 megahertz blocks in the Upper 700 MHz Band. However, the use of 5 megahertz blocks in the Lower 700 MHz Band appears to be problematic. For example, considering only the 12 megahertz of spectrum located at 698-710 MHz (*i.e.*, Blocks A and B), if we were to place two 5 megahertz blocks in this band, this would leave two megahertz of spectrum in the band that would have to be separately assigned. Also, because the 698-710 MHz band is paired with the 728-740 MHz band, this circumstance would apply to the 728-740 MHz band as well.

[137] *See* USCC *Ex Parte* at 3 (Feb. 13, 2006).

[138] The version of 1xEV-DO currently being implemented by CDMA carriers is referred to as "1xEV-DO Rev. 0." More advanced versions of 1xEV-DO technology, 1xEV-DO Rev. A and 1xEV-DO Rev. B, are expected to be deployed in 2006 and 2008, respectively. All 1xEV-DO versions operate on 1.25 megahertz bandwidths, and 5 megahertz blocks are needed to accommodate three 1xEV-DO emissions. *See* Press Release, CDMA Development Group, *CDMA2000 EV-DO Revision B Standard to be Published in First Quarter of 2006, available at* http://www.cdg.org/news/press/2005/Nov16_05.asp (last visited Aug. 6, 2006). The next-generation technology to be implemented by GSM carriers is called High Speed Downlink Packet Access (HSDPA); HSDPA is not expected to be available in the U.S. until the second half of 2006. Like Wideband CDMA, HSDPA transmissions operate on 5 MHz channels. *See* Airvana, Technology: Comparing Technologies, *available at* http://www.airvananet.com/technology/technology_hsdpa.htm (last visited Aug. 6, 2006).

[139] *See* Qualcomm Inc.'s MediaFlo Overview, at 9 (April, 2005) *available at* http://www.cdg.org/news/events/CDMASeminar/05_LatinAm/050420/6c%2015-30%20Omar%20Javaid.pdf (last visited Aug. 6, 2006) (indicating support for channel widths of 5, 6, 7, and 8 MHz); *see also supra* paras. 38, 44 (discussing Qualcomm as licensee in the Lower 700 MHz Band).

[140] *See* Feulner, "802.16 Enables Versatile Broadband Wireless Systems – Flexibility & Performance Key for Worldwide Deployment," (stating that for WiMax a wide range of possible signal bandwidths must be supported, and that the standard specifies optionally multiples of 1.25 MHz, 1.5 MHz, and 1.75 MHz up to a total bandwidth of 20 MHz).