areas, that would not be provided by others. Finally, our statutory mandate with respect to bidding preferences is to provide an opportunity for designated entities to engage in the provision of spectrum-based services. As noted above, we conclude that bidding credits, in conjunction with the other policies adopted here, afford sufficient opportunity.

65. We also reject Council Tree's request that, in the absence of a set-aside, the Commission should adopt a third small business definition to provide a third level of bidding credit. Our current rules for 700 MHz Commercial Services Band licenses provide for two bidding credits, 25% for applicants with attributable gross revenues not exceeding $15 million and 15% for applicants with attributable gross revenues not exceeding $40 million.[153] We find distinguishable in a number of respects the Commission's previous adoption of a third bidding credit tier when it adopted CMA licenses for the Lower 700 MHz C Block. An explicit consideration in the adoption of that additional bidding credit was the fact that, pursuant to the then-current band plan, all other blocks of spectrum in these bands would be licensed by EAGs.[154] In light of the strong interest expressed by smaller bidders in that then-single block of non-EAG licenses, we concluded that an additional bidding credit tier would increase opportunities for bidders with little other access to 700 MHz spectrum. However, today we revise the sizes of the geographic area licenses to include CMA licenses and EA licenses. In light of these revisions and the prior opportunities afforded with CMA licenses in the Lower 700 MHz Band C Block, an additional small business definition to provide a third level of bidding credit with respect to the new CMA licenses is not necessary to assure designated entities sufficient opportunity in this band. This conclusion is consistent with recent decisions with respect to licenses for AWS. In AWS, the Commission rejected a similar Council Tree proposal for a third bidding credit tier."' The Commission distinguished the prior use of a third tier in the Lower 700 MHz C Block in part on the grounds that "all of the other licenses in that [700 MHz] service were based on large, regional geographic areas."[156] Furthermore, we are not persuaded by Council Tree's claims with respect to the performance of designated entities in recent auctions. The performance of designated entities in Auction No. 66 demonstrates the strength of the Commission's size-based bidding credits in creating opportunities for small businesses rather than a need for additional credits.

66. With respect to the Access Spectrum et *al.* proposal to create a bidding credit for entities providing specified assistance to 700 MHz public safety service providers, such a credit would be difficult to define and enforce. In particular, the Commission would have to determine what constitutes an adequate commitment; how to avoid a bidding credit over- or under-compensating applicants for the commitment; how to evaluate compliance; and how to enforce provision of service to public safety entities. In light of the attendant difficulties, as well as the Commission's ability and commitment to promote the public interest in the provision of wireless public safety services by other means, we decline to adopt Access Spectrum et *al.*'s proposal.

(iii) Competitive Bidding and Aggregating New Licenses

67. Background. In the 700 *MHz* Commercial Services Notice, we sought comment on whether any changes to the Commission's competitive bidding rules are necessary or desirable in order to facilitate efficient aggregation of new licenses, in light of the existing spectrum blocks for 700 MHz Commercial Services licenses and any spectrum blocks that may he proposed.[157] The 700 *MHz*

[153] See 47 C.F.R. §§ 1.2110(f)(2), 27.502, 27.702

[154] ***See Lower 700 MHz Report and Order,*** 17 FCC Rcd at 1088 ¶ 173

[155] ***A WS-1 Order on Reconsideration, 20*** FCC Rcd at 14075-77 ¶¶ 32-36.

[156] ***Id.*** at n.113.

[157] ***700 MHz Commercial Services Notice,*** 21 FCC Rcd at 9372 ¶ 56.

Commercial Services Notice did not seek comment specifically on whether to utilize a combinatorial or package bidding auction format.

68. Commenters interested in large aggregations, including DIRECTV/EchoStar and Motorola, advocate for package bidding.[158] Milgrom/Wrege, as well as Access Spectrum *et al.*, note that the Commission's current package bidding system, which permits bidders to create any possible combination of licenses, limits each bidder to at most one winning bid and may be considered impracticable for auctions with more than a thousand licenses, due in part to the variety **of** bids each bidder may wish to place given that only one bid can become a winning bid.[159] Milgrom/Wrege suggest modifications to the Commission's system and also suggest that the Commission conduct a Public Forum in advance of the pre-auction Public Notices to consider the modifications. MetroPCS argues that the results **of** Auction No. 66 demonstrate that package bidding is not necessary for parties to aggregate large numbers of licenses.'[160] Finally, **U.S.** Cellular opposes package bidding, arguing that its complexities and uncertainties may deter participation.[161]

69. Discussion. The Commission's current competitive bidding rules authorize the use of package bidding and the Commission already **has** utilized a form of package bidding.[162] Consequently, the question before us now is whether we need to make changes to our competitive bidding rules in order to enable a new form of package bidding for the 700 MHz Commercial Services auction. We conclude that modifications to our current bidding systems, including those suggested by commenters, can be made without modifying the Commission's competitive bidding rules.

(iv) Modifications **to the** Tribal Land Bidding Credit

70. Backmound. In the 700 ***MHz Commercial Services Notice,*** we sought comment on whether the Commission should make any adjustments to its tribal land bidding credit rules as they apply to the 700 MHz Commercial Services licenses to be auctioned. We also specifically asked commenters to address use of the tribal land bidding credit given statutory requirements that the Commission deposit the proceeds from an auction in the Digital Television Transition and Public Safety Fund no later than June 30,2008. Depending on auction timing, it may be difficult for the Commission to grant license applications seeking tribal land bidding credits prior to the statutory deadline. To foreclose potential issues that tribal land bidding credits might create with respect to the statutory deadline, the Commission asked whether promoting deployment **of** wireless services to tribal lands would be better served with respect to the **700** MHz Band by exploring other means to promote access to spectrum and the provision of service in tribal lands.[163]

71. Commenters did not address the relationship between post-auction credits and the deadline for depositing payments. CTIA states its support for tribal land bidding credits with respect to promoting service on tribal lands without any further discussion.[164]

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[158] DIRECTV/EchoStar Comments in WT Docket No. 06-150 at 7-8, Motorola Comments in WT Docket No. 06-150 at 8.

[159] Access Spectrum *e?al.* Comments in WT Docket No. 06-150 at 26-27; Milgrom/Wrege Comments in WT Docket **No.** 06-150 at 4-9.

[160] MetroPCS Comments in WT Docket No. 06-150 at 5.

[161] USCC Comments in WT Docket No. 06-150 at 11-12.

[162] **See** Auction of Regional Narrowband PCS Licenses Scheduled **for** September 24, 2003; Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments, Package Bidding and Other Auction Procedures, I8 FCC Rcd 11974 (2003).

[163] 700 *MHz* ***Commercial Services*** *Notice,* 21 FCC Rcd at 9378-79 ¶ 75.

[164] CTIA Comments in WT Docket No. 06-150 **at** 17-18.

72. Discussion. No parties provided suggestions for possible modifications to our tribal land bidding credit rules to promote the deployment of wireless services to tribal lands or addressed the *relationship* between post-auction credits and *the* deadline for depositing payments. *In light* of the record, we conclude that we need not modify the tribal land bidding credit at this time.

c. Additional Rules **for** Licensees

(i) **Criteria for** Renewal

73. Backmound. In the 700 *MHz* Commercial Services Notice, we sought comment on whether to amend our rules to clarify or modify the requirements and procedures of the renewal process for licenses in the 700 *MHz* Commercial Services Band, including licenses that have already been auctioned and those that have yet to be auctioned. Specifically, we sought comment on the possibility of amending our rules to state more explicitly the criteria for renewal that apply to these 700 MHz authorizations under Part 27, regardless of whether licensees are involved in a comparative hearing.[165] In addition, to the extent the Commission's renewal requirements and at least some of its performance requirements apply at the end of a license term, we requested comment on the advantages and disadvantages of combining any performance requirements applicable to 700 MHz licensees with the review process that the Commission conducts during a license renewal application.[166] Finally, we sought comment on whether to adopt a new renewal process to replace the procedures for the filing of competing applications at renewal time.[167]

74. The renewal of 700 MHz Commercial Services licenses is governed by Parts 1 and 27 of the Commission's rules. Section 1.949 of the Commission's rules sets forth the general procedures for filing applications for renewal **of** licenses in the wireless radio services, including services in the 700 MHz Commercial Services Band.[168] Although the rule states that "[a]dditional renewal requirements applicable to specific services are set forth in the subparts governing those services,"[169] Part 27 contains no provisions on the specific renewal process to the extent a competing application is not received. In addition, Section 27.14(b)-(d) of the Commission's rules, which indicates that a comparative process is used to choose among renewal and competing applicants,[170] does not describe the type of comparative hearing to be employed. If a 700 MHz Commercial Services licensee's renewal application is not contested and no competing applications are received, then the licensee has no affirmative renewal filing obligation codified in the rules, other than the contemporaneous filing obligation of demonstrating that it has met the "substantial service" performance requirement in Section 27.14(a).[171] In the event that a competing application is filed under Section 27.14(b)-(d) of the rules,[172] however, a 700 MHz licensee

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[165] ***700 MHz Commercial Services Notice,*** 21 FCC Rcd at 9380-81 ¶¶ 80-81.

[166] ***Id.*** at 9381-82 ¶ 82.

[167] ***Id.*** at 9382-83 ¶ 83. For instance, the licenses could be returned to the Commission for re-auction should a license not he renewed. We also asked commenters to address whether any amendments of its rules on the renewal process should be limited to the unauctioned 700 MHz licenses, or whether any such amendments also should apply to those 700 MHz licenses which already have been auctioned in order to have a unitary regime for these licenses.

[168] 47 C.F.R. § 1.949. Specifically, it states that a renewal application must be filed no later than the expiration date of the authorization and no sooner than 90 days prior to expiration. *Id.* § 1.949(a).

[169] 47 C.F.R. § 1.949(a).

[170] ***See*** 47 C.F.R. § 27.14(b)-(d).

[171] That standard has not been defined in Commission rules, and commenters strongly objected to the suggestion in the 700 ***MHz Commercial Services Notice*** that the Commission adopt specific criteria. ***See infra*** Section IV.B.1.c.

[172] To date, the Commission has never received a competing application to a 700 MHz license renewal, nor, **for** that matter, to the renewal **of** any wireless radio service license under Part 27.

has the burden of making a detailed showing explaining why it should receive a renewal expectancy against any competing application.

75. Discussion. In this section, we clarify that all licensees in the 700 MHz Commercial Services Band seeking renewal of their authorizations at the end of their license term must file a renewal application in accordance with the provisions of Section 1.949 of the Commission's rules. Consistent with existing rules, as part of this renewal requirement licensees must demonstrate in their applications that they have provided substantial service during their past license term, which is defined as service that is sound, favorable, and substantially above a level of mediocre service that just might minimally warrant renewal. This requirement is distinct from performance requirements. Substantial service in the renewal context, as opposed to the coverage benchmarks established for the performance requirement context, encompasses Commission consideration of a variety of factors including the level and quality of service, whether service was ever interrupted or discontinued, whether service has been provided to rural areas,[173] and any other factors associated with a licensee's level of service to the public.[174] Accordingly, a licensee that meets the applicable performance requirements might nevertheless fail to meet the substantial service standard at renewal. Licensees must demonstrate at renewal that they have substantially complied with all applicable Commission rules, policies, and the Communications Act of 1934, as amended, including any applicable performance requirements.

76. Under the revised Section 27.14 of the Commission's rules, we also are eliminating the filing of competing applications to requests for renewal of these 700 MHz licenses. We are mindful of the potential costs and the burdens they impose on both the Commission and licensees. We agree with MetroPCS that such administrative processes "harken[] back to an old era . . . where competitors were known to file 'strike' applications against a renewal in the hope of getting a payoff."[175] Under the revised Section 27.14 of the Commission's rules, we are therefore adopting a process by which 700 MHz Commercial Services Band licenses comes back to the Commission for re-auction if a license is not renewed. The existing petition to deny process,[176] coupled with the ability of a petitioner to participate in any subsequent auction to re-license spectrum that is returned to the Commission for lack of renewal, creates sufficient incentives to challenge inferior service or poor qualifications of licensees at renewal. This approach protects the public interest without creating incentives for speculators to file "strike" applications.

77. By eliminating the filing of competing applications at renewal, we find that the concerns raised by the majority of commenters in this proceeding about renewal expectancies are moot. We recognize that the majority of commenters that addressed renewal issues did not support any changes to the Part 27 renewal rules applicable to 700 MHz Commercial Services Band licensees. Moreover, some of these commenters, such as AT&T and CTIA expressed concern that any revision to the rules governing

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[173] We note, for example, that the Commission stated in the ***Upper 700 MHz Report and Order*** that a licensee "that limits buildout to urban areas and areas with high density population, will not necessarily be ensured of license renewal, even if otherwise compliant with the construction benchmarks,'' and added its belief that substantial service "requires the licensee to buildout in rural areas as well." ***Upper 700 MHz First Report and Order,*** 15 FCC Rcd at 505771.

[174] As we have had the authority to do in the past on a case-by-case basis, we could nevertheless condition the renewal of any 700 MHz license on a specific level of compliance with one or more of these or any other relevant factors. In addition, once specific 700 MHz service offerings have had a chance to develop on a basis comparable to that of, *e.g.*, PCS, we plan to revisit these factors to the extent we determine that a particular problem or issue requires regulatory relief through the renewal review process.

[175] *See* MetroPCS Comments in WT Docket No. 06-150 at 17.

[176] Existing provisions in Part 1 provide procedures for petitions to deny, application dismissals, and rules for subsequent re-licensing through competitive bidding. ***See generally*** **47** C.F.R. § 1.901 et ***seq.***; ***see also id.*** § 27.501 *et seq.*; § 27.701 et seq.

renewal proceedings would eliminate the concept of "renewal expectancy" that applied in comparative hearings.[177] Because smaller carriers and rural interests in particular seemed concerned that certain rule changes would place a new burden on carriers ill equipped to meet it, we have decided to maintain 700 MHz Commercial Services Band licensees' expectations of renewal by eliminating provisions for competing applications. This action provides additional certainty for all 700 MHz Commercial Services Band licensees, and requests by certain commenters to do otherwise could result in additional administrative burdens on licensees that we find not to be in the public interest.

(ii) License Terms

78. Background. Section 27.13(b) of the Commission's rules provides that initial license authorizations for spectrum in the 700 MHz Commercial Services Band will extend until January 1, 2015, except that a Part 27 licensee commencing broadcast services will be required to seek renewal of its license for such services at the termination of the eight-year term following commencement of such operations.[178]

79. In the *700 MHz Commercial Services Notice,* we sought comment on whether and how the license terms of unauctioned and previously auctioned licenses in the 700 MHz Commercial Services Band should be revised, including whether the term for these 700 MHz licenses should be extended beyond January 1, 2015.[179] We also asked for comment on whether to establish a uniform license term for all services in the 700 MHz Commercial Services Band, regardless of their regulatory status.

80. Nearly all commenters who addressed this issue support revising the current rule to provide either a ten- or fifteen-year initial license term. Ten of these commenters support a 15-year term,[180] and eight commenters support a IO-year term.[181] Only two commenters objected to extending the license terms of these 700 MHz licensees.[182]

81. In addition, nine commenters argue that any revised license terms should apply to both unauctioned and auctioned 700 MHz Commercial Services Band licenses.[183] As part of their proposal,

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[177] *See* AT&T Comments in WT Docket No. 06-150 at 15; CTIA Comments in WT Docket No. 06-150 at 18.

[178] 47 C.F.R. § 27.13(b).

[179] *See 700 MHz Commercial Services Notice,* 21 FCC Rcd at 9383-85 ¶¶ 84-89

[180] Alltel Reply Comments in WT Docket No. 06-150 at 5; Aloha Comments in WT Docket No. 06-150 at 10-11; AT&T Reply Comments in WT Docket No. 06-150 at 3, 25-26; C&W Comments in WT Docket No. 06-150 at 4; Cingular Reply Comments in WT Docket No. 06-150 at 2; CTIA Comments in WT Docket No. 06-150 at 19-20; Frontier Comments in WT Docket No. 06-150 at 8; MetroPCS Reply Comments in WT Docket No. 06-150 at 13-14 (supports a 15 year term, or a ten year term at a minimum); Navajo Nation Comments in WT Docket No. 06-150 at 3; NextWave Reply Comments in WT Docket No. 06-150 at 15.

[181] Access Spectrum *et al.* Comments in WT Docket No. 06-150 at 35; Blooston Comments in WT Docket No. 06-150 at 7-8 (supports at least 10 years after DTV transition), Corr Comments in WT Docket No. 06-150 at 4; Dobson Comments in WT Docket No. 06-150 at 11; Motorola Reply Comments in WT Docket No. 06-150 at 5-6 (commenting that it would support an even longer term); Union Comments in WT Docket No. 06-150 at 6; Verizon Wireless Comments in WT Docket No. 06-150 at 10; Vermont Department of Public Service *et al.* in WT Docket No. 06-150 Comments at 11. *See also* RCA Reply Comments in WT Docket No. 06-150 at 4 (appearing to assume a 10-year term in discussing performance requirements); RCA Comments in WT Docket No. 06-150 at 8-9.

[182] DIRECTV/EchoStar Comments in WT Docket No. 06-150 at 10-11; Howard/Javed Comments in WT Docket No. 06-150 at 25.

[183] *See* Aloha Comments in WT Docket No. 06-150 at 11; Blooston Comments in WT Docket No. 06-150 at 7-8; *Corr* Comments in WT Docket No. 06-150 at 4; Dobson Comments in WT Docket No. 06-150 at 11; Frontier Comments in WT Docket No. 06-150 at 8; MetroPCS Reply Comments in WT Docket No. 06-150 at 13; Motorola Reply Comments in WT Docket No. 06-150 at 5-6; Navajo Nation Comments in WT Docket No. 06-150 at 3. *See also* NextWave Reply Comments in WT Docket No. 06-150 at 15 (extend term "for 700 MHz providers").

Access Spectrum *et al.* urge that license terms for the Guard Band A Block in the Upper 700 MHz Band should be harmonized with the Upper 700 MHz Commercial Services Band licenses.[184] Two commenters discuss revising license terms only for unauctioned licenses.[185] One commenter specifically opposes changing the initial license terms for previously unauctioned spectrum, and its position depends on the whether the Commission increases the performance requirements for the unauctioned 700 MHz Commercial Services spectrum.[186]

82. Discussion. We will revise our rules to provide that initial authorizations for the 700 MHz Commercial Services Band will have a term not to exceed 10 years from February 17,2009, which is the firm deadline for the DTV transition. Subsequent renewals will be for terms not to exceed 10 years. This revised license term will apply to all licenses in the 700 MHz Commercial Services Band. However, because Section 307(c)(1) of the Communications Act provides that a license for operating a broadcast station shall not be granted for a term that exceeds 8 years, we retain the current provision that a Part 27 licensee commencing broadcast services will be required to seek renewal of its license for such services at the termination of the eight-year term following commencement of such operations.[187] We do not revise the license term for Guard Band licensees because such revisions fall beyond the scope of the 700 MHz Commercial Services proceeding.[188]

83. We are extending the revised license term to both the already auctioned and unauctioned licenses in the 700 MHz Commercial Services Band. We find that uniformly extending the license term in this manner provides a level of parity for services within the same band. In addition, this treatment recognizes that band clearing and the resulting unencumbered **use** of the spectrum in the pre-DTV Act period was tied to a transition scheme that **has** now been replaced with a firm statutory transition date of February 17, 2009.[189] Specifically, the underlying reason behind the current rule changed with passage of the DTV Act. The Commission previously determined that 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 on a market-by market basis.[190] The same license terms that were adopted in the ***Upper*** 700 ***MHz First Report*** and ***Order*** were applied to licenses in the Lower 700 MHz Band.[191] However, the DTV Act's uniform deadline for the DTV transition has effectively removed the issue of market-by-market broadcast incumbency. Under these circumstances, we provide a level of uniformity

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[184] Access Spectrum ***et al.*** Comments in WT Docket No. 06-150 at 35.

[185] ***See*** Union Comments in WT Docket No. 06-150 at 6; Verizon Wireless Comments in WT Docket No. 06-150 at 10.

[186] Vermont Department of Public Service ***et al.*** Comments in WT Docket No. 06-150 at 11.

[187] 47 U.S.C. § 307(c)(1); see also 47 C.F.R. § 73.1020(a)

[188] We also note that we did not seek comment on possible revisions to the license term for Guard Band licenses in the 700 MHz Guard Bands proceeding. ***See generally*** 700 ***MHz Guard Bands Notice,*** 21 FCC Rcd 10413.

[189] Prior to the DTV 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. 47 U.S.C. § 309(j)(14)(B)(i)-(iii) (2005). ***See*** also 700 ***MHz Commercial Services Notice,*** 21 FCC Rcd at 93507 7,9350-51¶ 9,9356-57¶ 18 (discussing extension of DTV transition prior to DTV Act, the transition under the DTV Act, and the current license term for 700 MHz licensees).

[190] ***See Upper 700 MHz First Report and Order,*** 15 FCC Rcd 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);see also*** 47 U.S.C. 309(j)(14)(B)(i)-(iii) (2005).

[191] ***See Lower*** 700 ***MHz Report and Order,*** 17 FCC Rcd at 1077¶ 145.

by extending the revised license terms to all licensees in the 700 MHz Commercial Services Band, except for those engaging in broadcast services.

84. We find that a term not to exceed 10 years from February 17, 2009, should be used for initial authorizations in the 700 MHz Commercial Services Band, and that subsequent renewal terms will be 10 years. A ten-year license term is consistent with most other Part 27 services, with the exception of recently auctioned AWS-I licenses, which we address below,[192] as well as with the license terms for other similar spectrum, such as that used for cellular service and PCS.[193] In addition, this period will offer licensees regulatory certainty and help promote investment in the band. Under the current rules, all licensees would have terms that extend until January 1, 2015, which is only approximately six years from the end of the DTV transition. Thus, licensees that acquire their authorizations in a future auction would have had an initial license term less than ten years, and more likely for a shorter period, *i.e.*, six or seven years, depending on the date of the auction and issuance of the authorizations. In similar fashion, current licensees in the 700 MHz Commercial Services Band would only have approximately six years of access to their spectrum free from broadcasters. We find that a longer period should be made available to all licensees in order to provide sufficient time for the recovery of costs related to the development and deployment of new services, especially those based on technologies that are more advanced, more expensive, and which may take longer to develop. The 700 MHz Commercial Services Band is a likely band for the use of these more advanced technologies and we are concerned that a license term that expires only six years from the DTV transition provides too short a time period.

85. We decline to increase. the length of initial or renewal terms to fifteen years. We disagree with those commenters such as Aloha, CTIA, and Frontier who argue that parity with AWS-1 services mandates a fifteen-year term for 700 MHz services.[194] The "relocation and band clearance issues" that provided the rationale for the fifteen-year initial licenses for AWS-1 services do not apply here.'" The date certain of February 17, 2009, for the end of the DTV transition means that spectrum in the 700 MHz Band will be clear for use by 700 MHz Band licensees as of that date.[196]

86. We also disagree with DIRECTV/EchoStar, which believes that the current license term should be retained in order to promote prompt use of the spectrum,[197] and with Howard/Javed, who argue that the current rule should be kept to spur the development of a secondary market.[198] The combination of our decisions in this Report and Order and our secondary markets policies make it unlikely that this highly valued spectrum will sit unused. The Commission's secondary market spectrum leasing policies

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[192] See 47 C.F.R. 27.13, describing initial license terms for licensees in the 2305-2320 MHz and 2345-2360 MHz Bands (ten years), 1390-1392 MHz Band (ten years), 1392-1395 MHz and 1432-1435 MHz Bands (ten years), 1670-1675 MHz Band (ten years).

[193] See 47 C.F.R. §§ 22.513(e), 24.15

[194] *See* Aloha Comments in WT Docket No. 06-150 at 10-11; CTIA Comments in WT Docket No. 06-150 at 19-20; Frontier Comments in WT Docket No. 06-150 at 8-9.

[195] *See* AWS-I *Report and Order*, 18 FCC Rcd at 25190 ¶ 70

[196] See DTV Act § 3002; *see also* H.R. Conf. Rep. No. 109-362 (2005), *reprinted in* 2006 U.S.C.C.A.N. 3 (conference report for DTV Act)

[197] *See* DIRECTV/EchoStar Comments in WT Docket No, 06-150 at 11 (DIRECTV and EchoStar are concerned that "any such extension would reduce the amount of spectrum in play and therefore make new entry more difficult... The public interest demands that whomever the Commission licenses to use this spectrum do so in a timely manner.").

[198] *See* Howard/Javed Comments in WT Docket No. 06-150 at 28 (commenting that the current license terms should remain as an incentive to promoting a vigorous secondary market in spectrum leases, and argue that a shorter initial license period is one way to keep licensees from being able to "costlessly hold spectrum" for anticompetitive reasons, *i.e.*, spectrum warehousing).

focus on promoting spectrum leasing arrangements, and we have taken steps in this Report and Order to improve use of the spectrum, including the provision of a mix of geographic license areas consisting of CMAs, EAs, and REAGs.[199]

87. Finally, because of the specifically applicable statutory limitation, we will retain the current requirement that 700 MHz Commercial Services Band licensees commencing broadcast services will be required to seek renewal of their licenses for such services prior to the termination of the eight-year term following commencement of such operations.[200] As stated above, Section 307(c)(1) of the Communications Act provides that licenses granted for operating broadcast stations "shall be for a term not to exceed 8 years."[201]

(iii) Power Limits for Lower 700 MHz Band and Upper 700 MHz Commercial Services Band Base Stations

88. Backmound. The power limit for base stations operating in both the Lower 700 MHz Band and the Upper 700 MHz Commercial Services Band is 1 kW ERP.[202] In the Lower 700 MHz Band, however, base stations are permitted to operate at power levels up to 50 kW ERF' if they do not produce signals exceeding a power flux density (PFD) of 3 mW/m^2 on the ground within 1 kilometer of the station.[203]

89. In the *700 MHz Commercial Services Notice,* we sought comment on whether we should revise the power levels that commercial licensees in either the Lower 700 MHz Band and the Upper 700 MHz Commercial Services Band are permitted to employ.[204] In response, several commenters seek an increase in the power limit for 700 MHz Commercial Services Band base stations from 1 kW ERP to 2 kW ERP.[205] Some of these commenters specifically recommend raising the power limit for such 700 MHz licensees operating in rural areas,[206] and one such commenter suggests that any power increase could be accompanied by the Lower 700 MHz Band PFD requirement?" In addition, a number of

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[199] See supra Section III.A.2.a.

[200] See 47 C.F.R. § 27.13(b).

[201] 47 U.S.C. § 307(c)(1); see *also* 47 C.F.R. § 73.1020(a).

[202] See 47 C.F.R. §§ 27.50(b), (c). We note that under our rules, fixed stations may operate in the 700 MHz bands. Thus, the existing 1 kW ERP base station power limit and any other power limits referred to in this Order shall apply to fixed stations as well as base stations. We further note that 1 kW ERP is equivalent to 1640 W EIRP – the power limit permitted in the PCS and AWS bands.

[203] See 47 C.F.R. §§ 27.50(c), 27.55(b). Through the use of an appropriate PFD limit, a transmission from a 50 kW ERP base station can appear, to an adjacent band receiver operating in the vicinity of the base station, like a transmission from a 1 kW ERP base station operating without a PFD constraint.

[204] *See 700 MHz Commercial Services Notice,* 21 FCC Rcd at 9386-88.

[205] *See, e.g.,* DIRECTV Comments in WT Docket No. 06-150 at 13 (favoring a power increase in the Upper 700 MHz Band and asserting that in the 2008/2009 timeframe, "new or emerging technologies" will be available, which will allow 700 MHz licensees to employ power levels significantly greater than 1 kW ERP "without causing any interference to other spectrum users."). *See* also Aloha Partners Reply Comments in WT Docket No. 06-150 at 5.

[206] See Vermont Department of Public Service *et al* Comments in WT Docket No. 06-150 at 11 (favoring an increase in the Upper 700 MHz Band power limit in rural areas from 1 kW ERP to 2 kW ERP due to the "challenges" faced by rural providers in covering large geographic areas); *see* also AT&T Comments in WT Docket No. 06-150 at 12 (recommending a power limit increase in rural areas "similar to the higher power limits. . .now permitted in the cellular, PCS, and AWS services.").

[207] *See* Leap Wireless Comments in WT Docket No. 06-150 at 6-8 (proposing an increase in the power limit to 2 kW ERP for Upper 700 MHz Band base stations to "facilitate the deployment of robust CMRS services," and indicating that it would "not object" to a 3 mW/m^2 PFD requirement along with an increased power limit). Motorola suggests (continued....)

commenters contend that the Commission should employ a power spectral density (PSD) model for defining power limits in the 700 MHz Commercial Services Band.[208]

90. We also sought comment on whether we should continue to allow Lower 700 MHz Band licensees to operate base stations at power levels up to 50 kW ERP or whether this capability should be reduced for existing and/or future Lower 700 MHz Band licensees.[209] Most commenten addressing this issue oppose reducing the current 50 kW ERP capability in the Lower 700 MHz Band?" Some commenters particularly oppose any revision to this rule that might be applied to the already-auctioned portions of the Lower 700 MHz Band.'" Cingular suggests that the Commission "consider" increasing the power capability in the Lower 700 MHz Band in rural areas to 100 kW ERP "to further promote and expedite service to those areas."[212] In contrast, MSTV recommends lowering the power limit out of concern over potential interference to broadcast operations,[213] and Sprint believes that high-site, SO kW ERP transmissions in the Lower 700 MHz Band could cause interference to adjacent band, low-site, lower power operations.[214] Finally, Motorola requests that Lower 700 MHz Band licensees' capability to operate at SO kW ERP be defined in terms of power spectral density.[215]

91. Discussion. We modify our power limit rules for the Lower 700 MHz Band and the Upper 700 MHz Commercial Services Band in a number of ways. First, we implement a PSD model for

(Continued from previous page)
that if we permit a higher power limit for Upper 700 MHz Band commercial stations, there could be the potential for interference to Public Safety operations, and therefore recommends that if an increased power limit is adopted the "aggregate total power from non-desired signals into [a Public Safety portable] receiver front-end should not exceed approximately -25 dBm." *See* Motorola Comments in WT Docket No. 06-150 at 11.

[208] *See* Motorola Comments in WT Docket No. 06-150 at 11 (requesting that the Commission limit the power of 700 MHz Band base stations to 1 kW/MHz ERP). See *also* Aloha Partners Comments in WT Docket No. 06-150 at 11, MilkyWay Comments in WT Docket No. 06-150 at 9, CTIA Reply Comments in WT Docket No. 06-150 at 8, and Cingular Reply Comments in WT Docket No. 06-150 at 15. The issue of employing a PSD model for defining power limits was also raised in the ***Streamlining and Harmonization Further Notice.*** A number of parties commenting in that proceeding favored the adoption of the PSD model. ***See, e.g.,*** Comments of CTIA in WT Docket No. 03-264 at 4-6.

[209] ***See 700 MHz Commercial Services Notice,*** 21 FCC Rcd at 9385-88 ¶ 90-98.

[210] ***See*** AT&T Reply Comments in WT Docket No. 06-150 at 11; Motorola Comments in WT Docket No. 06-150 at 12.

[211] See C&W Enterprises Comments in WT Docket No. 06-150 at 5 and Corr Wireless Comments in WT Docket No. 06-150 at 8-10. ***See also*** Qualcomm Comments in WT Docket No. 06-150 at 22-24 (indicating that any decrease in power limits for existing Lower Band licensees is "unwarranted" and would require Qualcomm to construct many additional base stations to implement its MediaFlo system).

[212] ***See*** Cingular Reply Comments in WT Docket No. 06-150 at 15 (stating that such a power increase would not "substantially increas[e] the potential for interference").

[213] ***See*** MSTV Reply Comments in WT Docket No. 06-150 at 5-7 (arguing that we should reduce the power capability for Lower Band licensees to some unspecified level during the transition – during which time "knowledge developed. . . will teach [us] steps that are necessary to prevent harmful interference" to broadcast operations – and then after the transition, retain that reduced power level capability for Channel 52 stations only"). In addition, MSTV requests that we reaffirm our decision announced in the Public Notice released prior to the 2002 Lower 700 MHz Band auction that 700 MHz licensees must afford interference protection to adjacent channel broadcast services, and that such services "have priority over any adjoining 700 MHz services that might interfere." ***Id.*** at 4.

[214] Sprint Comments in WT Docket No. 06-150 at 11-12. Sprint, however, does not propose a particular, reduced power level for the Lower Band to prevent such interference.

[215] ***See*** Motorola Comments in WT Docket No. 06-150 at 12 (proposing that Lower Band licensees be limited to a power level of 50 kW/6 MHz ERP).

defining power limits for base stations operating in the entire 700 MHz Commercial Services Band.[216] The current power limit rules do **not** specify a bandwidth over which a licensee's power is to be limited, and could be construed to mean that the power limit applies on a "per emission" basis. Because some licensees may only transmit one emission within their given bandwidth, while others using technologies with narrower emissions might employ multiple emissions over that bandwidth, construing the power limit to apply on a "per emission" basis could allow licensees employing multiple emissions to transmit more total energy in their authorized spectrum blocks than licensees with only one emission in their spectrum blocks. To better accommodate all technologies, we are clarifying that the maximum allowable power levels in the 700 MHz Commercial Services Band are to be defined on a 'per megahertz of spectrum bandwidth" basis, rather than on a "per emission" basis. This clarification will enable higher power signals from wider band technologies, but will not result in a decrease in the total power currently allowed in the band from narrower band technologies. Given this clarification, we are also adopting additional measures to protect against any possible increased risk of interference, especially to 700 MHz public safety users.

92. More specifically, we will allow 700 MHz Commercial Services Band licensees employing bandwidths greater than 1 MHz to meet a base station power limit **of** 1 kW/MHz ERP (*i.e.*, no more than 1 kW ERF' in any 1 MHz band segment). Licensees operating with bandwidths of less than one megahertz will, however, continue to be permitted to operate at power levels up to 1 kW ERP over their bandwidth. Thus, for example, a licensee transmitting a signal with a bandwidth of 5 MHz could employ a power level of **5** kW ERP over the **5** MHz bandwidth, with each **1** MHz band segment within the **5** MHz bandwidth being limited to 1 kW ERP; and a licensee transmitting a signal with a bandwidth of 200 kHz could employ a power level of 1 kW ERP over the 200 kHz bandwidth. This approach to defining power limits, as suggested by Motorola, and others in the context of the ***Streamlining and Harmonization Further Notice,*** will achieve a degree of technological neutrality by ensuring that all licensees regardless of technology choice have enough power to operate a viable service. This neutrality would not exist if all licensees, regardless of their operating bandwidth, were required to limit their base station power levels to 1 kW ERP per emission.[217]

93. In response to proposals by parties seeking greater power limits for rural area operations, we will permit power levels of up to 2 kW/MHz ERP in rural areas, and consistent with our decision above, we will allow rural licensees operating with bandwidths less than one megahertz to operate at power levels up to **2** kW ERP over their bandwidth. In implementing this decision, we define rural areas, consistent with the ***Rural Report and Order,*** as those counties in the U.S. having a population of fewer than 100 people per square mile, based on the most recently available population statistics from the Bureau of the Census.[218] As suggested by Vermont Department of Public Service ***et al.***, increasing the permissible power in rural areas will enable 700 MHz Commercial Services Band licensees operating in such areas to more easily implement their systems; and as AT&T notes, increasing power levels in rural areas would be consistent with the recent Commission decision to permit rural carriers in the Cellular, AWS, and Broadband PCS services to operate at higher power levels?" We note that in the ***Rural Report and Order,*** where the same power increase was adopted, the Commission decided, as a "cautionary measure," to require carriers operating at higher power levels to coordinate with licensees operating within 75 miles **of** their base stations.[220] Consistent with this decision, we shall require any 700 MHz

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[216] We are not, however, adopting **the PSD** model for defining power limits for control, mobile, or portable stations operating in the bands.

[217] ***See*** Motorola Comments in WT Docket No. 06-150 at 10-11.

[218] ***See Rural Report and Order,*** 19 FCC Rcd at 19128 ¶ 89; 47 C.F.R. § 27.50(d)(1).

[219] *See Rural Report and Order*, 19 FCC Rcd at 19127~87, 19131195, 19133 ¶ 100.

[220] *See, e.g.*, *id.* at 19134 ¶ 101.

Commercial Services Band licensee seeking to operate a base station under our rules permitting power levels greater than 1 kW ERP in rural areas to coordinate in advance with all non-public safety 700 MHz licensees authorized to operate within 75 miles of the station and with all 700 MHz Regional Planning Committees that have jurisdiction within 75 miles of the station.

94. As noted above, licensees in the Lower 700 MHz Band are allowed to use up to 50 kW ERF' if they do not produce signals exceeding a power flux density (PFD) of 3 mW/m^2 on the ground within 1 kilometer of the station. A number of commenters expressed views on the appropriateness of the current, maximum 50 kW ERP capability for Lower 700 MHz Band operations. Sprint, for example, contends that 50 kW ERP transmissions in the Lower 700 MHz Band could cause interference to adjacent band operations, and Verizon indicates that "high-powered operations could be potentially harmful to mobile systems" in the Lower 700 MHz Band.[221] Conversely, Qualcomm states that "there is no evidence to support the reduction in the existing 50 kW ERP power level for the Lower Band,"[222] and various incumbent Lower 700 MHz Band licensees express concern over the possibility that their 50 kW ERF' power capabilities could be reduced."[223]

95. Considering these comments, we make certain modifications to the power limit rules in the Lower 700 MHz Band. Specifically, we will retain the ability of incumbent C and D Block licensees to employ power levels up to 50 kW ERF'. In addition, because we believe that unpaired blocks are conducive to the provision of broadcast-type operations, we shall permit licensees operating in any unpaired block(s) in the Lower 700 MHz Band to operate at a power level of 50 kW ERP as well.[224] However, because we believe that paired blocks are generally more conducive to the provision of mobile services, we shall not extend to new licensees operating in any Lower 700 MHz Band paired blocks the ability to operate at 50 kW ERP. This action helps preserve the flexibility the Commission originally envisioned for the Lower 700 MHz Band, *i.e.*, the use of both broadcast and mobile services in the band, by providing an environment conducive to mobile systems in the paired blocks and an environment conducive to broadcast-type systems in the unpaired blocks. Current and future licensees nevertheless will have the flexibility to implement broadcast-type or mobile systems in any particular block. For example, a licensee may implement a broadcast-type system in a paired block, but rather than a high-power, high-site system, it would have to design a distributed broadcast system.

96. In reaching this decision, we conclude that it would not be appropriate to reduce the power limits of incumbent Lower 700 MHz Band licensees, who acquired their spectrum with the expectation that they would be able to employ 50 kW ERF' transmissions in the band. Although we recognize concerns expressed by certain parties regarding the potential for adjacent band interference into the current unauctioned paired blocks (i.e., the current A and B Blocks) from high power emissions in adjacent incumbent and unauctioned unpaired blocks, we continue to believe that our out-of-band emission limits coupled with the 3 mW/m^2 PFD requirement will be effective in protecting unauctioned paired blocks from adjacent channel interference. We note, however, that the 50 kW ERF' limit in the

[221] See Verizon *Ex Parte* letter of April 4,2007 at 3.

[222] *See* Qualcomm Reply Comments in WT Docket No. 06-150 at 3.

[223] For example, C&W, a company that operates a system employing a single, high-powered, transmitter, indicates that if the power limit were reduced, it would have to add many more stations to cover the same area, at "great expense," and therefore "would have to discontinue the service it is providing. See C&W Comments in WT Docket No. 06-150 at 5. Similarly, Corr Wireless, which believes that with the 50 kW ERP power limit a licensee could provide "mobile TV and one-way data [services]" to small or medium-sized markets, considers the idea of reducing the power limit for existing Lower 700 MHz licensees a "gross breach of faith for licensees who relied on the specified power limits when applying for, bidding on, and paying for these licenses . . ." Corr Wireless Comments in WT Docket No. 06-150 at 8-9.

[224] See *infra* Section IV.B.1.a (proposing retention of the hand plan for the existing Lower 700 MHz Band, which includes an unpaired E Block).

Lower 700 MHz Band was based on a traditional broadcast emission, which consists of a single emission within the licensed bandwidth. The Commission never intended that emissions within a single block in the Lower 700 MHz Band exceed 50 kW ERP. Accordingly, we clarify that the 50 kW ERP limit for the current C and D Blocks, and any additional unpaired block(s) in the Lower 700 MHz Band, is a cap on the average total power of all emissions within the full authorized spectrum of the blocks. For example, a single incumbent C or D Block base station with an emission bandwidth of 1 megahertz could transmit with the full 50 kW ERP, but no other emissions would be permitted in the remaining 5 megahertz of the block. This limit would also apply to the cumulative emissions of both licensees if a 6 megahertz incumbent or unauctioned unpaired block is disaggregated.

97. In implementing this PSD approach to the power limits in both the Lower 700 MHz Band and the Upper 700 MHz Commercial Services Band, we continue to remain concerned that transmissions at higher power levels could potentially cause interference to adjacent channel operations. To mitigate the potential for harmful interference to adjacent channel operations, we require the following. For Lower 700 MHz Band licensees, if operating with a bandwidth of 1 megahertz or **less** and a transmitting power greater than 1 kW ERP non-rural or **2** kW ERF' rural, or if operating with a bandwidth of more than 1 megahertz and a PSD greater than 1 kW/MHz ERP non-rural or **2** kW/MHz ERP rural, then that licensee must comply with the **3** mW/m^2 PFD **limit.**[225] Thus, for example, a non-rural licensee transmitting an 8 kW ERP signal in a 5-megahertz bandwidth or a rural licensee transmitting a 4 kW ERP signal in a 1.25 MHz bandwidth would have to satisfy the **3** mW/m^2 PFD limit. However, a licensee transmitting an 800 watt ERP signal in a **200-kHz** bandwidth or a 4 kW ERP signal in a 5-megahertz bandwidth, or a rural licensee transmitting an 8 kW ERP signal in a 5-megahertz bandwidth, would not have to meet the PFD limit. Because we wish to remain especially vigilant regarding the potential for interference to public safety operations, we impose the following additional requirement on Commercial Services licensees operating in the Upper 700 MHz Band. Specifically, all Upper 700 MHz Commercial Services Band licensees, both rural and non-rural, transmitting signals at a power levels greater than I kW ERP, irrespective of bandwidth, must satisfy the **3** mW/m^2 PFD **limit.**[226] Thus, for example, an Upper 700 MHz Commercial Services Band licensee transmitting a **4** kW ERF' signal in a 5-megahertz bandwidth would have to meet the PFD limit.

98. Leap asks that we adopt a power limit of **2** kW ERF' for Upper 700 MHz Commercial Services Band base stations and indicates that it would not object to applying a **3** mW/m^2 PFD limit to such a power limit. **To** the extent that we are permitting Upper 700 MHz Commercial Services Band licensees to employ **2** kW **ERP,**[227] and requiring the application of our **3** mW/m^2 PFD in such instances, we are granting Leap's request. DIRECTV/EchoStar requests that we significantly increase the power limit in the Upper 700 MHz Commercial Services Band. However, DIRECTV/EchoStar proposes no specific, higher power limit for the band, and provides no information about the "new and emerging technologies" it believes would permit such higher power levels without causing interference to other users.[228] Thus, without specific information regarding DIRECTV/EchoStar's request for an increased power limit for the Upper 700 MHz Commercial Services Band, we must deny DIRECTV/EchoStar's request.

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[225] We will also require such licensees to meet the same type of notification requirements that currently apply to Lower 700 MHz Band licensees who are required to meet **our** PFD limit. ***See*** Sections 27.50(c), as amended.

[226] We will require such licensees to meet the same type **of** notification requirement that we are now requiring of Lower 700 MHz Band licensees. ***See*** Section 27.50(b), as amended.

[227] We permit Upper 700 MHz Band licensees to transmit at **2** kW ERP when operating over bandwidths of 2 megahertz or more.

[228] ***See*** DIRECTV/EchoStar comments in WT Docket No. 06-150 at 13 (indicating that as such technologies develop, it will supplement the record with specific power limit recommendations).

99. Motorola is concerned that possible increases in Upper 700 MHz Commercial Services Band power levels could result in interference to 700 MHz public safety operations. Motorola thus suggests that, if we permit higher power levels in the band, we require that the "aggregate" power from non-desired signals received by portable public safety devices situated within 1 km of a high-powered commercial base station be limited to -25 dBm.[229] We decline to adopt Motorola's proposal for two reasons. First, Motorola does not provide the technical basis for its proposed -25 dBm limitation (*i.e.*, how it would serve to protect public safety devices).[230] Second, any rule that would require new 700 MHz Commercial Services Band licensees to meet some measured signal level in all present and future public safety devices operating in the vicinity of their base stations could be burdensome and create uncertainty for such licensees as they develop and implement their networks. Our requirement that licensees meet a **PFD** limit at specified locations near their base stations when operating at higher power levels is less burdensome and will create more certainty for new licensees as they implement their systems.

100. We reject Cingular's request to permit a power capability of 100 kW ERP for Lower 700 MHz Band base stations operating in rural areas because we are concerned that such a power level could result in interference to adjacent channel, Lower 700 MHz Band operations. When the Commission adopted rules for the Lower 700 MHz Band to permit a 50 kW ERP power level, it analyzed the potential for interference to adjacent channel operations if power levels significantly greater than 1 kW ERP were permitted.[231] In that analysis, the Commission concluded that interference to adjacent channel base station receivers from transmitting Lower 700 MHz Band base stations would not be expected to occur when such stations are operating at power levels up to 50 kW ERP.[232] This analysis indicates, however, that if Lower 700 MHz Band base stations operated at power levels as high as 100 kW ERP, then the possibility of interference to adjacent band operations would increase.[233] In addition, Cingular does not explain why a 50 kW ERP power level would be inadequate, or why a power level of 100 kW ERP power level would be necessary to provide service to rural areas. We therefore reject Cingular's request for a power capability of 100 kW ERP for Lower 700 MHz Band operations in rural areas.

101. With regard to the concerns raised by MSTV about the use of 50 kW ERP power levels in the **Lower** 700 MHz Band, we reaffirm the Commission's long-standing position that broadcasters must be afforded adequate interference protection from 700 MHz licensees. When the Commission established its rules for these licensees, it ensured that appropriate protections would be provided to broadcast operations.[234] Thus, all 700 MHz Band licensees are required to comply with these rules during the DTV transition, and all licensees operating **on** Channel ***52*** will be required to continue to meet these requirements after the transition as well.

102. We will not, however, reduce the power capabilities **of** all Lower 700 MHz Band licensees either during **or** after the DTV transition as MSTV requests. Under Section **27.60** of our rules, 700 MHz licensees must limit their stations' transmissions to specified field strength levels at co-channel and adjacent channel broadcasters' Grade B contours, and under Section **27.53** of our rules, 700 MHz

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[229] ***See*** Motorola Comments in WT Docket No. 06-150 at 11

[230] We received no comments from the Public Safety community regarding the Motorola proposal

[231] ***See Lower 700 MHz Band Report and Order,*** 17 FCC Rcd **1121**, Appendix D

[232] The Commission indicated that desired-to-undesired (D/U) ratios of -42 dB or better would likely ensure non-interference to 700 MHz base station receivers. As shown in Table 1 of Appendix D, which indicates D/U ratios for various conditions, for base stations transmitting at 50 kW ERP, there are no conditions where D/U ratios exceed -42 dB and **only** a few where D/U ratios approach -42 dB. ***Id.***

[233] As indicated in Table 1 of Appendix D, for base stations transmitting at power levels as high as 100 kW ERP, there are a number of conditions where D/U ratios would approach -42 dB. Id.

[234] *See, e.g.,* 47 C.F.R. § 27.60 ("TV/DTV interference protection criteria"); 47 C.F.R. § 27.53 ("Emission limits").

licensees must meet prescribed out-of-band emission limits with respect to adjacent band operations. MSTV has not provided any reasoning as to why these requirements will not be met if and when base stations operate at high power levels. Rather, MSTV bases its request for a power reduction on a general, but speculative, concern that higher power levels could cause interference to television operations in the band. Given the absence of any existing circumstances of interference to broadcast operations or any technical rationale for why such interference would occur, we find that it is not necessary to prevent all Lower 700 MHz Band licensees from operating at 50 kW ERP power levels, either during or after the transition. We note, however, that, while we are not granting MSTV's request to reduce the power capabilities of all Lower 700 MHz Band licensees prior to the end of the transition, we do, through our decision above to limit power levels in the A Block to 1 kW/MHz ERP, grant MSTV's request to reduce the power level of licensees operating on Channel 52.

(iv) Power Limit Issues in WT Docket No. 03-264

103. Background. In the ***Streamlining and Harmonization Further Notice,*** the Commission sought comment on a request by CTIA to redefine how power limits are measured in the PCS and AWS bands.[235] CTIA asked that the Commission modify its power limit rules so that: (1) the power limit for the bands would be increased from 1640 watts EIRP to 3280 watts EIRP; (2) the power in the PCS and AWS bands would be measured using PSD (*i.e.*, the power limit in those bands, using PSD, would be 3280 watts EIRP/MHz); and 3) power would be defined by the measurement of "average," rather than "peak" power. In the ***Streamlining and Harmonization Further Notice,*** the Commission sought comment on the CTIA proposals in the context of other bands, including the 700 MHz Band. We therefore will address CTIA's proposals, as they would apply to the 700 MHz Band.

104. Discussion. As discussed above, we will employ PSD for defining power limits in the 700 MHz Band. We have thus granted the second of CTIA's requests as it applies to the 700 MHz Commercial Services Bands. However, we shall not apply to the 700 MHz Band CTIA's proposal to double power limits in the PCS and AWS-1 bands – *i.e.*, a power increase that would apply in both rural and non-mal areas and would not be accompanied by a PFD limit. CTIA provides no justification for permitting an unrestricted doubling of power levels for the 700 MHz Commercial Services Bands, and we find no basis for adopting such limits for the band. Instead, as discussed above, we are adopting rules for 700 MHz Band licensees that will allow for a power limit of 1 kW/MHz ERP in non-rural areas and 2 kW/MHz ERP in rural areas.

105. We do, however, find merit in extending to the 700 MHz Commercial Services Band CTIA's proposal to use "average," rather than "peak" power in measuring power levels. Although the use of "average" power will effectively result in an increase in 700 MHz Band power levels for non-constant envelope technologies, such as CDMA and WCDMA, the "average" measurement approach is a more accurate measure of the interference potential for these technologies. We find that any effective increase in power that would result through the use of an "average" measurement approach will be modest, and in any event will be outweighed by the benefit of measuring today's technologies using a more realistic and appropriate technique.

106. For purposes of clarifying the use of the "average power" measurement technique, we make the following determinations. First, we conclude that the technique shall be made during a period of continuous transmission and be based on a measurement using a 1 MHz resolution bandwidth.[236] Second, we shall restrict the peak-to-average ("PAR") ratio of the radiated signal to 13 dB. Limiting the

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[235] Biennial Regulatory Review – Amendment of Parts 1, 22, 24, 27, and 90 to Streamline and Harmonize Various Rules Affecting Wireless Radio Services, WT Docket No. **03-264**, ***Report and Order and Further Notice of Proposed Rulemaking, 20*** FCC Rcd 13900 ***(2005) (Streamlining and Harmonization Further Notice).***

[236] ***See*** Letter from Paul W. Garnett, CTIA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. **03-264** (filed Feb. **6, 2007) at 2.**

PAR to 13 dB strikes a balance between enabling licensees to use modulation schemes with high PARs (such as OFDM) and protecting other licensees from high PAR transmissions. Parties seeking to employ the "average power" measurement technique should consult with the FCC Laboratory for guidance on the appropriate averaging method for the particular technology they plan to use.

(v) Other *Technical* Issues

107. In response to the technical issues discussed in the 700 *MHz* ***Commercial Services Notice,*** commenters raise two additional matters: (1) the appropriateness of the current out-of-band emission ("OOBE) limits for Upper 700 MHz Commercial Services Band base stations; and (2) the potential for interference to 700 MHz public safety operations due to intermodulation ("IM") products.

108. Background. Sprint raises concerns about the potential for IM and OOBE interference to 700 MHz public safety operations and believes that we must prevent these types of interference from taking place.[237] With regard to IM interference, Sprint observes that signals from C and D block transmitters could potentially combine and form interference-causing IM products within the public safety base and mobile receive bands.[238] With regard to OOBE interference, Sprint argues that the existing 76 + 10log P OOBE limit[239] for Upper 700 MHz Commercial Services Band base stations is insufficient to protect public safety operations.[240] In response, Leap states that if the Commission were to tighten the existing OOBE limit, the Upper 700 MHz Commercial Services Band "could be rendered effectively unusable."[241] Leap suggests, alternatively, that we ***decrease*** the OOBE limit, to 53 + 10log P. In making this recommendation, Leap contends that the existing OOBE limit "will impose added cost to 700 MHz base station equipment."[242]

109. Access Spectrum *et al.* suggests that our current OOBE limit, which was designed to protect 700 MHz public safety narrowband channels, would not be needed to protect possible 700 MHz public safety broadband operations. It therefore asks that we consider adoption of the more modest OOBE limit that we currently employ to protect 700 MHz Commercial Services Band broadband systems? to protect potential 700 MHz public safety broadband operations?" Finally, Motorola contends that regardless of what changes we make to our rules for the Upper 700 MHz Commercial

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[237] ***See*** Sprint Comments in WT Docket No. 06-150 at iii. On the other hand, CTIA argues that we should not reduce our 700 MHz Band base station power limits, stating that the "technical merits of [700 MHz Band] power limits were vetted in earlier proceedings and adopted consistent with the Commission's objective in the broadband PCS and AWS-1 bands of providing service flexibility while protecting adjacent channel licensees from interferences." CTIA Comments in WT Docket No. 06-150 at 20.

[238] ***See*** Sprint Comments in WT Docket No. 06-150 at n.8.

[239] ***See*** 47 C.R.F. § 27.53(c)(3).

[240] ***See*** Sprint Comments in WT Docket No. 06-150 at n.10. Sprint does not propose a particular OOBE limit to address its concern.

[241] Leap believes that those parties advocating the need for more stringent interference protection for public safety users "must be required to provide evidence of a problem" and asserts that "to date the record contains only speculative conclusions." Leap further believes that the technical limits proposed by Sprint to address its interference concerns "would severely limit the range of services offered" in the Upper Band. Leap Reply Comments in WT Docket No. 06-150 at 3-4.

[242] ***See*** Leap Comments in WT Docket No. 06-150 at 9.

[243] ***See*** 47 C.F.R. §§ 27.53(c)(1)-(2).

[244] ***See*** Access Spectrum ***et al.*** Comments in WT Docket No. 06-150 at 33-34 and Appendix B at 13-14. Public safety broadband operations would be permitted under various, proposed revisions to the 700 MHz Public Safety Band presented in the 700 MHz Public Safety and 700 MHz Guard Bands proceedings.

Services Band, the current out-of-band emission requirements designed to protect 700 MHz public safety users "must be maintained."[245]

110. Discussion. We will retain the existing OOBE limits for commercial base stations operating in the Upper 700 MHz Commercial Services Band because we find these restrictions provide sufficient and appropriate protection to 700 MHz public safety operations. We also decline to impose any technical restrictions on Upper 700 MHz Commercial Services Band licensees to address potential IM interference to 700 MHz public safety operations. We will, however, require Upper 700 MHz Commercial Services Band licensees and 700 MHz public safety entities, upon request from the other, to exchange information about their stations and systems. We are adopting this requirement in order to limit the potential for IM interference to 700 MHz public safety mobile and portable devices from the transmissions of Upper 700 MHz Commercial Service Band base stations.

111. With regard to Sprint's argument for the need for increased OOBE limits, Sprint's conclusion that our 76 + 10 log P OOBE limit will result in interference to 700 MHz public safety operations is based on the assumption of a 65 dB site isolation figure in analyzing potential interference between commercial base stations and public safety mobile/portable receivers.[246] However, the Commission rejected this same premise in deciding not to adopt stricter OOBE limits in the *Upper 700 MHz Bund Third MO&O*. In that proceeding NF'STC sought an increase in the OOBE limit based on the assertion by TIA[247] that the appropriate site isolation figure in the CMRS system environment was 65 dB.[248] In response the Commission stated that "short of a decision to protect all public safety systems with measures directed at worst-case conditions (*e.g.*, interference that might occur only at certain close-in distances from an antenna), it is "unnecessary . . .to revisit the current 76 + 10log P standard."[249]

112. In the 800 *MHz Report and Order*, the Commission decided for similar reasons to not adopt stricter OOBE limits to protect 800 MHz public safety operations.[250] The Commission stated, as its rationale for not increasing the existing OOBE limit for the 800 MHz band, that the additional filtering needed to achieve proposed OOBE standards "would add cost and complexity – but no benefit – to those cells in a system in which, because of their location, or otherwise, unacceptable OOBE interference would not occur'' and the Commission was therefore unwilling to "impose stronger OOBE limits on every cell of every system in the country; particularly if only a handful of cells in a system might require them."[251]

113. We continue to believe that any change to the OOBE limit required for commercial Upper 700 MHz Commercial Services Band base stations is unsupported. We also note that no public safety entities expressed concern in this proceeding about the adequacy of commercial Upper Band

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[245] *See* Motorola Comments in WT Docket No. 06-150 at 10.

[246] The OOBE limit describes the degree to which out-of-band energy is initially reduced at a transmitter. Site isolation, in this instance, is a measure of the degree to which a signal is attenuated as it travels away from a transmitter towards an out-of-band receiver. Thus, an OOBE limit, along with an appropriate site isolation figure, determine how much out-of-band energy, and thus how much interference, is absorbed by a receiver.

[247] TIA provided the technical analysis in support of NPSTC's proposal

[248] *See* In the Matter of Petitions for Reconsideration of the Second Memorandum Opinion and Order, Service Rules for the 746-764 and 776-794 MHz Spectrum bands and Revisions to Part 27 of the Commission's Rules, *Third Memorandum Opinion and Order*, 17 FCC Rcd 13985, 13992 ¶ 21 (*Third 700 MHz MO&O*).

[249] *Id.* at 13993 ¶ 22. The Commission also noted that TIA's proposed increased OOBE limit for Upper 700 MHz Band base stations "would dramatically compromise the usefulness of the upper 700 MHz commercial spectrum blocks" and therefore concluded that TIA's presentation did not "justify the establishment of a stronger, uniform OOBE standard for commercial transmitters." *Id.* at 13993-94 ¶ 23.

[250] *See 800 MHz Report and Order*, 19 FCC Rcd at 15028-29 ¶ 104.

[251] *Id.* at 14969, 15028 ¶ 104.

OOBE limits in protecting public safety mobile receivers from interference. Further, under the provisions of Section 27.53(m) of the Commission's rules, when harmful interference due to out-of-band emissions occurs in any Part 27 service, "the Commission may, at its discretion," require greater out-of-band emission limits than specified for that service. Thus, if harmful OOBE interference occurred in the 700 MHz Public Safely Band from an Upper 700 MHz Commercial Services base station transmission, there would be a mechanism in place to address the problem. For these reasons, and consistent with our previous analyses and decisions with regard to OOBE limits in the 700 and 800 MHz bands, we decline to adopt any increase to our existing OOBE limit for Upper 700 Commercial Services Band base stations.

114. We also disagree with Leap's argument that the Commission should reduce the current OOBE limit to 53 + 10log P. Leap asserts that the existing OOBE limit of 76 + 10log P will impose added costs to 700 MHz base station equipment, but Leap does not indicate that such additional costs would place any significant financial burden to Upper 700 MHz Commercial Services Band licensees. Leap also states that the use of the lower OOBE limit would provide fair and reasonable protection to public safety users, but provides no technical analysis in support of this assertion.[252] We therefore decline to adopt Leap's proposal for a reduced OOBE limit for Upper 700 MHz Commercial Services Band operations.

115. In addition, we do not address Access Spectrum *et al.*'s proposal that we revise the OOBE limits to make them consistent with the way licensees operating in 700 MHz Commercial Services Band broadband blocks protect one another. Because key premises of this proposal – whether to redesignate the wideband Public Safety spectrum to broadband use and whether to consolidate that broadband spectrum at the bottom of the Public Safety allocation – are subjects of the Further Notice, its consideration in this Report and Order is premature. We are seeking further comment on the issue in the Further Notice.

116. With regard to Sprint's concern about IM interference, Sprint correctly notes that signals from the C Block and D Block base stations could combine to form unwanted IM products within the 12-megahertz public safety mobile receive band in the 700 MHz Band, and that such products potentially could cause interference to public safety mobile and portable receivers. The issue of IM interference in the Upper 700 MHz Commercial Services Band was initially raised in the *Third 700 MHz Memorandum Opinion and Order*. In that proceeding, TIA suggested that, to address IM interference, the Commission adopt a requirement, which would have effectively limited the transmissions of commercial base stations to 5 watts ERP.[253] The Commission concluded that requiring base stations to operate at such a low power level "could dramatically compromise the usefulness of the Upper 700 MHz band commercial blocks" and thus declined to adopt any technical limitations to address IM interference.[254] The Commission addressed the issue of IM interference in the *800 MHz Report and Order* as well, where it acknowledged IM as a potential source of interference to public safety operations in the 800 MHz band."[255] In that proceeding, the Commission once again declined to adopt specific technical measures to address JM

[252] See Leap Comments in WT Docket No. 06-150 at 7-9.

[253] Specifically, TIA suggested that the Commission adopt a requirement to limit power levels produced by commercial base stations to no greater than -45 dBm on the ground within 400 meters of the station. The Commission determined that to meet this limitation, a commercial base station would not likely be able to transmit at a power level greater than 5 watts ERP. See *Third 700 MHz MO&O*, 17 FCC Rcd at 13995 ¶ 28.

[254] *Id.* Sprint asserts that a similarly low power level would be needed to ensure the absence of IM interference in the Upper 700 MHz Band, but acknowledges that imposing such a limit on base stations "would not allow any cost-effective deployment of infrastructure, particularly if the operator sought to provide in-building service." Sprint Comments at n. 20.

[255] *800 MHz Report and Order*, 19 FCC Rcd at 15023 ¶ 91.

interference.[256] Rather, it adopted a series of requirements, which mandated that commercial licensees work with one another, as well as with public safety entities, to eliminate any IM interference that might occur to public safety operations.[257]

117. Although we continue to believe that it is not necessary to impose strict technical measures on Upper 700 MHz Commercial Services Band licensees to protect public safety operations from IM interference, we recognize that due to the spectral relationship between the Blocks C and D in the Upper 700 MHz Commercial Services Band and the 700 MHz Public Safety Band, IM interference to public safety mobile and portable devices could potentially occur if relatively low base station power levels are not employed.[258] We therefore take additional steps to address potential IM interference to public safety operations in the 700 MHz Band.

118. Specifically, as we did with respect to 800 MHz ESMR and Cellular licensees,[259] we will require Upper 700 MHz Commercial Services Band licensees, upon request from a 700 MHz public safety entity, to provide to that entity information about the location and parameters of any stations they plan to activate in the public safety entity's area of operation.[260] We will also require, as we did in Section 90.675, public safety licensees to provide, upon request of an Upper 700 MHz Commercial Services Band licensee, the operating parameters of their radio systems.[261] As indicated in the *800 MHz*

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[256] The Commission stated that "rather than *impose* stringent, across-the-board emission limits at this time, [it is] adopting rules that require ESMR and cellular telephone licensees to act only when and where it is evident that unacceptable interference is or will be caused to non-cellular 800 MHz systems, thereby affording such licensees a high degree of technical flexibility and minimizing the cost of interference avoidance." 800 *MHz* Report and Order, 19 FCC Rcd at 15040 ¶ 131.

[257] *See id.* at 15041 ¶ 129 (the Commission decided that "in lieu of adopting what could be draconian rules, [it is] affording ESMR and cellular telephone licensees the discretion to *make* any necessary changes to their own systems—or changes to non-cellular systems affected by unacceptable interference—as may be necessary to eliminate unacceptable interference"). In implementing this decision the Commission adopted Section 90.672 ("Unacceptable interference to non-cellular 800 MHz licensees from ESMR or Part 22 Cellular Radiotelephone systems"), Section 90.673 ("Obligations to abate unacceptable interference"), Section 90.674 ("Interference resolution procedures before, during, and after band reconfiguration"), and Section 90.675 ("Information Exchange").

[258] For example, a D Block transmission at 760 MHz, when combined with a C Block transmission at 750 MHz, will, in accordance with the $2F_1$-F_2 formula for the calculation of 3" order intermodulation, create an IM product at 770 MHz, which is within the 764-776 MHz Public Safety Band.

[259] See, *e.g.*, Section 90.675.

[260] As per Section 90.675, this would include information about the 700 MHz station's location, effective radiated power, antenna height, and channels available for use. Also, as per Section 90.675, Public Safety licensees will not be afforded the right to accept or reject the activation of a proposed 700 MHz station or to unilaterally require changes to the station's operating parameters. We note as well that 700 MHz licensees may regard their operating parameters as proprietary and if so, we encourage such licensees to use non-disclosure agreement whereby third parties will not be given access to such information. Failing that, the affected parties could seek a protective order from the Commission. See Digital Output Protection Technology and Recording Method Certifications, Order, MM Docket 04-68, DA 04-716 (rel. March 17, 2004). See also 47 C.F.R §§ 0.457, 0.459. We also encourage, but do not require, that such matters be submitted to arbitration, mediation, or other alternative dispute resolution mechanisms.

[261] Public safety licensees will also be required to provide information about any technical changes they plan to *make* to their systems.

Report and Order, these actions can both help prevent potential interference from occurring and help identify possible sources of interference more rapidly, if interference were to occur.[262]

119. Finally, if interference to public safety systems does take place, we will expect 700 MHz Commercial Services Band licensees to take whatever actions are necessary to mitigate the interference (*e.g.*, reducing out-of-band emissions, reducing power levels, changing operating frequencies, *etc.).* As operations begin in the Upper 700 MHz Commercial Services Band, we will he keenly interested in any circumstances of interference to public safety operations that are not appropriately addressed by commercial entities, and if we believe that further actions are necessary to ensure that such circumstances do not take place, we shall take such actions.

(vi) 911/E911 Requirements

120. Backmound. In the 700 *MHz Commercial Services Notice,* we sought comment on whether § 20.18 of the Commission's rules, which imposes 911 and Enhanced 911 (E911) obligations on certain enumerated wireless services, should be extended to services provided in the 700 MHz Commercial Services Band, to any Part 27 service, or to all similar wireless services, to the extent that they meet certain criteria established in the *E911 Scope Order.*[263] The "basic 911" requirement of § 20.18 requires providers of specified wireless voice services to transmit all wireless 911 calls made by their subscribers without respect to their call validation process *to* the appropriate Public Safety Answering Point (PSAP) or designated emergency authority.[264] Under the E911 requirement, providers are ultimately required (*i.e.*, during "Phase II") to automatically provide the PSAP or designated authority with the location of the 911 caller by longitude and latitude (Automatic Location Identification or ALI) within a specified level of accuracy.[265] Licensees can provide ALI information by deploying technology in their networks for locating subscribers (a network-based solution),[266] or by including Global Positioning System (GPS) or other location technology in subscribers' handsets (a handset-based

121. Currently, the 911/E911 obligations established in § 20.18 apply to the following services: Broadband PCS under Part 24, Cellular Radio Telephone Service under Part 22, Geographic Area and Incumbent Wide Area Specialized Mobile Radio (SMR) Service in the 800 MHz and 900 MHz Bands under Part 90, and those entities that offer these voice services by purchasing airtime or capacity wholesale from facilities-based providers.[268] These obligations are further restricted to apply only insofar as the covered service providers offer "real-time, two way switched voice service that is interconnected

[262] *See 800 MHz Report and Order,* 19 FCC Rcd at 15038 ¶ 125 ("if the characteristics of a proposed new cell are known in advance, it is possible to analyze the cell's potential for interference and make any necessary revisions to cell parameters before the cell is activated"), 15039 ¶ 127.

[263] *700 MHz Commercial Services Notice,* 21 FCC Rcd at 9390 ¶¶ 104-06

[264] 47 C.F.R. § 20.18(b)

[265] 47 C.F.R. § 20.18(e)-(h)

[266] Network-based location solutions employ equipment and/or software added to wireless carrier networks to calculate and report the location of handsets dialing 911. These solutions do not require changes or special hardware or software in wireless handsets. *See* 47 C.F.R. § 20.3 *("Network-based Location Technology").*

[267] Handset-based location solutions employ special location-determining hardware and/or software in wireless handsets, often in addition to network upgrades, to identify and report the location of handsets calling 911. *See* 47 C.F.R. § 20.3 *("Location-capable Handsets").*

[268] 47 C.F.R. § 20.18(a)

with *the* public switched network and utilizes an in-network switching facility which enables the provider to reuse frequencies and accomplish seamless hand-off of subscriber calls."[269]

122. The Commission made the majority of these application decisions in the 1996 E911 Report and *Order*.[270] The Commission determined in that Order that 911/E911 should be applicable to real-time, two-way, interconnected voice services provided by Cellular Radio Telephone Service carriers and broadband PCS carriers because customers of those public telephone services "clearly expect access to 911 and E911," given that they often cited "safety and security" as their main reason for purchasing a mobile phone.'" Geographic area and incumbent wide area SMR providers licensed in the 800 MHz and 900 MHz bands were made subject to the rule because these carriers showed "significant potential to offer near-term direct competition to cellular and broadband PCS carriers."[272]

123. The Commission declined, however, to extend 911/E911 obligations to a number of other services. For example, the Commission decided that local SMR voice service, even if interconnected, would not be governed by 911/E911 requirements as local SMR providers "offer[ed] mainly dispatch services to specialized customers in a more localized, non-cellular system configuration . . . ."[273] The Commission also determined that, while it expected that CMRS voice Mobile Satellite Service (MSS) carriers would eventually be required to provide access to emergency services, the Commission would not impose such requirements at that time because it might "impede the development of the service in ways that might reduce its ability to meet public safety needs."[274] Notwithstanding these determinations, the Commission affirmed that "the public interest will ordinarily require that all CMRS real time two-way voice communications services provide reasonable and effective access to emergency services."[275]

124. In the E911 *Scope Order* released in 2003, the Commission derived four factors from its earlier application decisions to inform its analysis of whether other services not necessarily within the scope of § 20.18(a) should be subject to the E911 rules.[276] Specifically, the Commission determined that it would consider whether (1) the service 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 CMRS or wireline local exchange service; and (4) it is technically and operationally feasible for the service or device to support E911.[277] The Commission also clarified, however, that while the four criteria would be "extremely useful in ensuring technological and competitive neutrality," these criteria were not the exclusive considerations. Instead, the Commission might also "consider other factors to inform [its] decision," including other factors that might mitigate the need to impose a requirement on a particular service.[278] Applying this analysis, the

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[269] See Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems, CC Docket No. 94-102, *Report and Order and Further Notice of Proposed Rulemaking,* 11 FCC Rcd 18676, 18716 ¶ 81 (1996) *(E911 Report and Order)*; 47 C.F.R. § 20.18(a).

[270] *See E911 Report and Order.*

[271] *See E911 Report and Order*, 11 FCC Rcd at 18716 ¶¶ 80-81; 47 C.F.R. § 20.18(a).

[272] *E911 Report and Order,* 11 FCC Rcd at 18716 ¶ 81; 47 C.F.R. § 20.18(a).

[273] *E911 Report and order,* 11 FCC Rcd at 18716-17 ¶ 81

[274] *Id.* at 18718 ¶ 83.

[275] *Id.*

[276] See Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, CC Docket 94-102, IB Docket No. 99-67, *Report and Order and Further Notice of Proposed Rulemaking,* 18 FCC Rcd 25340, 25347 ¶ 18 (2003) *("E911 Scope Order").*

[277] *Id.*

[278] *Id.* at 25341 ¶ 2, 25347 ¶ 19

Commission determined, among other things, that (1) MSS should now provide a modified form of basic 911 service, but would not, at that time, be required to provide E911 service; and (2) that wireless resellers and pre-paid calling service providers would be required to comply with 911/E911 requirements under § **20.18** to the extent that the underlying facilities-based provider offers access to 911 service?'

125. ***700 MHz Commercial Services Notice.*** In the ***700 MHz Commercial Services Notice,*** we sought comment on whether § 20.18 should be amended to apply the 911/E911 requirements to services in the 700 MHz Commercial Services Band that meet the ***E911 Scope Order*** criteria, to all services using bands subject to Part 27 that meet that criteria, or to all similar wireless services meeting that criteria.[280] We tentatively concluded that services provided using both auctioned and previously unauctioned spectrum in the 700 MHz Commercial Services Band and that meet the criteria established in the ***E911 Scope Order*** should be subject to the 911/E911 requirements?'' We also tentatively concluded that services using spectrum subject to Part 27, such as the AWS-I bands,[282] which meet the same criteria noted above should likewise be subject to the 911/E911 requirements.[283] We sought comment but made no tentative conclusion with regard to whether § 20.18 should be amended to apply to all similar wireless services that meet the ***E911 Scope Order*** criteria.[284]

126. Almost all of the commenters addressing the issue support application **of** the 911/E911 requirements to services in the 700 MHz Commercial Services Band to the extent that those services are similar to the services already subject to the requirements, with support coming from a range of interests including large, medium-sized, and rural carriers, manufacturers, and public interest groups.[285] CTIA also supports application of 911/E911 requirements to Part 27 services more broadly,[286] while **NENA** supports the extension of the 911/E911 requirements to wireless services that meet the ***E911 Scope Order*** criteria generally.[287] Many commenters note the critical public safety benefits of E911,[288] and also argue that similar services should be subject to the same requirements.[289] Several commenters also state, however, that E911 should not apply to 700 MHz Commercial Services Band services to a greater extent than it

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[279] *Id.*

[280] ***700 MHz Commercial Services Notice,*** 21 FCC Rcd at 9390 ¶¶ 104-05

[281] ***700 MHz Commercial Services Notice,*** 21 FCC Rcd at 9389 ¶ 100,9390¶ **104.**

[282] **As** noted above, AWS-1 refers to the 1710-1755MHz and **21**10-2155MHz bands, which the Commission determined would be licensed under its **Part** 27 rules.

[283] 700 ***MHz Commercial Services Notice,*** 21 FCC Rcd at 9390 ¶ 105

[284] ***Id.*** at 9390 ¶ 106.

[285] ***See*** Aloha Comments in WT Docket No. 06-150 at 12; AT&T Comments in WT Docket No. 06-150 at 16; Blooston Comments in WT Docket No. 06-150 at **8;** Cingular Comments in WT Docket No. 06-150 at 15; Dobson Comments in WT Docket No. 06-150 at 11; Leap Comments in WT Docket No. 06-150 at 11; NENA Comments in WT Docket No. 06-150 at 1-2; Qualcomm Comments in WT Docket No. 06-150 at 24 (supporting application of E911 **to** both auctioned and previously unauctioned spectrum); U.S. Cellular Comments at 18 **(same);** TIA Comments in **WT** Docket No. 94-102 at 9-10; T-Mobile Reply at 6.

[286] ***See*** **CTIA** Comments in WT Docket No. 06-150 at 21

[287] ***See*** NENA Comments in **WT** Docket No. *06-150* at 2

[288] ***See, e.g.***, CTIA Comments in WT Docket No. 06-150 at 21; Dobson Comments in WT Docket No. 06-150 at 11; TIA Comments in WT Docket No. 06-150 at 9; U.S. Cellular Comments **in** WT Docket No. 06-150 at 19.

[289] ***See*** **Aloha** Comments in WT Docket No. 06-150 at **12;** CTIA Comments in **WT** Docket No. 06-150 at 21; Leap Comments in WT Docket No. 06-150 at 11; U.S. Cellular Comments in **WT** Docket No. 06-150 at 19; T-Mobile Reply Comments in WT Docket No. 06-150 at 6.

does to services currently subject to the requirements.[290] TIA cautions against application of E911 to all services in the 700 MHz Commercial Services Band because some services might not meet the four *E911 Scope Order* criteria?"

127. The Rural Telecommunications Group (RTG) opposes any extension of 911/E911 requirements to the 700 MHz Commercial Services Band at this time.[292] RTG argues that imposition of 911/E911 in this band is "premature" because "[i]t is not yet clear what services will be provided or what technology will be used to provide them."[293] RTG argues that "[t]he technologies chosen to deploy 700 MHz may or may not be able to comply" with the 911/E911 requirements, and in particular, imposing 911/E911 requirements might "completely stifle rural deployments."[294] RTG asserts, for example, that many GSM rural carriers already subject to the E911 requirements could not meet the requisite accuracy standards "because no GPS handsets are available for GSM and cell sites tend to be deployed in a 'string of pearls' along highways."[295] RTG therefore recommends that the Commission should "wait to see how services develop and to revisit the issue in the future."[296]

128. Two commenters also raise issues regarding E911 and voice over internet protocol (VoIP) services. First, TIA argues that, where a wireless carrier provides broadband network access to a subscriber who then obtains interconnected voice services from a third party VoIP provider, the 911 obligation should be imposed on the VoIP provider, not the network access provider, pursuant to the Commission's E911 requirements for VoIP.[297] CTIA, addressing the situation where the wireless access provider and VoIP provider are the same, suggests that the Commission take this opportunity to address a petition filed by T-Mobile seeking clarification of the Commission's VoIP *E911 Order*.[298] T-Mobile's petition asks the Commission to clarify that, under the VoIP *E911 Order*, providers of mobile interconnected VoIP service may deliver location information for VoIP 911 calls to the PSAP using latitude and longitude coordinates in the same fashion as is done for wireless 911 calls?" In its comments, CTIA supports the requested clarification, and requests that, in this proceeding, the Commission establish more generally that mobile wireless providers offering interconnected VoIP services may meet their E911 obligations as VoIP providers through compliance with the 911/E911 requirements of § 20.18.[300]

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[290] *See* Aloha Comments in WT Docket No. 06-150 at 12 (700 MHz licensees should be subject to the same E911 requirements, "no more or less," as other licensees providing services where E911 obligations exist); Cingular Comments in WT Docket No. 06-150 at 15 (supporting application where services met the E911 *Scope Order* criteria); Qualcomm Comments in WT Docket No. 06-150 at 24.

[291] *See* TIA Comments in WT Docket No. 06-150 at 9-10.

[292] *See* RTG Comments in WT Docket No. 06-150 at 9.

[293] *Id.*

[294] RTG Comments in WT Docket No. 06-150 at 9-10.

[295] *Id.* at 10.

[296] *Id.*

[297] *See* TIA Comments in WT Docket No. 06-150 at 10.

[298] *See* CTIA Comments in WT Docket No. 06-150 at 22; IP-Enabled Services, E911 Requirements For IP-Enabled Service Providers, WC Docket No. 04-36, *First Report and Order and Notice of Proposed Rulemaking*, 20 FCC Rcd 10245 (2005) *(VoIP E911 Order), petition for review denied*, Nuvio Corp. v. FCC, 2006 WL 3688755 (D.C. Cir. 2006).

[299] *See* Petition of T-Mobile USA, Inc. For Clarification, WC Docket No. 04-36, filed July 29, 2006

[300] *See* CTIA Comments in WT Docket No. 06-150 at 22.

129. Discussion. We conclude that § 20.18(a) should be amended to apply 911/E911 requirements to all commercial mobile radio services (CMRS), including services licensed in the 700 MHz Commercial Services Band and the AWS-1 bands, to the same extent as they apply to wireless services currently listed in the scope provision of § 20.18.[301] Thus, CMRS providers must comply with the 911/E911 requirements solely to the extent that they "[offer] real-time, two way switched voice service that is interconnected with the public switched network and utilize an in-network-switching facility which enables the provider to reuse frequencies and accomplish seamless hand-offs of subscriber calls" (hereinafter, the "§ 20.18(a) criteria").[302] We will continue, however, to exclude MSS from § 20.18 in conformity with the Commission's decision in the ***E911 Scope Order***.[303]

130. The public interest generally requires wireless services meeting the § 20.18(a) criteria to provide 911/E911 service, even if not expressly enumerated.[304] The Commission has observed previously that "911 service is critical to our Nation's ability to respond to a host of crises,"[305] and that E911 in particular "saves lives and property by helping emergency services personnel do their jobs more quickly and efficiently."[306] We also take note of Congress's finding in the "Ensuring Needed Help Arrives Near Callers Employing 911 Act of 2004" that "for the sake of our Nation's homeland security and public safety, a universal emergency telephone number (911) that is enhanced with the most modern and state-of-the-art telecommunications capabilities possible should be available to all citizens in all regions of the Nation" and that "enhanced 911 is a high national priority."[307] Accordingly, it is critical that mobile telephone services meeting the § 20.18(a) criteria continue to offer 911 and E911 as they make use of new frequencies.

131. We further find that commercial mobile radio services meeting the 20.18(a) criteria will also meet the four criteria set forth in the ***E911 Scope Order***. In particular, we find that these services are likely to compete with services provided pursuant to cellular, broadband PCS, or 800/900 MHz SMR licenses, and that subscribers will have similar expectations of emergency access from services meeting the § 20.18(a) criteria regardless of what frequencies carriers are using to provide them.[308] Indeed, we have found that for many Americans, "the ability to call for help in an emergency is the principal reason they own a wireless phone."[309] This should be no less true for a consumer calling from a phone utilizing

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[301] ***See*** 47 C.F.R. § 20.18

[302] 47 C.F.R. § 20.18(a)

[303] The Commission initially excluded MSS from § 20.18 in the ***E911 Report and Order***. ***See E911 Report and Order***, 11 FCC Rcd at 18718 ¶ 83. In the ***E911 Scope Order***, upon revisiting the issue, the Commission recognized that MSS operators continued to faced unique difficulties in implementing 911 and E911 obligations, and therefore declined to apply the obligations of $20.18 and instead imposed a separate, limited 911 requirement specifically for MSS, including a requirement to establish emergency call centers. ***See E911 Scope Order***, 18 FCC Rcd at 25347-57 ¶¶ 20-39.

[304] ***E911 Report and Order***, 11 FCC Rcd at 18718 ¶ 83.

[305] ***See E911 Scope Order***, 18 FCC Rcd at 25341 ¶ 1

[306] ***E911 Report and Order***, 11 FCC Rcd at 18678 ¶ 3, 18679 ¶ 5

[307] 47 U.S.C. § 942 note

[308] ***See*** Cingular Comments in WT Docket No. 06-150 at 16("[c]onsumers' expectations and the public interest clearly would be served by extending these rules to 700 MHz licensees"); Leap at 11 ("It is logical, equitable, and indeed, vitally important to consumers that all CMRS services – whether operating in spectrum allocated for PCS, AWS, 700 MHz or some other services, be made subject to the same emergency access and compatibility requirements.").

[309] Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems, Phase II Compliance Deadlines for Non-Nationwide CMRS Carriers, CC Docket No. 94-102, ***Order*** to ***Stay***, 17 FCC Rcd 14841, 14842 ¶ 4 (2002).

700 MHz, AWS, or any other spectrum. Further, we find no support in the record, and consider it unlikely, that additional, terrestrial-based commercial mobile radio services meeting all of the criteria of § 20.18(a) will present any special technical obstacles, as compared to currently deployed services, that would warrant modifications of the 911/E911 requirements?" To the extent that such obstacles become apparent as new services are established, appropriate modifications can be considered at that time. We therefore agree with the commenters that the extension of the 911/E911 requirements under § 20.18 to all commercial mobile radio services meeting the § 20.18(a) criteria is justified by the interest in competitive neutrality as well as by the critical public safety benefits of 911/E911.[311]

132. We find that RTG's concerns regarding the possible difficulty of implementing 911/E911 in rural areas do not support delaying the extension of the 911/E911 provisioning requirements to other bands and services. RTG bases its argument on conjecture only – that technology being developed for 700 MHz may not support provision of E911 service. Given the critical importance of E911 to consumers and the public safety community, we cannot accept this unsupported assertion as a basis for delaying imposition of E911 requirements and putting at risk the safety of life and property. In this regard, we agree with NENA that deployment of E911 service is most effectively accomplished by establishing E911 requirements at the outset of establishing service in new bands.[312] We also note that, notwithstanding RTG's reference to existing GSM deployments, to the extent that carriers pursue a handset-based solution, all subscribers that obtain service on the new bands should have compliant handsets from the beginning."'

133. Blooston, while supporting the extension of 911/E911 to the 700 MHz Commercial Services Band, caution that the development of 700 MHz equipment is not as far along as it is for broadband PCS and argue that the timetables for E911 compliance should not "put licensees in a compliance quandary when they have little or no control over the equipment manufacturing process."[314] We note, however, that while manufacturers of handset and voice network technology have no regulatory obligation under § 20.18 to produce E911-compliant products, they do have strong financial incentives to do so if they wish to sell their products to the carriers subject to § 20.18.[315] For example, because CMRS providers that adopt a handset-based solution may activate only location-capable handsets, manufacturers that do not provide location-capable handsets for the new bands may significantly diminish their access to the handset market. Conversely, as noted above, requiring carriers to incorporate E911 technology in

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[310] The Commission bas stated, in connection with AWS, that an "important goal in the AWS proceeding is to try, to the extent possible, to provide the same technical criteria for AWS equipment as currently exist for broadband PCS." *AWS-1 Order on Reconsideration,* 20 FCC Rcd at ¶ 42. *See also* Aloha Comments in WT Docket No. 06-150 at 10 ("[t]here is nothing peculiar about 700 MHz spectrum that warrants unique treatment with regard to E911 matters").

[311] *See, e.g.*, CTIA Comments in WT Docket No. 06-150 at 21 (applying E911 to 700 MHz is dictated by both public safety determinations and principles of regulatory parity); T-Mobile Reply Comments in WT Docket No. 06-150 at 6 ("Not only would the public interest be served . . . , the regulatory certainty created through application of uniform rules to all similarly-situated providers would benefit the licensees themselves.").

[312] See NENA Comments in WT Docket No. 06-150 at 2 ("Instead of trying to retrofit E9-1-1 to services long after their introduction, as occurred with conventional cellular telephony, it would be better to forewarn entrepreneurs of emergency calling access obligations that will apply to 700 MHz services meeting the chosen regulatory criteria.")

[113] *See* 47 C.F.R. § 20.18(g)(1)(iv) (requiring that, for carriers implementing a handset-based solution, 100 percent of all new digital handsets activated be location-capable).

[314] Blooston Comments in WT Docket No. 06-ISO at 9.

[315] *Cf. E911 Scope Order,* 18 FCC Rcd at 25381 ¶ 101 ("[CMRS providers] typically decide which handsets to offer for use with their service. These are the entities that provide consumers wireless voice service. Therefore, by placing the obligation on these entities, we ensure that the handsets they offer are capable of meeting the enhanced 911 requirements contained in our rules. We, therefore, do not need to impose a separate obligation on disposable phone manufacturers.").

their initial systems also benefits the carriers, because it permits them to adopt 911/E911 without having to modify or replace non-compliant technology.

134. Further, because we have established 911/E911 obligations well before the auctioning of licenses in the 700 MHz Commercial Services Band and not long after the completion of the auction of the AWS-1 bands, we are satisfied that manufacturers will have adequate opportunity to produce compliant solutions for these new services by the time service providers are ready to begin incorporating them. This view is further supported by the fact that the manufacturing interests that commented on the 911/E911 issue, Qualcomm and TIA,[316] both fully supported extension of 911/E911 to the 700 MHz Band."[317] Their support for the 911/E911 extension gives us confidence that manufacturers of communications technology will provide E911-compliant products in a timely fashion, and that new services will not, therefore, be significantly delayed by the need to comply with the 911/E911 mandate. Accordingly, we conclude that § 20.18(a) should be amended to apply 911/E911 requirements to all CMRS providers, other than MSS providers, regardless of the frequencies over which the service is provided. We will continue to exclude MSS, however, and we further emphasize that, by this extension, we do not mean to override any prior Commission decision specifically excluding a particular service, like local SMR, from the obligation to provide 911/E911.

135. While we extend the scope of 911/E911 by deleting references to specific services and spectrum bands, we do not modify the current service criteria set forth in § 20.18(a) to incorporate the four criteria enumerated in the ***E911*** Scope ***Order.*** As noted above, the four criteria for analyzing whether a service should be subject to 911/E911 include whether (1) the service 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 CMRS or wireline local exchange service; and (4) it is technically and operationally feasible for the service or device to support E911. While the Commission found the criteria useful analyhcally to "ensur[e] technological and competitive neutrality," and to determine whether particular services should be subject to 911 requirements when a question arises, they were never intended to be definitive and exclusive. Rather, the Commission stated in the ***E911*** Scope ***Order*** that it would "also consider other factors to inform [its] decision" of whether a service would be subject to 911/E911.[318] We therefore retain the current § 20.18(a) criteria to define the scope of the 911/E911 obligation under § 20.18. We will continue, however, to consider the factors identified in the ***E911*** Scope ***Order*** when analyzing whether 911/E911 obligations should be applied to a particular new CMRS service, if a significant question arises as to whether the § 20.18(a) criteria apply.

136. We reject CTIA's request to resolve the T-Mobile Petition for Clarification regarding whether compliance with § 20.18 will also satisfy any obligations under the ***VoIP E911 Order.*** We will resolve that petition at a later time in the proceeding in which it has been filed. We emphasize, however, that providers of a commercial mobile service meeting the criteria specified in § 20.18(a) are required to comply with the E911 requirements of that section, regardless of what spectrum and technology is being used to provide the service. Conversely, only wireless services that satisfy the § 20.18(a) criteria are subject to the requirements of that section. Thus, if a provider offers a non-voice service, this will not trigger the $20.18 requirements for that provider."[319]

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[316] TIA states that it is "the leading trade association for the information and communications technology [] industry, with 600 member companies that manufacture or supply the products and services used in global communications across all technology platforms." TIA Comments in WT Docket No. 06-150 at 2.

[317] Qualcomm Comments in WT Docket No. 06-150 at 24; TIA Comments in WT Docket No. 06-150 at 9.

[318] ***E911*** Scope ***Order, 18*** FCC Rcd at 25347 ¶ 19.

[319] ***See also E911 Report and Order,*** 11 FCC Rcd at 18717-18 ¶ 82 (declining to extend E911 to two-way non-voice services). We note that service providers offering interconnected VoIP are independently subject to E911 (continued...)

(vu) Hearing Aid-Compatible Wireless Handsets

137. Background. In addition to proposing the extension of 911/E911 requirements to services provided in new spectrum bands, the Commission also sought comment on whether it should similarly extend the hearing aid compatibility requirements under § 20.19.[320] The requirements of § 20.19 were established by the Commission pursuant to the Hearing Aid Compatibility Act of 1988 and a determination by the Commission in 2003 to lift the blanket exemption under that law for digital wireless telephones.[321] Section 20.19 of the Commission's rules requires the providers of certain enumerated wireless services and the manufacturers of handsets used in those services to offer hearing aid-compatible handset models to their customers.[322] As with the 911/E911 obligations under § 20.18, the hearing aid compatibility requirements under § 20.19 currently apply only to providers of broadband PCS, Cellular Radio Telephone Service, and certain SMR providers in the 8001900 MHz bands, and only to the extent that these providers "offerreal-time, two-way switched voice or data service that is interconnected with the public switched network and utilizes an in-network switching facility that enables the provider to reuse frequencies and accomplish seamless hand-offs of subscriber calls."[323] The entities subject to § 20.19 must begin offering a specific number of hearing aid-compatible digital wireless handset models by specific dates unless they fall under de *minimis* exceptions.[324] In addition, both camers and manufacturers are subject to certain labeling requirements in connection with the hearing aid-compatible handsets that they offer.[325]

138. Pursuant to the statutory requirement that there be "established technical standards,"[326] a handset must be certified as meeting a certain level of compatibility under the American National Standards Institute (ANSI) C63.19 standard."' More specifically, section 20.19(b) of the Commission's rules provides that a wireless handset is deemed hearing aid-compatible if, at minimum, it receives a U3 rating for radio frequency interference and a U3T rating for inductive coupling "as set forth in the standard document ANSI C63.19-2001[,] 'American National Standard for Methods of Measurement of

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obligations under 47 C.F.R. $9.5, including such providers using Part 15 unlicensed radio frequency devices to provide such services. *See VoIP* E911 *Order,* 20 FCC Rcd at 10257-58¶ 24 (defining the scope of VoIP E911 obligations), 10259¶ 25 (E911 rule applies to "providers of all interconnected VoIP services"); *see also* CTIA Comments in WT Docket No. 06-150 at 22 (noting that wireless providers are offering "IP-enabled services to their subscribers, with VoIP services integrated with mobile devices."); see *also* Petition of T-Mobile USA, Inc. For Clarification, WC Docket No. 04-36, filed July 29,2006, at ii ("There are promising technologies using unlicensed spectrum in development that may enable the offering *of* VoIP services in conjunction with CMRS.").

[320] *700 MHz Commercial Services Notice,* 21 FCC Rcd at 9390 ¶¶ 104-06.

[321] See Hearing Aid Compatibility Act of 1988, Pub. L. No. 100-394,102 Stat. 976 (1988), codified at 47 U.S.C. § 610; Section 68.4(a) of the Commission's Rules Governing Hearing Aid-Compatible Telephones, *Report and Order,* WT Docket No. 01-309, 18 FCC Rcd 16753 (2003); *Erratum,* 18 FCC Rcd 18047 (2003) (*Hearing Aid Compatibility Order).*

[322] 47 C.F.R. § 20.19.

[323] 47 C.F.R. § 20.19(a).

[324] See 47 C.F.R. § 20.19(c), (d). See *also* Section 68.4(a) of the Commission's Rules Governing Hearing Aid-Compatible Telepbones, *Report and Order,* WT Docket No. 01-309, 18 FCC Rcd 16753 (2003); *Erratum,* 18 FCC Rcd 18047 (2003) *(Hearing Aid Compatibility Order); Order on Reconsideration and Further Notice* d *Proposed Rulemaking,* 20 FCC Rcd 11221 (2005).

[325] See *47* C.F.R. § *20.19*(f).

[326] 47 U.S.C. § 610(b)(1).

[327] 47 C.F.R. § 20.19(b)(1), (2).