

licensees in the 1710-1755 and 2110-2155 MHz bands would be free to provide common carrier, non-common carrier, or private internal communications or any combination of these services in a single license. Under this approach, along with being authorized to provide private internal communications, applicants would be permitted to select common carrier status as well as non-common carrier status for authorization in a single license, rather than having to choose between common and non-common carrier status. We proposed that applicants and licensees in the 1710-1755 and 2110-2155 MHz bands be required to indicate a regulatory status based on any services they choose to provide, and that if a licensee were to change the service or services it offers such that its regulatory status would change, the licensee must notify the Commission.

58. *Discussion:* We adopt our regulatory status proposal and require licensees in the 1710-1755 and 2110-2155 MHz bands to comply with the regulatory status provisions of section 27.10 of the Commission's rules.¹⁴⁸ Under this flexible regulatory approach, licensees in the 1710-1755 and 2110-2155 MHz bands may provide common carrier, non-common carrier, or private internal communications or any combination of these services under a single license at any time anywhere within their licensed service areas.¹⁴⁹ Similarly, licensees may use this spectrum to provide public safety services, although this spectrum has not been designated as exclusive public safety radio service spectrum. This broad licensing framework will encourage licensees to develop new and innovative services with minimal regulatory restraint. However, since the 1710-1755 and 2110-2155 MHz bands have not been allocated for broadcast services, licensees may not use these bands for broadcast services.

59. To fulfill our enforcement obligations and to ensure compliance with Titles II and III of the Communications Act, we will require all licensees to identify the regulatory status of the service(s) they intend to provide. Consistent with section 27.10 of the Commission's Rules, licensees in the 1710-1755 and 2110-2155 MHz bands will not be required to describe their particular services, but only to designate the regulatory status of the service(s). We remind potential applicants that an election to provide service on a common carrier basis requires that the elements of common carriage be present;¹⁵⁰ otherwise the applicant must choose non-common carrier status.¹⁵¹ If potential applicants are unsure of the nature of their services and their classification as common carrier services, they may submit a petition with their applications, or at any time, requesting clarification and including service descriptions for that purpose.¹⁵²

¹⁴⁸ 47 C.F.R. § 27.10.

¹⁴⁹ See FCC Form 601.

¹⁵⁰ See 47 U.S.C. § 153(44) ("A telecommunications carrier shall be treated as a common carrier under this Act . . ."); see also 47 U.S.C. § 332(C)(1)(A) ("A person engaged in the provision of a service that is a commercial mobile service shall, insofar as such person is so engaged, be treated as a common carrier for purposes of this Act . . .").

¹⁵¹ See Amendment of the Commission's Rules to Establish Part 27, the Wireless Communications Service (WCS), GN Docket No. 96-228, *Report and Order*, 12 FCC Rcd 10785, 10848 ¶¶ 121-22 (1997) (*Part 27 Report and Order*). The Commission examined services in the *LMDS Second Report and Order* and explained that any video programming service would be treated as a non-common carrier service. Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services, CC Docket No. 92-297, *Second Report and Order, Order on Reconsideration, and Fifth Notice of Proposed Rulemaking*, 12 FCC Rcd 12545, 12639-41 ¶¶ 213-15 (1997) (*LMDS Second Report and Order*); *aff'd, Melcher v. FCC*, 134 F.3d 1143 (D.C. Cir. 1998).

¹⁵² *Part 27 Report and Order*, 12 FCC Rcd at 10848 ¶ 121.

60. We also determine that if a licensee elects to change the service or services it offers such that its regulatory status would change, the licensee must notify the Commission.¹⁵³ A change in a licensee's regulatory status will not require prior Commission authorization, provided the licensee is in compliance with the foreign ownership requirements of section 310(b) of the Communications Act that apply as a result of the change.¹⁵⁴ We require notification within 30 days of a change made without prior Commission approval. We note, however, that a different time period may apply, as determined by the Commission, where the change results in the discontinuance, reduction, or impairment of the existing service.¹⁵⁵

2. Ownership Restrictions

(a) Foreign Ownership

61. *Background:* In the *AWS Service Rules NPRM*, we observed that sections 310(a) and 310(b) of the Communications Act, as modified by the Telecommunications Act of 1996, impose foreign ownership and citizenship requirements that restrict the issuance of licenses to certain applicants.¹⁵⁶ We noted that section 27.12 of our rules implements these restrictions. In terms of filing applications, we proposed that common carriers and non-common carriers be subject to the same reporting obligations. We sought comment on this proposal.

62. *Discussion:* Based on our statutory responsibilities, we determine that the provisions of section 27.12 of the Commission's rules apply to applicants applying for licenses in the 1710-1755 and 2110-2155 MHz bands.¹⁵⁷ Section 27.12 implements section 310 of the Communications Act, as modified by the Telecommunications Act of 1996.¹⁵⁸ All applicants are subject to section 310(a), which prohibits licenses from being "granted to or held by any foreign government or the representative thereof."¹⁵⁹ In addition, as applicable here, an applicant requesting authorization for a common carrier, aeronautical en route or aeronautical fixed service station license would also be subject to the foreign ownership requirements of section 310(b).

63. We did not receive any comments opposing our proposal that common carriers and non-common carriers be subject to the same reporting obligations. In filing applications, therefore, common carriers and non-common carriers will not be subject to varied reporting obligations. By establishing parity in reporting obligations, however, we do not establish a single, substantive standard for compliance. For example, we do not and would not deny a license to an applicant requesting authorization exclusively to provide services not enumerated in section 310(b), solely because its foreign ownership would disqualify it from receiving a license if the applicant had applied for a license to provide the services enumerated in section 310(b). Because we are adopting a flexible approach to licensing these bands, we determine that all licensees will be subject to the same requirements to file changes in foreign ownership information to the extent required by our Part 27 rules.

¹⁵³ See 47 C.F.R. § 27.10(d). See also 47 C.F.R. § 27.66(a)-(b).

¹⁵⁴ 47 U.S.C. § 310(b); see *infra* ¶¶ 61-63.

¹⁵⁵ See 47 C.F.R. § 27.66(a)-(b).

¹⁵⁶ *AWS Service Rules NPRM*, 17 FCC Rcd at 24151-52 ¶ 39.

¹⁵⁷ 47 C.F.R. § 27.12.

¹⁵⁸ 47 U.S.C. § 310(a),(b).

¹⁵⁹ 47 U.S.C. § 310(a).

(b) Spectrum Aggregation Limits; Eligibility Restrictions

64. *Background:* In the *AWS Service Rules NPRM*, we noted that the Commission had previously decided in 2001 to “sunset” the Commercial Mobile Radio Service (CMRS) spectrum aggregation limit, or “spectrum cap,”¹⁶⁰ effective January 1, 2003.¹⁶¹ At the time it decided to sunset the cap, the Commission also stated that it would continue to pursue the objectives of “discourag[ing] anticompetitive behavior while at the same time maintaining incentives for innovation and efficiency,”¹⁶² but would do so by performing case-by-case reviews of proposed CMRS spectrum transactions rather than by applying a prophylactic rule.¹⁶³ The Commission also found that “to the extent that the initial distribution of spectrum through auction is an issue in the future, that is also amenable to case-by-case review, in the sense that [the Commission] can shape the initial distribution through the service rules adopted with respect to specific auctions.”¹⁶⁴

65. Since the CMRS spectrum cap was designated to sunset prior to the auctioning of spectrum in the 1710-1755 and 2110-2155 MHz bands, we observed in the *AWS Service Rules NPRM* that these bands would not be subject to any generalized limits on spectrum aggregation, and tentatively concluded that we would not need to adopt any band-specific service rules addressing spectrum aggregation limits applicable to the initial licensing of these bands.¹⁶⁵ However, we did seek comment on whether any such limits are necessary or appropriate.¹⁶⁶ In particular, we sought comment on whether we should limit the amount of spectrum in these bands that any one entity (or related entities) may acquire at auction in the same geographic licensing area.¹⁶⁷

66. We further noted that in the initial licensing of some major new services, the Commission has limited eligibility beyond the requirements of section 310, in order to maximize competition by ensuring that at least some licenses go to new entrants.¹⁶⁸ However, we noted that given the current state of competition in the CMRS industry, we did not believe that such restrictions were necessary

¹⁶⁰ See 47 C.F.R. § 20.6.

¹⁶¹ *AWS Service Rules NPRM*, 17 FCC Rcd at 24152 ¶ 40 (citing 2000 Biennial Regulatory Review: Spectrum Aggregation Limits for Commercial Mobile Radio Services, WT Docket No. 01-14, *Report and Order*, 16 FCC Rcd 22668 (2001) (*recon. pending*) (*Spectrum Cap Order*)).

¹⁶² *Id.* at 24152 ¶ 40 (citing *Spectrum Cap Order*, 16 FCC Rcd at 22679 ¶ 26 n.71 (citing Implementation of Sections 3(n) and 332 of the Communications Act—Regulatory Treatment of Mobile Services, GN Docket No. 93-252, *Third Report and Order*, 9 FCC Rcd 7988, 8105 ¶ 251 (1993))).

¹⁶³ *Id.* at 24152 ¶ 40 (citing *Spectrum Cap Order*, 16 FCC Rcd at 22693-94 ¶ 50).

¹⁶⁴ *Id.* at 24152 ¶ 40 (citing *Spectrum Cap Order*, 16 FCC Rcd at 22696 ¶ 54).

¹⁶⁵ *Id.* at 24152 ¶ 41.

¹⁶⁶ *Id.*

¹⁶⁷ *Id.*

¹⁶⁸ *Id.* at 24152-53 ¶ 42. For example, the Commission limited eligibility for the PCS A and B blocks to entities that were not licensees of cellular systems in the same area. See Amendment of the Commission’s Rules to Establish New Personal Communications Services, GEN Docket No. 90-314, *Second Report and Order*, 8 FCC Rcd 7700, 7744-45 ¶ 105 (1993). In granting the Commission authority in section 309(j) of the Communications Act to auction wireless spectrum and to impose eligibility requirements as appropriate, Congress also directed the Commission to exercise that authority so as to “promot[e] . . . economic opportunity and competition.” See 47 U.S.C. § 309(j)(3).

for the 1710-1755 and 2110-2155 MHz bands and sought comment on this view.¹⁶⁹ We also inquired as to whether there should be any set-asides for new entrants or other types of applicants or whether there should be any restrictions barring entities (such as incumbent cellular or PCS providers) from acquiring licenses in these bands, other than the foreign ownership requirements set forth in section 310 of the Communications Act.¹⁷⁰

67. *Discussion:* We agree with those commenters who oppose a spectrum aggregation limit for the 1710-1755 and 2110-2155 MHz bands,¹⁷¹ and we will impose no specific aggregation limitations on this spectrum. We do not agree with U.S. Cellular and RCA, who argued in favor of restricting the initial aggregation of spectrum by any winning bidder to 20 or 30 megahertz in the same geographic licensing area.¹⁷² We believe that entities should have the unrestricted flexibility to aggregate spectrum in these bands. Parties should be afforded the flexibility at auction and in the secondary market to aggregate sufficient unencumbered spectrum for them to make available new and innovative service to the public. As we recently recognized in the *Eighth Annual CMRS Competition Report*, the CMRS industry continues to experience “increased service availability, lower prices for consumers, innovations, and a wider variety of service offerings,”¹⁷³ and thus we concluded that there is effective competition in the CMRS market.¹⁷⁴ We also concluded that competition for mobile data products is developing successfully, as evidenced by the “multitude of mobile data services, service providers, pricing plans and devices available to consumers.”¹⁷⁵ Given the robust state of competition in the CMRS market, we do not feel it is necessary to impose an initial aggregation limit on these spectrum bands. We prefer to provide potential licensees with maximum flexibility in these allocations.

68. We also will not set aside spectrum for designated entities or other categories of bidders. Our objectives of ensuring both efficient use of spectrum and diversity of licensees can best be achieved by adopting a variety of license areas and spectrum block sizes, and ensuring the ability of licensees to partition and disaggregate their licenses and fully participate in the secondary spectrum markets. The adoption of spectrum leasing policies with respect to this spectrum should facilitate the ability of wireless licensees to lease spectrum usage rights to third parties.¹⁷⁶ In addition, by adopting some smaller geographic licensing areas and some smaller spectrum block sizes, we believe we will encourage participation by smaller and rural entities, without the necessity of adopting set-asides or eligibility restrictions, because such licenses will be less expensive and should more closely mirror such bidders needs. We do not see a need to supplement the incentives for small business participation provided elsewhere in this order by foreclosing any of the licenses to other bidders. As

¹⁶⁹ *Id.*

¹⁷⁰ *Id.*

¹⁷¹ See AT&T Wireless Comments at 12; CTIA Comments at ii, 7-8; Ericsson Comments at 5; AT&T Wireless Reply Comments at 3-4; Cingular Reply Comments at 8.

¹⁷² See US Cellular Comments at 3, 10-12; RCA Comments at 5.

¹⁷³ Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services, WT Docket No. 02-379, *Eighth Report*, at ¶ 17, FCC 03-150, rel. July 14, 2003 (*Eighth Annual CMRS Competition Report*).

¹⁷⁴ *Id.* at ¶ 12.

¹⁷⁵ *Id.* at ¶ 219.

¹⁷⁶ See *supra* ¶ 26 for a discussion of the application of spectrum leasing policies adopted in the *Secondary Markets Report and Order*.

we stated in the *AWS Service Rules NPRM*, "opening these bands to as wide a range of applicants as possible would encourage entrepreneurial efforts to develop new technologies and services, while helping to ensure efficient use of this spectrum."¹⁷⁷ We also believe that the bidding credits that we are adopting below will encourage participation by small businesses and entities intending to serve rural areas (including tribal lands), and that these bidding credits further mitigate the need for adopting set-asides or eligibility restrictions.¹⁷⁸

3. License Term; Renewal Expectancy

69. *Background:* In the *AWS Service Rules NPRM*, we proposed a 10-year license term for licensees in the 1710-1755 and 2110-2155 MHz bands, with a renewal expectancy similar to that afforded PCS, cellular, and Part 27 licensees.¹⁷⁹ We stated that a 10-year license term, combined with a renewal expectancy, would help to provide a stable regulatory environment that would be attractive to investors, and thereby encourage development of these frequency bands. We sought comment, however, on whether a license term of longer than 10 years would be appropriate to achieve these goals and better serve the public interest.

70. *Discussion:* Based on the record in this proceeding, we will establish an initial license term for licensees in the 1710-1755 and 2110-2155 MHz bands of 15 years and subsequent renewal terms of 10 years, and will modify section 27.13 of our rules to reflect this determination.¹⁸⁰ AT&T Wireless, Cingular, CTIA, Ericsson, RCA, and Verizon Wireless argue that given the relocation and band clearance issues associated with these bands, it makes sense to adjust our usual ten-year license term.¹⁸¹ We agree with these commenters that the circumstances surrounding the future development and deployment of services in these bands warrant an initial license term longer than 10 years in order to encourage the investment necessary to develop these bands. We believe that an initial 15-year license term followed by 10-year renewal terms will provide investors with the necessary assurances that a sufficient amount of time will be available to recoup the initial costs of developing and deploying advanced wireless networks in the these bands.¹⁸²

71. We also agree with the commenters that licensees in the 1710-1755 and 2110-2155 MHz bands should have the right to the same renewal expectancy as other Part 27 licensees and, therefore, will apply the renewal expectancy provisions of section 27.14 of our rules applicable to these licensees.¹⁸³ This section provides that a renewal applicant receives a preference or renewal expectancy if the applicant has provided substantial service during its past license term and has complied with the Communications Act and applicable Commission rules and policies.¹⁸⁴ According

¹⁷⁷ *AWS Service Rules NPRM*, 17 FCC Rcd at 24153 ¶ 42.

¹⁷⁸ See *infra* ¶¶ 144-149.

¹⁷⁹ *AWS Service Rules NPRM*, 17 FCC Rcd at 24153-54 ¶ 43.

¹⁸⁰ 47 C.F.R. § 27.13.

¹⁸¹ CTIA Comments at 8-9; Ericsson Comments at 5; RCA Comments at 8; Verizon Wireless Comments at 4-5; AT&T Wireless Reply Comments at 6-7; Cingular Reply Comments at 6. See also *supra* ¶¶ 47-56.

¹⁸² Since the relocation process is expected to be completed over the next few years, the 15-year license term will only apply to initial licenses issued before December 31, 2009. After this date the reason for having an initial license term longer than the usual 10-year license term will no longer be valid.

¹⁸³ CTIA Comments at 8-9; Ericsson Comments at 5; RCA Comments at 8; Cingular Reply Comments at 6.

¹⁸⁴ 47 C.F.R. § 27.14.

to this section, substantial service is defined as "service which is sound, favorable, and substantially above a level of mediocre service which just might minimally warrant renewal."¹⁸⁵ An initial 15-year license term, with subsequent 10-year license renewal periods, combined with the renewal expectancy provisions of section 27.14, will help to provide a stable regulatory environment that will be attractive to investors, and thereby encourage development of these frequency bands.

72. In the event that a license in the 1710-1755 and 2110-2155 MHz bands is partitioned or disaggregated, any partitionee or disaggregatee will be authorized to hold its license for the remainder of the partitioner's or disaggregator's license term, and will be eligible for a renewal expectancy on the same basis as other licensees. This approach is similar to the partitioning provisions the Commission adopted for MDS,¹⁸⁶ for the Upper 700 MHz licensees,¹⁸⁷ and for broadband PCS licensees.¹⁸⁸ Specifically, we do not believe that a licensee, by partitioning or disaggregation, should be able to confer greater rights than it was awarded under the terms of its license grant.

4. Performance Requirements

73. *Background:* In the *AWS Service Rules NPRM*, we sought comment on whether licensees in the 1710-1755 and 2110-2155 MHz bands should be subject to any performance requirements in addition to a substantial service requirement at license renewal.¹⁸⁹ We noted that in some services the Commission has imposed minimum coverage requirements on licensees to ensure that spectrum is used effectively and service is implemented promptly, and in other services the Commission has identified specific coverage criteria as meeting a substantial service requirement, but has allowed licensees to make alternative showings of substantial service if they do not meet these criteria.¹⁹⁰ We therefore sought comment on whether specific coverage requirements should be established for these bands, or whether coverage criteria should be adopted as one means, but not the exclusive means, of meeting a substantial service requirement.¹⁹¹ We also sought comment on whether licensees should be subject to interim performance requirements prior to the end of the license term.¹⁹²

74. With respect to partitioned or disaggregated licenses, we sought comment on whether a partitionee or disaggregatee should be bound by the standard the Commission adopts in this proceeding. We further asked for comment on whether an adjustment to either a substantial service requirement or a minimum coverage requirement must be made in order to account for the Federal

¹⁸⁵ 47 C.F.R. § 27.14(a).

¹⁸⁶ See Amendment of Parts 21 and 74 of the Commission's Rules With Regard to Filing Procedures in the Multipoint Distribution Service and in the Instructional Television Fixed Service, MM Docket No. 94-131, *Report and Order*, 10 FCC Rcd 9589, 9614 ¶ 46 (1995).

¹⁸⁷ Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules, WT Docket No. 99-168, *First Report and Order*, 15 FCC Rcd 476, 506-08 ¶ 73-78 (2000) (*Upper 700 MHz First Report and Order*).

¹⁸⁸ See Geographic Partitioning and Spectrum Disaggregation by Commercial Mobile Radio Services Licensees and Implementation of Section 257 of the Communications Act—Elimination of Market Barriers, WT Docket No. 96-1148, *Report and Order and Further Notice of Proposed Rulemaking*, 11 FCC Rcd 21831, 21870 ¶¶ 76-77 (1996).

¹⁸⁹ *AWS Service Rules NPRM*, 17 FCC Rcd at 24154 ¶ 47.

¹⁹⁰ *Id.* at 24154 ¶ 47.

¹⁹¹ *Id.*

¹⁹² *Id.*

government's continued use of the 1710-1755 MHz band until 2004, or its operation of certain in-band facilities after that date.¹⁹³ We sought the views of commenters as to what action the Commission should take if a licensee does not comply with the adopted performance requirements. We proposed to apply Section 1.946(c),¹⁹⁴ which provides for the automatic termination of an authorization if a licensee fails to commence service or operations by the expiration of its license term. Lastly, in discussing the consequences that would flow from a licensee's failure to comply with its coverage requirements, we sought comment on whether the licensee should be prohibited from bidding on the geographic area license for the same territory in the future.¹⁹⁵

75. *Discussion:* We will apply the substantial service requirement in section 27.14(a) of the Commission's rules to the 1710-1755 and 2110-2155 MHz bands.¹⁹⁶ According to that provision, by the end of its license term a licensee must provide "substantial service," that is, service that is sound, favorable and substantially above the level of mediocre service that just might minimally warrant renewal. Compared to a construction standard, Section 27.14(a)'s substantial service requirement will provide licensees greater flexibility to determine how best to implement their business plans based on criteria demonstrating actual service to end users. This requirement provides the flexibility required to accommodate the new and innovative services that we believe will be forthcoming in these bands.

76. Furthermore, this substantial service standard is particularly appropriate here because the incumbency of federal and other current licensees in these bands would make specific benchmarks for all new licensees inequitable. In contrast, the standard we adopt today provides us with the flexibility to consider the particular circumstances of each licensee and how the level of incumbency has had an impact on a particular licensee's ability to build-out and commence service in its licensed area.¹⁹⁷

77. With respect to interim performance requirements, we agree with RCA, who was the sole commenter on this issue, and determine that a mid-license term requirement is not needed.¹⁹⁸ RCA points out that in many instances, licensees may meet an interim population coverage requirement by installing a small number of cell sites in a urban market, with few cell sites in rural markets. RCA argues that the public is not well served under such scenarios.¹⁹⁹ Therefore, in keeping with our desire to provide flexibility to licensees to implement their business plans, we will not adopt interim performance requirements.

78. Only one commenter responded to the Commission's request for comments on applying section 1.946(c) to those licensees who fail to meet their performance requirement. We agree with Petrocom and find that such a failure to meet the performance requirements should result in the

¹⁹³ *Id.* at 24155 ¶ 48.

¹⁹⁴ *Id.* at 24155 ¶ 49.

¹⁹⁵ *Id.*

¹⁹⁶ 47 C.F.R. § 27.14(a).

¹⁹⁷ See Facilitating the Provision of Spectrum-Based Services to Rural Areas and Promoting Opportunities for Rural Telephone Companies To Provide Spectrum-Based Services, WT Docket No. 02-381, *Notice of Proposed Rulemaking*, FCC 03-222, ¶ 38, rel. Oct. 6, 2003 (*Rural Services NPRM*) (if new wireless services are licensed using geographical areas, the Commission will examine the appropriateness of adopting a substantial service or alternative construction requirement for the new service at that time).

¹⁹⁸ See RCA Comments at 5-6.

¹⁹⁹ See *id.* at 5.

automatic termination of the license.²⁰⁰ This will serve the public interest by providing a clear and expeditious procedure for dealing with such licenses. In the event that a licensee loses its license for failure to comply with the Commission's performance requirements, in addition to forfeiting the license, the licensee will be ineligible to regain it. The adoption of such a rule is in the public interest and is consistent with the rules we have adopted for other services.²⁰¹

79. Finally, having received no comments on this issue, we adopt our proposal that in the event a license is partitioned or disaggregated, the partitionee or disaggregatee should also be bound by the substantial service requirement we adopt today. We will apply Section 27.15 of the Commission's rules, under which parties to partitioning or disaggregation agreements are provided with options as to how they may satisfy the requirements set forth in Section 27.14.²⁰²

5. Disaggregation and Partitioning of Spectrum

80. *Background:* In the *AWS Service Rules NPRM*, we noted that geographic partitioning and spectrum disaggregation is a tool utilized by the Commission that is intended to promote efficient spectrum use and economic opportunity for a wide variety of applicants, including small business, rural telephone, minority-owned, and women-owned applicants.²⁰³ We sought comment on whether licensees in the 1710-1755 and 2110-2155 MHz bands should be able to partition their service areas and disaggregate their spectrum and, if so, whether the partitioning and disaggregation provisions of section 27.15 of the Commission's rules should apply to these licensees.

81. *Discussion:* We determine that licensees in the 1710-1755 and 2110-2155 MHz bands should have the same ability to partition their service territories and disaggregate their spectrum as other wireless licensees and, therefore, we will allow them to partition their service territories and disaggregate their spectrum to the extent permitted by section 27.15 of our rules.²⁰⁴ Section 27.15(a)(2) provides that licensees may apply to partition their licensed geographic service areas or disaggregate their licensed spectrum at any time following the grant of their licenses.²⁰⁵ In addition, this section provides, among other obligations, that the partitioning licensee must include with its request a description of the partitioned service area and a calculation of the population of the partitioned service area and the licensed geographic service area.²⁰⁶ This section also contains provisions against unjust enrichment.²⁰⁷

82. The comments the Commission received on this issue support allowing licensees in the 1710-1755 and 2110-2155 MHz bands to partition and disaggregate. Cingular states that "the Commission should allow partitioning and disaggregation so that licensees may fine-tune their

²⁰⁰ See Petrocom Comments at 9.

²⁰¹ See 47 C.F.R. §§ 24.103(h), 24.203(b), and 27.14(a).

²⁰² 47 C.F.R. § 27.15.

²⁰³ *AWS Service Rules NPRM*, 17 FCC Rcd at 24155 ¶ 50. "Partitioning" is the assignment of geographic portions of a license along geopolitical or other boundaries. "Disaggregation" is the assignment of discrete portions of "blocks" of spectrum licensed to a geographic licensee or qualifying entity. Disaggregation allows for multiple transmitters in the same geographic area operated by different companies on adjacent frequencies.

²⁰⁴ CTIA Comments at 11-12; Cingular Reply Comments at 9-10; TDD Coalition Reply Comments at 19.

²⁰⁵ 47 C.F.R. § 27.15(a)(2); see also *Part 27 Report and Order*, 12 FCC Rcd at 10836-39 ¶¶ 96-103.

²⁰⁶ 47 C.F.R. § 27.15(b)(1).

²⁰⁷ 47 C.F.R. § 27.15(c)(1)(2); see also 47 C.F.R. § 1.2111.

licenses to satisfy their individual spectrum needs.”²⁰⁸ CTIA states that it “strongly supports permitting partitioning and disaggregation in the AWS bands.”²⁰⁹ CTIA asserts that “partitioning and disaggregation will allow licensees to use spectrum more efficiently, speed service to underserved areas, stimulate competition, provide increased flexibility to licensees and facilitate the acquisition of spectrum by a wide variety of entities, both large and small.”²¹⁰ As the commenters recognize, the Commission has permitted partitioning and disaggregation in other wireless services, including both Broadband and Narrowband PCS,²¹¹ Multipoint Distribution Service (MDS),²¹² 800 and 900 MHz Specialized Mobile Radio Service (SMR),²¹³ 39 GHz fixed point-to-point microwave,²¹⁴ Local Multipoint Distribution Service (LMDS),²¹⁵ Maritime Services,²¹⁶ and paging.²¹⁷ In addition, the Commission has permitted other Part 27 licensees, including 700 MHz and 2.3 GHz licensees, to partition and disaggregate.²¹⁸ Allowing licensees in the 1710-1755 and 2110-2155 MHz bands to have the same partitioning and disaggregation rights as other wireless licensees, including other Part 27 licensees, ensures regulatory parity among licensees.

83. While the comments support allowing licensees in the 1710-1755 and 2110-2155 MHz bands to partition and disaggregate, RCA expresses concern that small rural carriers have insufficient bargaining power when negotiating partitioning and disaggregation agreements.²¹⁹ Our band plan, however, should make it easier for small businesses and rural carriers to acquire spectrum. Specifically, we meet the needs of these types of providers by utilizing small licensing areas (*i.e.*, RSAs and MSAs) and by including small blocks of spectrum. We shall also make every effort, in future allocation decisions, to establish a home for TDD systems. We remain concerned about ensuring that small businesses and rural carriers have access to spectrum. At the end of last year, we released a *Notice of Inquiry* that, among other issues, examined the effectiveness of our current regulatory tools, including partitioning and disaggregation, in facilitating delivery of wireless service to rural areas.²²⁰ Based on the record developed in that proceeding, we have recently released a *Notice of Proposed Rulemaking* seeking comments on various proposals to effectuate service to rural areas

²⁰⁸ Cingular Reply Comments at 9-10.

²⁰⁹ CTIA Comments at 11.

²¹⁰ *Id.* at 11; *see also* TDD Coalition Reply Comments at 19 (stating support for CTIA’s position).

²¹¹ 47 C.F.R. § 24.104 (Narrowband PCS); 47 C.F.R. § 24.714 (Broadband PCS).

²¹² *See* Amendment of Parts 1, 21, 73, 74 and 101 of the Commission’s Rules to Facilitate the Use of the Universal Licensing System in the 2150-2162 and 2500-2690 MHz Bands, WT Docket No. 03-66, *Notice of Proposed Rule Making and Memorandum Opinion and Order*, 18 FCC Rcd 6722 (2003) (proposing 47 C.F.R. § 101.1506).

²¹³ 47 C.F.R. § 90.813 (900 MHz SMR); 47 C.F.R. § 90.911 (800 MHz SMR).

²¹⁴ 47 C.F.R. § 101.56.

²¹⁵ 47 C.F.R. § 101.1111.

²¹⁶ 47 C.F.R. § 80.60.

²¹⁷ 47 C.F.R. § 22.513.

²¹⁸ 47 C.F.R. § 27.15.

²¹⁹ RCA Comments at 6-7.

²²⁰ Facilitating the Provision of Spectrum-Based Services to Rural Areas and Promoting Opportunities for Rural Telephone Companies To Provide Spectrum-Based Services, WT Docket No. 02-381, *Notice of Inquiry*, 17 FCC Rcd 25554 (2002).

and communities.²²¹ In addition, we have recently adopted the *Secondary Markets Report and Order*.²²² These proceedings should help ensure that small businesses and rural carriers can acquire spectrum to meet their business needs.

6. Other Operating Requirements

84. *Background:* In the *AWS Service Rules NPRM*, we cautioned that even though licenses for the 1710-1755 and 2110-2155 MHz bands may be issued pursuant to one rule part, licensees in these bands may be required to comply with rules contained in other parts of the Commission's rules by virtue of the particular services that they offer.²²³ We sought comment on any provisions in existing, service-specific rules that may require specific recognition or adjustment to comport with the supervening application of another rule part, as well as any provisions that may be necessary in this other rule part to fully describe the scope of covered services and technologies.

85. *Discussion:* As we stated above, even though licenses for spectrum in the 1710-1755 and 2110-2155 MHz bands will be issued pursuant to Part 27 of the our rules, the licensees in these bands will be required to comply with other rule parts.²²⁴ Section 27.3 of our rules lists some of the other rule parts that maybe applicable to licensees in the 1710-1755 and 2110-2155 MHz bands. Some of these rule parts will be applicable by virtue of the fact that they apply to all licensees and others will apply depending on the type of service these licensees provide. For example:

- All applicants and licensees in the 1710-1755 and 2110-2155 MHz bands will be subject to the application filing procedures for the Universal Licensing System, set forth in Part 1 of our rules.²²⁵
- Licensees in the 1710-1755 and 2110-2155 MHz bands will be required to comply with the practices and procedures listed in Part 1 of our rules for license applications, adjudicatory proceedings, etc.
- Licensees in the 1710-1755 and 2110-2155 MHz bands will be required to comply with the Commission's environment provisions, including section 1.1307.²²⁶
- Licensees in the 1710-1755 and 2110-2155 MHz bands will be required to comply with the antenna structure provisions of Part 17 of our rules.
- To the extent a licensee in the 1710-1755 and 2110-2155 MHz bands provides a Commercial Mobile Radio Service (CMRS), such service would be subject to the provisions of Part 20 of the our rules, along with the provisions in Part 27.²²⁷ Part 20 applies to all CMRS providers, even though the stations may be licensed under other parts of our rules.

²²¹ *Rural Services NPRM, supra n.197.*

²²² *See Secondary Markets Report and Order, supra n.59.*

²²³ *AWS Service Rules NPRM, 17 FCC Rcd at 24156 ¶ 52.*

²²⁴ *See supra ¶ 17.*

²²⁵ *See 47 C.F.R. Part 1, Subpart F.*

²²⁶ *47 C.F.R. § 1.1307.*

²²⁷ *47 C.F.R. Part 20; see also 47 C.F.R. § 27.3(g).*

- The application of general provisions of Part 27 includes rules related to equal employment opportunity, 911 service, etc.

86. In the *AWS Service Rules NPRM*, we sought comment on whether there are any specific provisions in Part 101 of the Commission's rules²²⁸ that should apply to licensees in the 1710-1755 and 2110-2155 MHz bands if they provided fixed services even though their stations would be licensed under Part 27.²²⁹ In response to this question, CTIA notes that "CMRS licensees (like PCS licensees) are permitted to provide fixed services without being subject to additional Part 101 requirements."²³⁰ CTIA expresses concern "that imposing additional Part 101 requirements on licensees offering fixed services in the AWS bands will subject those licensees to disparate regulatory treatment."²³¹ While as discussed above licensees in the 1710-1755 and 2110-2155 MHz bands will be subject to rules of general applicability and certain other rule parts depending on the services that they offer, these licensees will not be subject to the provisions contained in Part 101. The Part 101 rules are service specific rules and apply to licenses issued under that rule part.

E. Technical Rules

87. Under the United States Table of Frequency Allocations, both Mobile Service and Fixed Service operations are permitted for the 1710-1755 and 2110-2155 MHz bands. While we do not know the specific nature of the communications services that will ultimately be offered in this spectrum, our intent is to craft technical rules that will enable a broad range of services to be provided. In so doing we must also have rules that will minimize interference to incumbent co-channel and adjacent channel Government and non-Government users. With these considerations in mind, we establish, in the following sections, the technical rules for operations in the 1710-1755 and 2110-2155 MHz bands.

1. Co-Channel Interference Between AWS Licensees Operating in Adjacent Regions

88. *Background:* We must provide a means for limiting potential interference between AWS systems operating on the same spectrum in different geographic areas. In the *AWS Service Rules NPRM*, we tentatively concluded that either the "boundary limit"²³² or "coordination"²³³ approaches could be used to satisfy this requirement.²³⁴ We noted that both approaches have advantages and disadvantages. Coordination, for example, would likely minimize the potential for interference to coordinated stations; but it could also impose unnecessary costs in coordinating facilities that have a low potential for interference, and could result in undesirable strategic or anti-competitive behavior on the part of competing licensees. The use of a boundary limit would establish an accepted standard, which would enable licensees to deploy facilities in boundary areas without the need for coordination;

²²⁸ 47 C.F.R. Part 101.

²²⁹ *AWS Service Rules NPRM*, 17 FCC Rcd at 24156 ¶ 52.

²³⁰ CTIA Comments at 12-13.

²³¹ *Id.* at 13.

²³² With this method, licensees would be required to limit the field strength of their station's transmissions to some prescribed level at their geographic border.

²³³ Under this approach, licensees operating on the same spectrum in adjacent areas would coordinate the location of their stations to control interference.

²³⁴ *AWS Service Rules NPRM*, 17 FCC Rcd at 24157 ¶ 56.

but this approach could still require some planning between licensees to ensure that spectrum is used efficiently and that potential interference does not occur.²³⁵ If a boundary limit methodology is used, we sought comment as to what signal level should be allowed at the border.²³⁶ We also asked whether, if the boundary limit method is adopted, we should permit licensees operating in adjoining areas to employ alternative, agreed-upon signal limits at their common border.

89. *Discussion:* We conclude that the boundary limits should be used to address co-channel interference. Both CTIA and Motorola favor the use of boundary limits, with Motorola noting that the use of boundary limits has "proven to be effective in the deployment of PCS service."²³⁷ Ericsson, on the other hand, suggests "a cooperative approach to the resolution of in-band interference issues" and contends that agreements between licensees, independent of the Commission "are a particularly effective tool that allows adjacent operators to set appropriate emission limits" and "facilitate the highest and best use of the spectrum."²³⁸ We believe that the use of boundary limits is the best approach for limiting interference in border areas of AWS licensees operating on common spectrum bands.²³⁹ It is a method that we have adopted and employed in other wireless services, and it is an approach that we believe satisfies the requirement in Section 337(d)(1) that we establish "interference limits at the boundaries of the spectrum block and service area."²⁴⁰ The coordination method also has merit because it could, as Ericsson points out, allow carriers to agree to signal limits, which could lead to more efficient use of the spectrum.²⁴¹ We feel, however, that the most effective way of ensuring protection to co-channel licensees in adjoining areas is to adopt a standard signal limit for all licensees, at all geographic borders. But we shall also permit licensees operating in adjoining areas to agree to alternative signal limits at their common borders, if they choose to do so. In this way, while a standard signal limit will provide a default interference level in the absence of specific agreements between parties, alternative limits could enable a higher level of service to areas near their borders, which will enable licensees to make most efficient use of their spectrum.

90. As to the particular signal limit that should apply under our rules, those commenting on this issue favor the use of a 47 dB μ V/m field strength limit. Motorola, for example, suggests that the 47 dB μ V/m limit used under Part 24 for Broadband PCS is more appropriate than the 40 dB μ V/m limit prescribed for the 700 MHz band "because it would generally allow for more reliable communications in boundary regions."²⁴² We agree. Because the types of services that will be provided in the AWS band are likely to be similar to the services offered in the nearby PCS band, we

²³⁵ For example, if the base stations of two licensees provide the same signal level at a particular location along the border, interference could result to the receiving stations of both licensees operating at that location. Conversely, if a licensee is required to limit its signal to a prescribed level along the border and its neighboring licensee does not offer service to that particular location, then the level of service the licensee could provide in that area could be restricted unnecessarily.

²³⁶ We noted that a 40 dB μ V/m field strength limit is used in the 700 MHz services, and that a 47 dB μ V/m field strength limit is used in Broadband PCS and WCS. See 47 C.F.R. §§ 24.236 and 27.55.

²³⁷ See CTIA Comments at 13-14; Motorola Comments at 10.

²³⁸ Ericsson Comments at 7.

²³⁹ No commenters indicated a concern that the boundary limit approach would lead to anti-competitive behavior among licensees, and we are confident that under this approach such behavior will not occur.

²⁴⁰ 47 U.S.C. § 337(d)(1).

²⁴¹ Ericsson Comments at 7.

²⁴² Motorola Comments at 10.

see no reason to deviate from the field strength that has been adopted for that service. We conclude that the appropriate field strength limit for the Advanced Wireless Service is 47 dB μ V/m. We therefore require AWS licensees to limit the signals from their base and fixed stations operating in the 2110-2155 MHz band to a predicted²⁴³ or measured²⁴⁴ field strength level of 47 dB μ V/m at their geographic border.

2. Adjacent Channel Interference Between AWS Licensees

91. *Background:* In the *AWS Service Rules NPRM*, we sought comment on whether AWS licensees should be required to protect adjacent block AWS systems through the use of an out-of-band emission (OOBE) limitation.²⁴⁵ We noted that the OOBE limit that requires licensees to attenuate power levels (P) by at least $43 + 10 \log_{10}(P)$ dB at the edges of their spectrum blocks is commonly employed in other wireless services, and it has generally been found to be adequate in preventing adjacent channel interference.²⁴⁶ No commenters disagreed with the adoption of this out-of-band emission limit to protect adjacent AWS operations.²⁴⁷

92. *Discussion:* We conclude that the $43 + 10 \log_{10}(P)$ out-of-band emission limit is appropriate for protecting wireless systems that will operate in the AWS bands. We anticipate that AWS systems will be similar in design to cellular and PCS systems, and the $43 + 10 \log_{10}(P)$ limit has been used effectively in these services in limiting adjacent channel interference. We therefore adopt this out-of-band emission limit for all transmitters operating in the AWS bands. In the event that, once individual systems are deployed and operational, it is determined that this limitation does not prevent an AWS transmitter from causing harmful interference, we shall, at our discretion, require the licensee of that transmitter to provide greater emission attenuation.

93. Lucent agrees with the use of the $43 + 10 \log_{10}(P)$ OOBE limit to protect adjacent channel operations. However, Lucent proposes a modification to the way we traditionally measure out-of-band emissions. Lucent refers to its comments to the Commission's *Year 2002 Biennial Review* proceeding, where it noted that our rule in Part 24 describing the procedure for measuring out-of-band emissions states that "in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed."²⁴⁸

²⁴³ Licensees should calculate the 47 dB μ V/m field strength at their border using a predictive model that is appropriate to the environment and terrain that exists in their geographic area. Appendix D contains a sampling of predictive models that could be used in this calculation.

²⁴⁴ Licensees will be allowed to satisfy the required field strength limitation by providing a measured 47 dB μ V/m signal at their borders. They could elect to use this approach in areas where, for example, extreme terrain blockage could enable base or fixed stations to be located closer to a geographic border than indicated by a predictive model.

²⁴⁵ *AWS Service Rules NPRM*, 17 FCC Rcd at 24160 ¶ 64.

²⁴⁶ See 47 C.F.R. § 27.53(a)(3); see also *Part 27 Report and Order*, 12 FCC Rcd at 10857 ¶ 144 (citing 47 C.F.R. §§ 22.359(iii), 22.917(e), 24.238).

²⁴⁷ AT&T Wireless Comments at 9-10; CTIA Comments at 13-14; Ericsson Comments at 7; Lucent Comments at 3-4; Motorola Comments at 14.

²⁴⁸ Lucent Comments at 4.

94. Lucent had sought modification to rule 24.238(b) in the context of the Wireless Telecommunications Bureau's recent periodic review of its rules.²⁴⁹ The Bureau considered the proposal at that time, but declined to modify rule 24.238(b).²⁵⁰ We continue to believe that the existing rule, as adopted in the recent *Cellular Biennial Review First Report and Order*,²⁵¹ provides the most appropriate way of measuring out-of-band emissions into adjacent spectrum. Our goal in developing out-of-band emission standards is to provide for a minimal and predictable level of interference into adjacent spectrum. Our existing rule serves that purpose. The modification proposed by Lucent, however, could enable licensees with emission bandwidth greater than 1.25 MHz to potentially place greater amounts of energy into adjacent bands.²⁵² We therefore decline to adopt this proposal to modify our rules.

3. Power Limits

95. *Background:* In the *AWS Service Rules NPRM*, we sought comment on what power limits should be established for AWS transmitters.²⁵³ The Commission observed that transmitters used in the private land mobile service, cellular radio service, and fixed microwave services typically employ substantially different transmitter power levels. The Commission also noted that the output powers of potential Government co-channel users could range much higher than typical non-Government users. Accordingly, the Commission invited comment as to what these limits should be and the basis for the suggested limits. The Commission also solicited views as to whether we should establish power limits for all transmitters, or just mobile equipment, or just base station equipment.

96. *Discussion:* We shall adopt the same 1640 watts peak equivalent isotropically radiated power (EIRP) limit for AWS base stations in the 2110-2155 MHz band that is currently provided for base stations operating in broadband PCS under Part 24 of our rules. For AWS mobile stations operating in the 1710-1755 MHz band, however, we shall adopt a power limit of 1 watt peak EIRP, which is lower than the 2 watt peak EIRP limit currently prescribed for mobile stations operating in broadband PCS. Most commenters support the application of the same power limits for AWS that currently apply to broadband PCS. AT&T Wireless, for example, states that "[s]ince current CMRS carriers will almost certainly be the primary initial licensees in the AWS bands, and since the AWS spectrum will most likely be used to augment existing wireless offerings, applying the Part 24 [PCS] rules would promote the most efficient and rapid utilization of newly available spectrum by allowing

²⁴⁹ In its comments in the *Year 2002 Biennial Review* proceeding (WT Docket No. 02-310), Lucent proposed that Section 24.238(b) be modified to state that "in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of either 12.5 kHz or one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed." See Lucent Comments at 3 (unpaginated).

²⁵⁰ In its decision the Bureau found that "Lucent [did] not argue that the underlying purpose of the rules (to provide an adequate measure of interference protection to other licensees) no longer exists or is not necessary in the public interest . . ." See *Federal Communications Commission 2002 Biennial Review, Staff Report of the Wireless Telecommunications Bureau* (WT Docket No. 02-310, GC Docket No. 02-390), December 31, 2002, at p. 57, Appendix IV.

²⁵¹ See *Year 2000 Biennial Review – Amendment of Part 22 of the Commission's Rules to Modify or Eliminate Outdated Rules Affecting the Cellular Radiotelephone Service and other Commercial Mobile Radio Services*, WT Docket No. 01-108, *Report and Order*, 17 FCC Rcd 18401, 18410-11 ¶ 46 (2002) (*Cellular Biennial Review First Report and Order*).

²⁵² That is, licensees with emission bandwidths greater than 1.25 MHz could meet specified emission limits within the first 12.5 kHz of adjacent spectrum, but could potentially place greater emissions into the spectrum beyond 12.5 kHz than a licensee employing a lesser emission bandwidth.

²⁵³ *AWS Service Rules NPRM*, 17 FCC Rcd at 24160-61 ¶ 65.

carriers to utilize existing infrastructure, technologies, and expertise.”²⁵⁴ Cingular, however, proposes that the output power for AWS mobile stations should be measured at the radiofrequency port, rather than based on EIRP. Cingular argues that this “would create harmonization between the Commission’s rules and the ETSI, which, in turn, would facilitate research regarding, and deployment of, directive antennas at the mobile station.”²⁵⁵

97. Although the goals of creating harmonization between our rules and those used in Europe and of improving directive antenna technology are laudable, we decline to adopt this proposal. A more important goal in this proceeding is to, to the extent possible, try to provide the same technical criteria for AWS equipment as currently exist for broadband PCS. We therefore find that it would be best to establish the same method for measuring power in the AWS bands that we currently use for measuring power in the broadband PCS bands.²⁵⁶

98. In determining the appropriate EIRP limit for the 1710-1755 MHz band we must be mindful of the presence of incumbent Government operations in that band.²⁵⁷ While the majority of the Government systems will be relocated to other spectrum, there will continue to be Government operations at 16 military facilities for some time, including two sites indefinitely. In analyzing the potential for interference to the continued Government operations, coordination processes would be simplified if mobiles operate with a maximum power of 1 watt EIRP. While this is lower than the power currently authorized for broadband PCS mobiles, we note that most PCS mobiles operate at substantially less power than one watt and thus this limit should not be a hindrance to AWS operations. We therefore establish the power limit for base and fixed stations operating in the 2110-2155 MHz bands as 1640 watts peak EIRP and 100 watts peak output power. Fixed, mobile and portable stations operating in the 1710-1755 MHz band shall be limited to 1 watt EIRP peak power, and mobile and portable stations must employ a means for limiting power to the minimum necessary for successful communications.²⁵⁸

99. Motorola in its comments notes that under our broadband PCS rules, power limits for PCS base stations “are applied irrespective of the bandwidth utilized by the licensee’s deployed technology.”²⁵⁹ This, according to Motorola, allows technologies using narrower bandwidths to “radiate a higher power per unit bandwidth.”²⁶⁰ Motorola therefore suggests that we adopt power limits for the AWS bands that are associated with a transmitter’s emission bandwidth. Specifically, Motorola proposes that for base stations operating in the AWS bands with bandwidths less than 1 MHz, our adopted EIRP limit would apply. But for base stations with operating bandwidths greater than 1 MHz, the EIRP limit would be applied to a 1 MHz bandwidth -- *i.e.*, for bandwidths greater than 1 MHz, the power limit would be 1640 w/MHz EIRP. Motorola indicates that this would “ensure

²⁵⁴ AT&T Wireless Comments at 9. AT&T Wireless indicates as well that if we were to adopt substantially different technical rules for AWS, it would force carriers, in areas where both CMRS and AWS spectrum is used, to “construct and maintain two parallel radio interface networks, including cell sites, towers, and antennas, in order to maintain the same level of service coverage and quality.” *Id.* at 10.

²⁵⁵ Cingular Reply Comments at 7 (ETSI is the European Telecommunications Standards Institute).

²⁵⁶ See 47 C.F.R. § 24.232.

²⁵⁷ See *infra* ¶¶ 117-123.

²⁵⁸ When the relocation of DOD operations from the 1710-1755 MHz band is completed, we may consider raising the power limit for fixed, mobile, and portable stations in that band to 2 W EIRP peak power.

²⁵⁹ Motorola Comments at 14.

²⁶⁰ *Id.*

that all wideband systems would radiate the same power per unit bandwidth, regardless of the technology utilized."²⁶¹

100. We do not favor the adoption of this proposal. As an initial matter, we are concerned that adopting a rule that permits greater power levels for systems using wider bandwidths would create an inconsistency between our AWS rules and those of wireless mobile services on nearby spectrum, such as PCS and ATC, with the result being a loss of regulatory parity among these different services. We continue to believe that our focus should be toward decreasing power levels whenever possible.²⁶² Such efforts will enable us to better manage, and make more efficient use of the spectrum.

101. While we do not adopt this proposal in this proceeding, we recognize that, as wideband technologies become more prevalent in wireless systems, analyzing and determining appropriate power levels for such technologies could be a worthwhile undertaking. We believe, however, that this issue is more appropriately considered in the context of petition for rulemaking, where its impact could be considered in the context of not just the AWS band, but other wireless bands as well. We therefore invite Motorola, or any other interested party, to seek additional consideration of this matter through such a petition.

102. We also sought comment on whether to permit higher power limits in rural areas than in urban areas, and if so, what those limits might be. Motorola recommended that base stations located in rural areas be exempted from power limits. In support of this proposal, Motorola argues that in exempting rural base stations from power limits, we would enable licensees to provide greater geographic coverage with fewer base station transmitters, which would "[reduce] the cost of building out systems in [rural] areas."²⁶³ Motorola suggests that this would enable faster deployment of 3G services in rural America, which would be "consistent with Congress's statutory directive to promote 'the development and rapid deployment of new technologies, products, and services for the benefit of the public, including in rural areas.'"²⁶⁴ We believe that the power limits we have established are sufficient to enable licensees operating in rural areas to provide coverage throughout their service areas. The power limit of 1640 EIRP has been used effectively for base stations in PCS and furthermore, any excessive power level could cause potentially harmful overload interference to nearby, adjacent band receivers. We therefore find that it is appropriate to limit the power levels to base stations as described above, regardless of their location; and thus decline to exempt rural stations from our power limit requirement.²⁶⁵

103. Finally, in addition to limiting the power of base stations, we must also consider imposing an antenna height limit for such stations. A base station's antenna height, in combination

²⁶¹ *Id.*

²⁶² It should also be noted that this proposal would be in conflict with our Spectrum Policy Task Force recommendation to "investigate rule changes that enable the lowering of permitted power in urban areas . . ." *Spectrum Policy Task Force Report* at 64.

²⁶³ Motorola Comments at 14-15.

²⁶⁴ *Id.* at 15.

²⁶⁵ We note, however, that in our recently-adopted *Rural Services NPRM*, we seek comment on whether to increase the rural power limits for PCS and other licensed services. *Rural Services NPRM* at ¶¶ 47-58. Given that AWS network operations and configurations are likely to be similar to PCS, if a finding is made that rural power limits for PCS should be increased, we could, in the future, explore the possibility of similar power increases for AWS.

with its EIRP, quantifies the signal level produced by the station at a specific location. In other wireless services, which were initially licensed on a site-by-site basis,²⁶⁶ it was important to place a limit on the coverage area of base stations to limit co-channel interference. However, in a service such as AWS, which will be licensed from the outset on a geographic area basis, we do not believe that, with the requirement to limit signal strength at a licensee's geographic border, it is necessary to place a limit on the coverage area produced by individual base stations. We therefore do not impose antenna height limits on base or fixed stations operating in the 2110-2155 MHz band.

4. Spectrum Location of Base and Mobile Transmissions

104. *Background:* In the *AWS Service Rules NPRM*, we sought comment on whether base and mobile transmitters should be allowed to operate in both the lower (1710-1755 MHz) and upper (2110-2155 MHz) AWS bands or whether, alternatively, we should restrict base station transmissions to one band and mobile transmissions to the other band.²⁶⁷ We noted that NTIA, in reaching its conclusion that 3G systems were not likely to cause interference to Government operations, had assumed that non-Government base stations would not operate in the lower AWS band.²⁶⁸ We also observed that in other land mobile systems we have generally provided for mobile channels in one band paired with base channels in a different band.²⁶⁹

105. *Discussion:* Commenters generally oppose allowing base and mobile transmissions in the same band and specifically favor the mandatory placement of base stations in the 2110-2155 MHz band and mobile stations in the 1710-1755 MHz band. These parties believe that permitting base and mobile transmissions in the same band will result in interference among AWS users. For example, NTIA states that if base stations were allowed in the 1710-1755 MHz band, then the conclusions reached in the *NTIA AWS Assessment* regarding the sharing of the band by Government and non-Government entities would no longer be valid, and that a new assessment of this issue would be necessary.²⁷⁰ Lucent asserts that permitting "operator choice" in locating base and mobile transmissions in the AWS bands could result in the potential for interference that "would likely demand the use of more stringent out of band energy requirements, the use of lower power transmitters, and the designation of guard bands."²⁷¹ Verizon Wireless observes that though the Commission did not clearly define the PCS base and mobile transmit bands, PCS carriers agreed among themselves to locate mobile stations in one band and base stations in the other band. Verizon Wireless contends that the Commission cannot necessarily "rely on private incentives to ensure the type of interference protection that results from establishing clearly in advance that one set of frequencies will be used for mobile transmit and the other for base transmit."²⁷² Motorola indicates that the Commission "should clearly" designate the lower band for mobile transmissions and the upper

²⁶⁶ See, e.g., 47 C.F.R. Part 90, Subpart S (the 800 and 900 MHz bands).

²⁶⁷ *AWS Service Rules NPRM*, 17 FCC Rcd at 24161 ¶ 66.

²⁶⁸ *NTIA AWS Assessment* at 6.

²⁶⁹ *AWS Service Rules NPRM*, 17 FCC Rcd at 24161 ¶ 66.

²⁷⁰ NTIA Comments at 3-4.

²⁷¹ Lucent Comments at 3.

²⁷² Verizon Wireless Comments at 5.

band for base transmissions, claiming that "harmful interference to adjacent channel users" would result if this base and mobile transmissions were permitted in the same bands.²⁷³

106. In favoring the mandatory placement of mobile transmissions in the 1710-1755 MHz band and base transmissions in the 2110-2155 MHz band, various parties also observe that this action would be consistent with international use of this spectrum and would enable U.S. consumers to realize the benefits of economies of scale and international roaming, which would result from such global harmonization. Nokia, for example, points out that, consistent with the recommendations of ITU-R M.1036, several countries are now using the 2110-2170 MHz band for downlink transmissions in IMT-2000 networks, and Motorola observes that the 1710-1785 MHz band is currently used for mobile transmissions in DCS-1800 spectrum in Europe.²⁷⁴

107. The TDD Coalition, however, argues that limiting the lower band to mobile transmissions and the upper band to base transmissions would prevent TDD-based services from being implemented in either band, and that such an action would go "against the FCC's policy of flexible allocations to promote advanced wireless communications service."²⁷⁵ The TDD Coalition points out further that, while ITU-R Working Party 8F indicated that the co-existence of TDD and FDD systems on adjacent bands in the same geographic area would cause interference to the stations of both systems, a "follow-up" ITU report is being developed which, according to the TDD Coalition, will show that the "interference between TDD and FDD systems can 'easily' be mitigated through the use of various techniques."²⁷⁶

108. We are concerned about the possibility that certain interference conditions could occur if base and mobile stations were permitted to operate in the same AWS bands. One such condition is the "base-to-base" interference scenario, which occurs when transmissions from one base station cause interference to another base station attempting to receive on an adjacent channel. When base transmit and base receive frequencies (*i.e.*, mobile transmit frequencies) are far enough apart from one another, as they are in most land mobile radio services, this type of interference does not take place.²⁷⁷ However, if base transmit and receive frequencies are spectrally close to one another, then base-to-base interference can occur. Similarly, if mobile transmit and mobile receive frequencies are close by, then "mobile-to-mobile" interference can take place (*i.e.*, where a transmitting mobile causes interference to another mobile receiving on an adjacent channel).

109. Clearly, these types of interference scenarios are of concern to both Government and non-Government users. From the Government users' standpoint, the placement of AWS base stations

²⁷³ Motorola Comments at 3. CTIA, Nokia, and AT&T agree with this assertion, citing the findings of ITU-R Working Party 8F Report ITU-R M.1036 (draft recommendation on "Frequency Arrangements for Implementation of International Mobile Telecommunications-2000 (IMT-2000) in the Bands 806-960 MHz, 1710-2025 MHz, 2110-2200 MHz and 2500-2690 MHz," Doc. 8F/TEMP/330r2). The ITU-R Report recommends that the 1.7 GHz band should be used only for mobile transmissions and that the 2.1 GHz band should be used only for base transmissions. CTIA Comments at 14; Nokia Comments at 1-2 (unpaginated); and AT&T Comments at 8.

²⁷⁴ Nokia Comments at 3 (unpaginated); Motorola Comments at n.19 and 20; *see also* Ericsson Comments at 9; Lucas Comments at 3 (unpaginated); AT&T Wireless Comments at 9.

²⁷⁵ TDD Coalition Reply Comments at 11. PetroCom also opposes restricting one type of transmission in one band and the other type of transmission in the other band. PetroCom Comments at 8.

²⁷⁶ TDD Coalition Reply Comments at 24.

²⁷⁷ When there is sufficient frequency separation, our traditional out-of-band emission limit, *i.e.*, the 43 + 10log P limit, and our limits on base station power are sufficient to prevent such interference from occurring.

in the 1710-1755 MHz band could result in base-to-base interference to their systems that currently operate below, within, and above that band.²⁷⁸ Because the Government's assessment of how Government and non-Government entities will share this spectrum is based on the assumption that only mobile stations would operate in the 1710-1755 MHz band, the Government might have to re-evaluate this assessment if we allow base stations in that band. Non-Government users are concerned that mixing base and mobile transmissions in the 1710-1755 and 2110-2155 MHz bands would either directly result in interference or could require the implementation of costly measures to *prevent* interference. For example, if we permitted base stations transmissions in the 1710-1755 MHz band, we would likely have to impose tighter out-of-band emission (OOBE) limits and lower power levels, and possibly even require guard bands and interference zones. Stricter OOBE limits would require licensees to employ more expensive transmitting equipment; implementing interference zones would result in a loss of coverage within a licensee's authorized area of operation; and guard bands would result in a waste of usable spectrum. The additional costs associated with equipment that provides stricter emission limits is certainly not a requirement we would want to impose on future licensees operating in the AWS bands. And we do not believe that the potential loss of spectrum and coverage area that would result from the use of guard bands and interference zones are conditions we should necessarily accept in our efforts to manage the spectrum and provide wireless service to the public.

110. We therefore conclude that base station transmissions will not be allowed in the 1710-1755 MHz band and will only be permitted in the 2110-2155 MHz band.²⁷⁹ This decision eliminates any concern about excessive potential interference between AWS and Government users and enables the transfer of Government spectrum to occur *without any unnecessary impediments*. The decision also allows future AWS licensees to operate on AWS spectrum without having to satisfy unnecessary technical or operational restrictions, which could limit their ability to make efficient use of the spectrum. And finally, this decision, as various commenters note, enables the United States to remain consistent with global use of the 1710-1755 MHz and 2110-2155 MHz bands; this will facilitate international roaming and will enable base and mobile equipment to be manufactured at lower cost.

111. While we determine that it is best not to permit base and mobile stations to operate in the same AWS bands -- which effectively prevents TDD systems from operating in those bands -- we continue to believe that one of our primary goals in managing the spectrum is to facilitate the development of new and different technologies, including TDD.²⁸⁰ Therefore, as discussed in

²⁷⁸ Even after the relocation of Government spectrum from the 1710-1755 MHz band is completed, there will continue to be Government operations in the spectrum above 1755 MHz and below 1710 MHz.

²⁷⁹ The 1710-1755 and 2110-2155 MHz bands are allocated for the Mobile and Fixed Services. The Mobile Service consists of base stations communicating with mobile stations. The Fixed Service consists of fixed stations communicating with other fixed stations. In developing our rules for AWS, we must determine how and where these various stations shall be permitted to operate within the AWS bands. Mobile stations will be allowed in the 1710-1755 MHz band and base stations will be permitted in the 2110-2155 MHz band. The question is where fixed stations shall and shall not be allowed to operate. A fixed station with a relatively high transmitting antenna is, with regard to the out-of-band emissions it can place into an adjacent band receiver, indistinguishable from a base station operating at the same antenna height -- and as we have indicated, the *NTIA AWS Assessment* was based on not permitting base stations in the 1710-1755 MHz band because of concerns about interference to Government systems operating within, above, and below that band. So in order to *prevent interference* to adjacent band Government operations, we shall place a special limit on the fixed stations that will be permitted to operate in the 1710-1755 MHz band. Specifically, we shall limit the antenna of any fixed station operating in the 1710-1755 MHz band to a height of no more than 10 meters above ground. As indicated in paragraph 103 above, the height of antennas of fixed stations operating in the 2110-2155 MHz band, however, shall be unrestricted.

²⁸⁰ Significantly, one of the access technologies indicated by the ITU in its IMT-2000 standard provides for TDD/CDMA transmissions.

paragraph 46 above, if proponents of TDD can conclusively demonstrate that such technologies could be used in these bands or some segments of these bands without causing interference to other spectrum users, we would be prepared to revisit this issue. We will also make every effort to provide spectrum opportunities for TDD systems in allocation and spectrum decisions affecting other bands, such as in the *AWS Allocation* proceeding.²⁸¹

5. Protecting Incumbent Systems from Interference

(a) The 2110-2155 MHz Band

112. As we indicated in the *AWS Service Rules NPRM*, some fixed point-to-point microwave systems authorized under Part 101 of our rules will continue to operate in the 2110-2155 MHz band after AWS licensing begins.²⁸² We therefore asked how such systems should be protected from interference from co-channel and adjacent channel AWS operations. In particular, we asked whether the TIA Telecommunications Service Bulletin (TSB) 10-F should be used to provide guidelines for the protection of incumbent systems. Also, Multipoint Distribution Service (MDS) systems under Part 21 are licensed in the 2110-2155 MHz band.²⁸³ While we are currently exploring the possibility of relocating MDS operations to other spectrum, until such time as those operations are relocated, they must be protected from interference from AWS systems.²⁸⁴

(i) Protection of Part 101 Systems

113. Motorola indicates that the TIA TSB 10-F procedures have been effective in determining potential interference to incumbent fixed microwave receivers operating in the 1850-1990 MHz band, and should similarly be used to protect microwave systems in the 2110-2155 MHz band.²⁸⁵ API agrees that TSB 10-F “sets forth appropriate criteria to determine what constitutes an intolerable level of interference” to an incumbent user,²⁸⁶ but also suggests that the coordination procedures developed by the National Spectrum Managers Association (WG20.94.045) be allowed to be used to evaluate the interference potential to incumbent systems.²⁸⁷ In addition, API asks us to confirm that the obligation to relocate an incumbent licensee “should be triggered by a demonstration of a potential interference

²⁸¹ See Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems, ET Docket No. 00-258, *Third Report and Order, Third Notice of Proposed Rulemaking and Second Memorandum Opinion and Order*, 18 FCC Rcd 2223 (2003).

²⁸² *AWS Service Rules NPRM*, 17 FCC Rcd at 24158 ¶ 61. In the *Emerging Technologies* relocation procedures, we indicated that incumbent fixed point-to-point links would be moved on an as-needed basis.

²⁸³ MDS operations are confined to the 2150-2155 MHz portion of the 2110-2155 MHz band.

²⁸⁴ See Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems, ET Docket No. 00-258, *Third Report and Order, Third Notice of Proposed Rulemaking and Second Memorandum Opinion and Order*, 18 FCC Rcd 2223 (2003).

²⁸⁵ Motorola Comments at 11. See also Ericsson Comments at 8.

²⁸⁶ API Comments at 7.

²⁸⁷ *Id.* API points out that these procedures have been used in the context of the introduction of PCS operations into the 1.9 GHz band.

under the applicable technical standard, rather than a showing that any actual interference has occurred.²⁸⁸

114. We conclude that AWS licensees should be required to coordinate, prior to initiating operations from any base or fixed station, their frequency usage with co-channel and adjacent channel incumbent Part 101 fixed-point-to-point microwave licensees operating in the 2110-2155 MHz band. We therefore apply to the AWS bands the provisions of Section 24.237 of our rules, which details the coordination requirements for the protection of incumbent fixed microwave systems in the PCS bands.²⁸⁹ The procedures described in this rule rely on the use of predictive methods for determining interference. Thus, in response to API's inquiry regarding the triggering mechanism for relocation of fixed microwave systems, we find that relocation of such systems may be based on a prediction of potential interference and need not be triggered by an occurrence of actual interference. Finally, in paragraph (g) of the current rule 24.237, we indicate that we would accept the procedures developed by any "recognized authority" in determining appropriate interference criteria.²⁹⁰ The procedures developed by the National Spectrum Managers Association would appear to fall into this category and could therefore, as API suggests, be used for this purpose.

(ii) Protection of Part 21 Systems

115. As noted above, MDS operations in the 2110-2155 MHz band may eventually be relocated to other spectrum.²⁹¹ However, until that occurs, we must protect MDS systems from interference from AWS operations. We shall therefore require AWS licensees, prior to initiating operations from any base or fixed station, to coordinate their frequency usage with co-channel and adjacent channel incumbent Part 21 MDS licensees.²⁹²

(iii) Goldstone, California Facility

116. The 2110-2120 MHz band is allocated on a primary basis for earth-to-space (deep space) communications in the Space Research service used by the National Aeronautics and Space Administration (NASA).²⁹³ Operations in this service in the United States are limited to deep space communications at the NASA Goldstone Deep Space Network (DSN) facility in Goldstone, California. AWS licensees will be permitted to operate in the area around Goldstone without having to provide protection to the facility. However, operation of AWS systems will be affected by transmissions from Goldstone. In the *AWS Allocation Order*, we concluded that because of the nature of operations at Goldstone, a significant amount of interference should not occur to AWS systems operating in the 2110-2120 MHz band in the vicinity of Goldstone.²⁹⁴ However, AWS licensees using

²⁸⁸ *Id.* at 7-8.

²⁸⁹ 47 C.F.R. § 24.237. Included in the rule shall be the requirement that, unless AWS and fixed microwave licensees agree on an alternative method, TIA TSB 10-F must be used as the guideline for determining the co-channel and adjacent channel fixed microwave facilities to be coordinated.

²⁹⁰ 47 C.F.R. § 24.237(g).

²⁹¹ *See supra* ¶ 112.

²⁹² In the event that AWS and MDS licensees cannot reach agreement in coordinating their facilities, they may seek the assistance of the Commission, and the Commission may then, at its discretion, impose requirements on either or both parties.

²⁹³ *See* February 15, 1961 letter from FCC Secretary Waple to Director of Telecommunications Executive Office of the President.

²⁹⁴ *AWS Allocation Order*, 17 FCC Rcd at 23208 ¶ 33.

the 2110-2120 MHz band should be aware that this facility may operate at any time at a nominal EIRP of 105.5 dBW,²⁹⁵ along any azimuth, and at elevations as low as 10 degrees above the horizon. During these transmissions, AWS systems operating in the vicinity of Goldstone may become unavailable. AWS licensees cannot claim protection from interference due to these transmissions. We thus note that future AWS licensees operating in spectrum in the 2110-2120 MHz band in the area surrounding Goldstone, California should consider this potential for interference in developing their systems.

(b) The 1710-1755 MHz Band

117. This spectrum is used extensively by the Federal Government for both military (Army, Air Force, and Navy) and non-military (Department of Agriculture (USDA), Department of Energy (DOE), Department of Justice (DOJ), Federal Aviation Agency (FAA), Department of Interior (DOI), Tennessee Valley Authority (TVA), U.S. Coast Guard (USCG), Federal Power Administration (FPA), and Department of the Treasury) operations.²⁹⁶ The following is a description of Department of Defense (DOD) and non-DOD operations in the band and a discussion of the types of protection that shall be provided to such operations by AWS licensees.

(i) Department of Defense Operations

118. There are 16 military facilities in the country that are classified as "protected facilities," and there are various types of systems operating at these locations. These include: airborne telemetry and video systems; ground operations, including tactical radio relay and fixed microwave systems; precision guided munitions (PGM) systems; and others.²⁹⁷ According to the *NTIA AWS Assessment* and subject to the availability of reimbursement funds, DOD is expected to relocate all airborne operations at these facilities by December, 2008, but until that time, these systems must be protected from non-Government operations in the 1710-1755 MHz band.²⁹⁸ Ground-based systems at the 16 sites shall be converted from exclusive Government use to mixed use as of January 1, 2004. Ground-based operations will continue on a secondary basis with respect to non-Government systems at 14 of those 16 sites. At the remaining two locations -- in Yuma, Arizona and in Cherry Point, North Carolina -- ground-based systems shall continue to operate on a primary basis indefinitely and such systems must therefore be protected indefinitely from non-Government operations. PGM systems, which operate in the 1710-1720 MHz band, shall continue on a primary basis at all 16 sites until inventory is exhausted, or until the expected clearance date of December 31, 2008, whichever is earlier; such systems must therefore be protected from non-Government operations during this period of time.²⁹⁹ The "other" military systems³⁰⁰ will relocate to spectrum in other bands when such spectrum becomes available.

²⁹⁵ The DSN, under emergency conditions, transmits with EIRP up to 119.5 dBW.

²⁹⁶ According to the Government Master File (GMF) of January, 2001, there are 1,825 Federal frequency assignments in the 1710-1755 MHz band.

²⁹⁷ These include unmanned ground robotic systems, range timing distribution systems, and target scoring devices.

²⁹⁸ See *supra* ¶ 7.

²⁹⁹ See *NTIA AWS Assessment* at 12.

³⁰⁰ See *supra* n. 297.

119. *Protection of the 16 DOD Facilities:* AWS must protect systems operating at the 16 DOD facilities from interference until such systems are relocated to other spectrum.³⁰¹ In order to protect these facilities, AWS licensees will be required to restrict the operations of their stations in the 1710-1755 MHz band. The February 1995 Spectrum Reallocation Final Report (*1995 Reallocation Final Report*), Appendix F, Figure F-3 provides a table indicating the "radius of operation" for each of the 16 facilities.³⁰² AWS licensees shall therefore be prohibited from situating their base and fixed stations at any locations that could potentially permit mobile, fixed, and portable stations transmitting in the 1710-1755 MHz band to cause interference to government systems operating within the radii of operation of the 16 facilities. Thus, AWS licensees shall be required to coordinate any operations that could permit mobile, fixed, and portable stations as specified in Section 27.1134(a) of the adopted rules.³⁰³ Except for Yuma, Arizona and Cherry Point, North Carolina, these various restrictions shall apply until such time as the relocation of the Federal systems has been completed.³⁰⁴ Furthermore, AWS licensees will be required to accept any interference received from operations at the 16 facilities. Such interference could occur at large distances outside the operating radii due to airborne operations within those radii.

120. Motorola, in its comments, expresses concern that aeronautical systems operating at the DOD sites will have a significant impact on AWS operations.³⁰⁵ Specifically, Motorola notes that because aircraft can operate at altitudes of up to 50,000 feet, interference could be caused to AWS operations more than 400 kilometers away. We are sympathetic to Motorola's concerns. However, there is little that can be done to prevent such interference from occurring on occasion. Aeronautical operations at these facilities are expected to cease by 2008.³⁰⁶ Until that time, we encourage Government users at the 16 installations and AWS licensees operating in nearby areas to work together to try to minimize interference to AWS operations, to the extent possible.

121. *The Yuma, Arizona and Cherry Point, North Carolina Facilities:* As noted above, protection of ground systems at the Cherry Point and Yuma installations shall continue on a primary basis indefinitely. Motorola therefore suggests that the Commission develop mandatory coordination procedures between AWS licensees and DOD operations at the Cherry Point and Yuma locations.³⁰⁷ We disagree with this proposal. Because of the critical nature of the operations being conducted at these facilities, formal interference criteria are needed to protect these sites. Coordination procedures will not ensure necessary protection to the military systems operating at these locations. Thus, in order to provide appropriate protection to DOD operations at these installations, AWS licensees must satisfy defined interference-protection criteria. We therefore decline to adopt a coordination

³⁰¹ TRR operations will continue indefinitely and on a primary basis at the Cherry Point and Yuma facilities.

³⁰² The information from the table has been included in rule section 27.1134.

³⁰³ See Appendix C final rule section 47 C.F.R. § 27.1134(a). This coordination will be accomplished between the AWS licensee and the Commander of the affected DoD facility. Notwithstanding this local coordination, all parties must recognize that the FCC and NTIA maintain the authority to enforce the coordination requirement and correct interference (*i.e.*, in the event of an interference complaint from DoD, the Commission working with NTIA and the AWS licensee will rectify the situation).

³⁰⁴ See *supra* ¶ 7 (describing the circumstances and conditions for the relocation of Federal systems).

³⁰⁵ Motorola Comments at 12.

³⁰⁶ As discussed above, this date may change. See *supra* ¶ 7.

³⁰⁷ Motorola Comments at 11.

approach, and shall require AWS licensees to provide permanent protection to the Yuma and Cherry Point facilities in accordance with the protection measures described in paragraph 119, above.

122. *Precision Guided Munitions Systems*: As noted above, PGM systems will continue to use the 1710-1720 MHz band on a primary basis until all PGM inventory is exhausted, or the expected clearance date of December 31, 2008, whichever is earlier. Motorola asks that PGM operations be protected through coordination procedures developed between DOD and AWS licensees.³⁰⁸ We disagree with this suggestion as well. The only reliable way to protect these important military systems is to require AWS licensees to comply with specified interference protection criteria, and we therefore decline to adopt the proposal set forth by Motorola. Rather, AWS licensees will be required to protect PGM operations at each of the 16 facilities in accordance with the protection measures described in paragraph 119 above until PGM inventory at each facility is exhausted, or the expected clearance date of December 31, 2008, whichever is earlier.

123. *Unmanned Ground Robotic Systems, Range Timing Distribution Systems, and Target Scoring Devices*: These systems are located at military test ranges at the 16 protected DOD sites. Until such time as these systems are relocated to other spectrum, they shall be protected in accordance with the protection measures described in paragraph 119 above. No timeline has been established for the relocation of these systems.

(ii) Non-Department of Defense Operations

124. These are the fixed systems of the remaining Federal agencies (*i.e.*, DOI, USDA, DOJ, DOE, FAA, FPA, and Department of the Treasury), which are to be relocated, subject to the availability of relocation funds. According to the *NTIA AWS Assessment*, all systems subject to relocation are anticipated to vacate the 1710-1755 MHz band within 2 years of such funds becoming available.³⁰⁹ However, because relocation may not occur until well after the auction of AWS spectrum, Government and AWS systems could operate simultaneously in the 1710-1755 MHz band for some time. We must therefore provide protection to Government stations from interference from co-channel and adjacent channel AWS systems during this time period. Therefore, until such time as AWS licensees have reimbursed affected Government licensees and the Government licensees have relocated to other spectrum, AWS operators shall be required to protect Government fixed systems in accordance with the provisions set forth in TIA TSB 10-F, "Interference Criteria for Microwave Systems," or its successor.³¹⁰

(c) Below 1710 MHz

125. The 1675-1710 MHz spectrum is used by both the Federal Government and non-Federal Government in the Meteorological-Satellite Service (space-to-earth communications) and from 1675 to 1700 MHz by the Federal Government alone in the Meteorological Aids Service (radiosonde). It is anticipated that AWS stations operating in the 1710-1755 MHz band should not cause interference to meteorological operations. We therefore impose no general restriction on AWS systems to protect such operations. However, there is a potential scenario that could result in interference to meteorological systems. This would be the condition where a meteorological receiver is pointed at a

³⁰⁸ Motorola Comments at 12. Motorola also suggests that PGM operations be limited to lower altitudes and/or night-time use and that AWS licensees be given some advance notification of such operations. *Id.*

³⁰⁹ See *supra* ¶ 7.

³¹⁰ TIA TSB 10-F provides standards for protecting fixed, microwave stations from co-channel and adjacent channel operations.

low angle toward the horizon and an AWS fixed station (at a height of up to 10 meters above ground) is operating nearby and pointing in the direction of the radiosonde ground station or the meteorological-satellite earth station.³¹¹ If interference to a meteorological receiver were to occur under this scenario and the affected licensee were to notify the AWS operator that interference was occurring, the operator would be required to modify its station location and/or technical parameters as necessary to eliminate the interference.

(d) Above 1755 MHz

126. There is considerable Government usage of the spectrum between 1755 and 1842 MHz, and Government operations in this spectrum shall continue after AWS systems are licensed. Government systems must therefore be protected from interference from AWS stations operating in the 1710-1755 MHz band. The Government has identified the following types of operations in the spectrum above 1755 MHz: non-DOD systems operating in the 1755-1761 MHz band; DOD operations in the 1755-1761 MHz band, which include tactical radio relay and airborne telemetry systems located at the 16 protected DOD sites; and Space-Ground Link Subsystem (SGLS) and Aircrew Combat Training Systems (ACTS) systems operating in the 1761-1842 MHz band at the 16 sites. In protecting the 16 DOD facilities from co-channel interference in accordance with the distance separations indicated in the *1995 Reallocation Final Report*, Appendix F, Figure F-3,³¹² AWS licensees operating in the 1710-1755 MHz band will effectively provide necessary protection to the DOD systems operating at those facilities on adjacent spectrum. Thus, no further protection of these operations is required by AWS licensees. However, AWS licensees will be required to protect non-DOD operations above 1755 MHz; and shall provide such protection by satisfying the appropriate provisions prescribed in TIA TSB 10-F.

(e) Below 2110 MHz

127. The 2025-2110 MHz band is used by Government and non-Government entities for Earth-to-space transmissions in the Space Operation, Space Research, and Earth-Exploration Satellite services. Recently, the ITU performed a study of potential interference to satellite services from co-channel 3G systems.³¹³ In February, we released our 2 GHz MSS/ATC Order,³¹⁴ in which we considered the ITU study in assessing the likelihood for adjacent channel interference from 1990-2025 MHz ATC operations to space receivers operating in the 2025-2110 MHz band. In our analysis, we concluded that neither base nor mobile ATC stations operating under our Part 24 out-of-band emission standards would cause interference to adjacent band satellite receivers.³¹⁵ Given that the potential for interference from AWS operations above 2110 MHz to 2025-2110 MHz space systems should be no different than interference to such systems from ATC operations below 2025 MHz, we find that no special requirements are needed to protect space systems operating in the 2025-2110 MHz band from AWS systems operating in the 2110-2155 MHz band.

³¹¹ Satellite receivers may not be registered in FCC or NTIA databases.

³¹² See *supra* ¶ 119.

³¹³ See ITU-R Study Group 7 Recommendation SA.1154, "Provisions To Protect The Space Research (SR), Space Operations (SO) And Earth-Exploration Satellite Services (EES) And To Facilitate Sharing With The Mobile Service In The 2025-2110 MHz And 2200-2290 MHz Bands."

³¹⁴ Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands, IB Docket No. 01-185, *Report and Order and Notice of Proposed Rulemaking*, 18 FCC Rcd 1962 (2003) (*ATC Report and Order*).

³¹⁵ *Id.* at 2131-32 (App. C1).

128. The Earth-Exploration Satellite Service (EESS) stations operating in the 2025-2110 MHz band are uplink terminals. As such, they could potentially cause interference to AWS mobile or fixed receivers operating in the adjacent 2110-2155 MHz band. US footnote 347 in the Table of Frequency Allocations grants the non-Government Earth-to-space allocation to the EESS in the 2025-2110 MHz band with the condition that EESS uplink stations do not cause interference to stations operating in accordance with the Table of Frequency Allocations. Currently, there are four non-Government licensees operating in this band. Due to their limited number, and the fact that AWS stations are not yet in operation, we find that the four incumbent Earth-to-space EESS stations operating in the 2025-2110 MHz band will not be required to protect AWS stations. However, any non-Government EESS stations authorized after the adoption date of this Order shall be required to protect future AWS operations. The criteria for protecting AWS operations from future EESS uplink stations will be established in a future proceeding.

129. The 2025-2110 MHz band is also used by the Broadcast Auxiliary Service (BAS) under Part 74 of our rules, and by the Cable Television Relay Service (CARS) under Part 78 of our rules.³¹⁶ Both fixed and mobile TV BAS stations and mobile CARS stations are authorized in this band, and they are used for Electronic News Gathering (ENG) operations, transmitting TV programming material to TV studios from wherever news events may be happening.³¹⁷ We are concerned that base or fixed stations operating in the 2110-2155 MHz band, if situated too close to BAS/CARS receive stations, could cause interference to such stations. This interference could be due to out-of-band emissions falling in the 2025-2110 MHz BAS band or due to overload of the receivers operating in that band. We do not believe, however, that tightening the out-of-band emission standard for AWS base stations would be the most appropriate way to address this potential problem. As an initial matter, one of our goals in this proceeding is to, to the extent possible, try to provide the same technical criteria for AWS equipment as currently exist for PCS. Maintaining our $43 + 10 \log_{10}(P)$ OOB standard for AWS serves this purpose. Secondly, because of the nature of the potential interference scenario at issue, *i.e.*, one where a fixed station may cause interference to another fixed station, the particular stations can be situated far enough from one another to prevent interference from occurring. In addition, the technical parameters of the stations (*e.g.*, the orientation of directional antennas, the filters in transmitters and receivers) can be adjusted so as to minimize interference.

130. We therefore conclude that the best way to deal with the possibility of AWS base stations causing interference to BAS and CARS stations is to require AWS and BAS/CARS licensees to coordinate the location and technical parameters of their stations. This approach toward mitigating interference to BAS and CARS operations was similarly adopted in the ATC proceeding, where we decided that: "ATC operators will be required to protect all existing licensees in the adjacent bands."³¹⁸ We shall therefore require AWS licensees to coordinate the location of any base or fixed stations operating in the 2110-2155 MHz band with BAS/CARS licensees operating in their area. Before constructing and operating a base or fixed station, AWS licensees shall be required to determine the location and licensee of any BAS or CARS station authorized in their area of operation,

³¹⁶ 47 C.F.R. Part 74 and Part 78.

³¹⁷ ENG mobile units, for example, capture programming material in the field and transmit the material to fixed ENG receive stations, often located on building rooftops. ENG stations may relay programming either directly to a TV studio or to the TV studio via additional fixed ENG links.

³¹⁸ See *ATC Report and Order*, 18 FCC Rcd at 2061-62 ¶ 203 (2003).

and coordinate their planned stations with that licensee.³¹⁹ We shall expect BAS/CARS and AWS licensees to work together to develop ways to mitigate interference, whether it be through locating their stations as far as possible from one another or by implementing one or more technical solutions. In the event that mutually satisfactory coordination agreements cannot be reached, licensees may seek the assistance of the Commission, and we may, at our discretion, impose requirements on one or both parties. While we conclude that interference can be avoided through coordination, AWS operators will be required to protect previously licensed BAS and CARS operations in the adjacent 2025-2110 MHz band.

(f) Above 2155 MHz

131. The 2155-2160 MHz band is allocated for use by the Multipoint Distribution Service (MDS) under Part 21 and by the Fixed Microwave Service under Part 101.³²⁰ In a future proceeding, we will decide whether MDS operations in this band should be relocated to other spectrum.³²¹ Until that decision is made, however, we must continue to protect MDS systems operating in the 2155-2160 MHz band. In the *AWS Service Rules NPRM*, we sought comment on how MDS operations should be protected from interference.³²² Although WCAI expressed concern about potential interference to MDS operations, it proposed no specific protection criteria, nor did it formally seek special protection measures for MDS.³²³ We thus have no basis upon which to make a decision as to how MDS should be protected. We therefore do not adopt any such special measures to protect MDS operations at this time, and will simply require AWS licensees operating in the 2110-2155 MHz band to satisfy the same protection criteria to protect MDS licensees that they must employ to protect adjacent band AWS licensees (*i.e.*, our $43 + 10 \log_{10}(P)$ OOB standard).

6. RF Safety

132. *Background:* In the *AWS Service Rules NPRM*, we stated that our rules implementing the National Environmental Policy Act of 1969 are intended to prevent human exposure to potentially unsafe levels of radiofrequency (RF) radiation.³²⁴ To that end, we noted that section 1.1307(b) of our rules requires preparation of Environmental Assessments when licensees propose to construct fixed transmission facilities that exceed specified parameters.³²⁵ We indicated that exposure guidelines for

³¹⁹ Information regarding BAS and CARS stations can be obtained by consulting local SBE coordination committees.

³²⁰ 47 C.F.R. Parts 21, 101. There are no Part 101 systems currently licensed in this spectrum.

³²¹ See Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems, ET Docket No. 00-258, *Third Report and Order, Third Notice of Proposed Rulemaking and Second Memorandum Opinion and Order*, 18 FCC Rcd 2233 (2003).

³²² *AWS Service Rules NPRM*, 17 FCC Rcd at 24159-60 ¶ 63.

³²³ WCAI Comments at 5. WCAI in its comments indicates that it will "review with great interest the comments from the AWS community" with regard to technical measures that community would provide to protect MDS operations. *Id.* at 6. WCAI states, however, that "as a preliminary observation it appears that the Commission likely will have to impose far more rigorous limitations on AWS out-of-band emissions into any relocated MDS channels in the 2155-2180 MHz band than the Commission imposes on AWS out-of-band emissions within the AWS band." *Id.*

³²⁴ *AWS Service Rules NPRM*, 17 FCC Rcd at 24161 ¶ 68; see also 47 C.F.R. §§ 1.1310, 2.1093.

³²⁵ 47 C.F.R. § 1.1307(b). Similarly, sections 2.1091 and 2.1093 require environmental evaluation of certain mobile and portable transmitters prior to equipment authorization or use. See 47 C.F.R. §§ 2.1091, 2.1093. (continued....)

the 2.3 GHz Wireless Communications Services (WCS) band are the same as those for spectrum at 1710-1755 MHz and 2110-2155 MHz.³²⁶ For WCS, we stated that the threshold for environmental review is an effective radiated power (ERP) greater than 1,000 watts.³²⁷

133. *Discussion:* With regard to RF safety requirements, the Commission adopted the 1,000 watts ERP threshold for 2.3 GHz to recognize the flexibility with respect to use, power, location, and other factors that was accorded licensees operating in that band, and determined that this power limit was appropriate to ensure compliance with the Commission's RF exposure standards for most situations.³²⁸ Moreover, the Commission found the 1,000 watts ERP threshold consistent with its existing rules for transmitters and devices of comparable use and similar operating frequencies. For the same reasons, we adopt the 1,000 watts ERP safety threshold for fixed operations in the 1710-1755 and 2110-2155 MHz bands. We therefore will modify sections 1.1307(b), 2.1091, and 2.1093 of our rules³²⁹ to include services and devices applicable to the 1710-1755 and 2110-2155 MHz bands. We note, however, that the standard we adopt today is subject to change.³³⁰

7. Canadian and Mexican Coordination

134. *Background:* In the *AWS Service Rules NPRM*, we noted that section 2.301 of our rules requires stations using radio frequencies to identify their transmissions with a view to eliminate harmful interference and generally enforce applicable radio treaties, conventions, regulations, arrangements, and agreements.³³¹ With respect to Canada, we noted that coordination of frequency assignments in the 1710-1755 MHz band is presently subject to the provisions of Arrangement D of the *Agreement between the United States of America and Canada concerning Coordination and Use of Radio Frequencies Above 30 Megacycles per Second*, October 24, 1962, as amended. Additionally, we indicated that coordination of assignments in the 2110-2155 MHz band is subject to Arrangement A of this Agreement, and assignments in the 2150-2155 MHz band are also subject to the *Interim Arrangement Concerning the Use of the Frequency Bands 2150-2162 MHz and 2500-2690 MHz by MCS and MDS Stations Near the Canada/United States of America Border*, June 25, 2002.

135. *Discussion:* At this time, changes to international agreements between and among the United States, Mexico and Canada concerning the reallocation of this spectrum are not complete.

(Continued from previous page)

The Commission provides guidance on acceptable methods of evaluating compliance with exposure limits in OET Bulletin No. 65. OET Bulletin No. 65 (Edition 97-01) was issued on August 25, 1997, and is available for downloading at the FCC Web Site: <<http://www.fcc.gov/oet/rfsafety>>. Copies of OET Bulletin No. 65 also may be obtained by calling the FCC RF Safety Line at (202) 418-2464. Other circumstances may also trigger an Environmental Assessment. See generally 47 C.F.R. § 1.1307(a).

³²⁶ See 47 C.F.R. § 1.1310.

³²⁷ 47 C.F.R. §§ 1.1307(b), 27.52; see also 47 C.F.R. § 24.52 (PCS).

³²⁸ *Part 27 Report and Order*, 12 FCC Rcd at 10862 ¶ 154 n.345, noting that in a pending petition for reconsideration of the RF Guidelines Report and Order, the Commission was considering whether to revise the threshold for requiring routine evaluation of mobile devices above 1.5 GHz from 1.5 watts to 3 watts. This change was made in Procedures for Reviewing Requests for Relief from State and Local Regulations Pursuant to Section 332(c)(7)(B)(v) of the Communications Act of 1934, WT Docket No. 97-192, *Second Memorandum Opinion and Order and Notice of Proposed Rulemaking*, 12 FCC Rcd 13494, 13541 ¶ 51 (1997).

³²⁹ 47 C.F.R. §§ 1.1307(b), 2.1091, 2.1093.

³³⁰ See Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields, ET Docket No. 03-137, *Notice of Proposed Rulemaking*, 18 FCC Rcd 13187 (2003).

³³¹ *AWS Service Rules NPRM*, 17 FCC Rcd at 24162 ¶ 71; see also 47 C.F.R. § 2.301.

Until such time as agreements between the United States, Mexico and Canada become effective, we will require the same technical restrictions at the border that we adopt for operation between geographic service areas, to the extent they are not in violation of current bilateral agreements and arrangements. Operations in the 1710-1755 and 2110-2155 MHz bands must not cause harmful interference across the border. When agreements between the United States, Mexico and Canada are final and become effective, licensees in the 1710-1755 and 2110-2155 MHz bands will be expected to comply with these agreements. In addition, if these agreements are modified in the future, licensees in the 1710-1755 and 2110-2155 MHz bands will be expected to comply with these modifications.

F. Competitive Bidding

136. As discussed above, section 3002 of the Balanced Budget Act of 1997 requires the Commission to assign licenses for the majority of the AWS bands through competitive bidding pursuant to section 309(j) of the Communications Act.³³² In the *AWS Service Rules NPRM*, we tentatively concluded that it serves the public interest to license all portions of the AWS bands, including the 2150-2155 MHz portion of the 2110-2155 MHz band, by the same mechanism.³³³ Because we have adopted a geographic licensing scheme for all portions of the AWS bands that permits the filing of mutually exclusive applications, consistent with both statutory obligations, we must resolve such applications for licenses in these bands through competitive bidding.³³⁴

1. Incorporation by Reference of the Part 1 Standardized Auction Rules

137. *Background:* In the *AWS Service Rules NPRM*, we requested comment on a number of issues relating to the competitive bidding procedures for the 1710-1755 MHz and 2110-2155 MHz bands.³³⁵ We proposed to conduct the auction of initial licenses in these bands in conformity with the general competitive bidding rules set forth in Part 1, Subpart Q, of the Commission's rules and substantially consistent with the bidding procedures that have been employed in previous auctions.³³⁶ Specifically, we proposed to employ the Part 1 rules governing competitive bidding design, designated entities, application and payment procedures, reporting requirements, collusion issues, and unjust enrichment.³³⁷ Under this proposal, such rules would be subject to any modifications that the

³³² See *supra* ¶ 24. The Balanced Budget Act of 1997 identified the 1710-1755 MHz band for competitive bidding in section 3002(c) and the 2110-2150 MHz band in section 3002(b). Pub. L. No. 105-33, 111 Stat. 251 (1997). The timing requirements applicable to both these bands were rescinded. Auction Reform Act of 2002, Pub. L. No. 107-195, 116 Stat. 715 (2002).

³³³ *AWS Service Rules NPRM*, 17 FCC Rcd at 24163 ¶ 72.

³³⁴ See *supra* ¶ 30-34.

³³⁵ *AWS Service Rules NPRM*, 17 FCC Rcd at 24163-24165 ¶¶ 72-80.

³³⁶ See, e.g., Amendment of Part 1 of the Commission's Rules—Competitive Bidding Procedures, WT Docket No. 97-82, *Order, Memorandum Opinion and Order and Notice of Proposed Rule Making*, 12 FCC Rcd 5686 (1997); *Third Report and Order and Second Further Notice of Proposed Rule Making*, 13 FCC Rcd 374 (1997) (*Part 1 Third Report and Order*); *Order on Reconsideration of the Third Report and Order, Fifth Report and Order, and Fourth Further Notice of Proposed Rule Making*, 15 FCC Rcd 15293 (2000) (*Part 1 Recon Order/ Fifth Report and Order and Fourth Further Notice of Proposed Rule Making*); *Seventh Report and Order*, 16 FCC Rcd 17546 (2001); *Eighth Report and Order*, 17 FCC Rcd 2962 (2002); *Second Order on Reconsideration of the Third Report and Order and Order on Reconsideration of the Fifth Report and Order*, 18 FCC Rcd 10180 (2003), recons. pending.

³³⁷ *AWS Service Rules NPRM*, 17 FCC Rcd at 24163 ¶ 73; 47 C.F.R. § 1.2101 *et seq.*

Commission may adopt in our Part 1 proceeding.³³⁸ We also sought comment on whether any of our Part 1 rules or other auction procedures would be inappropriate or should be modified for an auction of licenses in these bands.

138. *Discussion:* As explained below, we conclude that our Part 1 rules and other auction procedures are appropriate for an auction of licenses in these bands. While commenters did not specifically address whether we should use the general competitive bidding rules set forth in Part 1, Subpart Q, of the Commission's rules, commenters raised a variety of arguments regarding bidding design and other aspects of our auction procedures. For example, CTIA suggests that the Commission study whether a package or combinatorial bidding design would be appropriate for some of the larger spectrum blocks.³³⁹ U.S. Cellular, however, advocates the use of simultaneous multiple round auction methodologies for all EA or MSA/RSA licenses without package bidding features.³⁴⁰ As we have indicated previously, combinatorial (or "package") bidding is an auction methodology that may take many forms.³⁴¹ We note that the Wireless Telecommunications Bureau ("WTB"), consistent with statutory obligations,³⁴² will seek comment on auction-related procedural issues, including auction design, prior to the start of the AWS auction pursuant to WTB's existing delegated authority.³⁴³ This will provide WTB with an opportunity to weigh the benefits and disadvantages of any particular bidding design, among other auction-specific issues (*e.g.* minimum opening bids), prior to the start of the auction. CTIA, U.S. Cellular, all potential auction applicants and other interested parties are encouraged to participate in this process and submit comments on such auction-related procedural issues.

139. One Commenter, RCA, urges the Commission to modify its competitive bidding procedures and to allow initial licensees the option of returning portions of the license, effectively disaggregating or partitioning the license back to the Commission, in exchange for a monetary credit toward future auction purchases.³⁴⁴ In support of its proposal, RCA argues that where spectrum is licensed in larger areas, only large companies are able to purchase the licenses because rural licensees

³³⁸ See *Fourth Further Notice of Proposed Rule Making*, 15 FCC Rcd 15293 (2000); see also *Part 1 Recon Order/Fifth Report and Order*, 15 FCC Rcd 15293 (*recon. pending*).

³³⁹ See CTIA Comments at 15.

³⁴⁰ See U.S. Cellular Corporation Comments at 12-13.

³⁴¹ Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59), *Notice of Proposed Rule Making*, 16 FCC Rcd 7278, 7302-03 ¶ 50, n.120.

³⁴² See 47 U.S.C. § 309(j)(3)(E)(i) (obligation to permit notice and comment on proposed auction procedures before issuance of bidding rules).

³⁴³ See 47 C.F.R. §§ 0.131(c) (functions of WTB); 0.331 (authority delegated to WTB); 0.332 (actions taken under WTB's delegated authority); 1.2103 (competitive bidding design options, including simultaneous multi-round and combinatorial bidding auctions, among others); 1.2104 (competitive bidding mechanisms). See also Amendment of Part 1 of the Commission's rules—Competitive Bidding Procedures, *Order, Memorandum Opinion and Order, and Notice of Proposed Rule Making*, 12 FCC Rcd 5686, 5697-98 ¶ 16 (1997). See, *e.g.*, Auction of Regional Narrowband PCS Licenses Scheduled for September 24, 2003, Comment Sought on Package Bidding Procedures, Reserve Prices or Minimum Opening Bids, and Other Auction Procedures, 18 FCC Rcd 6366 (2003).

³⁴⁴ See RCA Comments at 6-7. In a footnote, RCA also appears to suggest that such a credit should be transferable. *Id.* at n. 7. AT&T Wireless Reply Comments at 3.

lack the necessary capital.³⁴⁵ RCA also asserts that such large companies do not consistently make full use of the licenses in rural areas resulting in the existence of “unused spectrum.”³⁴⁶ In those instances, RCA also believes that rural licensees are impeded in their ability to obtain spectrum through partitioning and disaggregation because large companies may dictate the terms for partitioning and disaggregation and may also decline to deal with rural licensees.³⁴⁷ RCA contends that its proposal would help to achieve the dual goals of avoiding spectrum warehousing and promoting the use of spectrum in rural areas because large companies would have a financial incentive to return “unused spectrum” from individual licenses, presumably in rural areas, to the Commission for reassignment.³⁴⁸

140. As a preliminary matter, we decline to adopt RCA’s proposal because it would increase the likelihood that the winning bidder in an auction is not the party with the highest valued use, thus undermining the integrity of the auction system. Under RCA’s proposal, a party whose plans are more speculative might be encouraged to enter into the auction because the Commission would, in effect, partially insure auction participants against the risk of future loss through the existence of the credit option.³⁴⁹ Obviously, the Commission does not wish to encourage such behavior. Furthermore, as discussed elsewhere in this order, other market driven flexible policies are in place that should address many of the concerns raised by RCA.³⁵⁰

141. Under RCA’s proposal, a licensee would be able to retain a portion of the spectrum or a geographic area of a license for a given market and return the remainder to the Commission.³⁵¹ We believe that permitting the return of a portion of a license in exchange for an auction credit as suggested by RCA may result in the licensee partitioning spectrum or disaggregating a geographic area that is not an optimal geographic area or size.³⁵² This, in turn, would decrease the likelihood that the new licensee would be able to develop innovative services that will allow it to compete in the marketplace.³⁵³ In contrast, if a licensee and a third party can identify applications for which

³⁴⁵ See RCA Comments at 6 (urging the Commission to license available spectrum “according to MSAs and RSAs rather than by other county groupings such as EAs or MEAs.”).

³⁴⁶ See *id.*

³⁴⁷ See RCA Comments at 6-7; AT&T Wireless Reply Comments at 3 (supports RCA’s proposal).

³⁴⁸ See RCA Comments at 6-7.

³⁴⁹ The Commission has consistently indicated that it would not insure winning bidders against the risk of loss. Requests for Refunds of Down Payments Made in Auction No. 35, *Order*, 17 FCC Rcd 6283 (explaining that changes in the market value of licenses after the close of an auction do not affect a winning bidder’s obligations), *reversed on other grounds*; Disposition of Down Payment and Pending Applications By Certain Winning Bidders in Auction No. 35, *Order and Order on Reconsideration*, 17 FCC Rcd 23354 (2002).

³⁵⁰ See *supra* ¶ 83.

³⁵¹ RCA Comments at 7.

³⁵² Previously, the Commission has found that “cherry-picking” of spectrum in this manner is contrary to the public interest. See Amendment of the Commission’s Rules Regarding Installment Payment Financing For Personal Communications Services (PCS) Licensees, WT Docket No. 97-82, *Second Report and Order and Further Notice of Proposed Rulemaking*, 12 FCC Rcd 16436, 16455, 16463, 16469 ¶¶ 38 (“These provisions prevent licensees from selectively surrendering spectrum for which they may believe they paid too much, or otherwise discarding spectrum in markets that may be more difficult to serve (commonly referred to as ‘cherry-picking’ of licenses or spectrum)”), 57, 67.

³⁵³ See, e.g., Amendment of Part 95 of the Commission’s Rules to Provide Regulatory Flexibility in the 218-219 MHz Service, WT Docket No. 98-169, *Second Order on Reconsideration of the Report and Order and* (continued....)

disaggregation, partitioning, or spectrum leasing is practical, our rules allow and we would encourage such a transaction because it would promote the rapid development of the full license. This is particularly true in light of the new flexibility provided to wireless licensees by our recent *Secondary Markets Report and Order*.³⁵⁴ We note, however, that in certain limited circumstances, the public interest might be served by the Commission recovering previously licensed spectrum, e.g. when spectrum must be cleared in order to be reallocated for new uses.

142. Further, we note that a fundamental assumption of RCA's proposal is that the AWS band plan will favor larger licensees. However, as we explained above, the AWS band plan adopted here includes licenses with a variety of geographic sizes that will provide licensees with flexibility to implement their business plans and ensure that licenses are disseminated to a wide variety of applicants. Accordingly, the balance struck in our selection of geographic license areas, coupled with our existing partitioning and disaggregation procedures and the new flexibility provided by the *Secondary Markets Report and Order*, obviates the need to devise a new mechanism as proposed by RCA and AT&T Wireless, which, we believe, is inappropriate under the band plan that we have adopted. Thus, at this time, we decline to adopt the return credit option suggested by RCA in the absence of a record demonstrating that the public interest is best served by the adoption of such a proposal. We further note, however, that we are continuing to examine ways of amending our regulations and policies governing the electromagnetic spectrum and facilities-based commercial and private wireless services that rely on spectrum, in order to promote digital migration and rapid and efficient deployment of these services in rural and underserved areas.³⁵⁵

143. Consistent with our proposals, we will use the general competitive bidding rules set forth in Part 1, Subpart Q, of the Commission's rules to conduct the auction of initial licenses in the 1710-1755 MHz and 2110-2155 MHz bands.³⁵⁶ Our decision to apply the Part 1 rules is consistent with our ongoing effort to streamline our general competitive bidding rules for all radio services that are subject to competitive bidding.³⁵⁷ As we stated in the *AWS Service Rules NPRM*, application of the general competitive bidding rules will be subject to any modifications that the Commission may subsequently adopt.³⁵⁸

(Continued from previous page)

Memorandum Opinion and Order, 15 FCC Rcd 25020, ¶ 19 (rejecting a licensee's request to provide disaggregation as part of a financial restructuring plan).

³⁵⁴ The Commission has recently adopted a *Report and Order* in the secondary markets proceeding that is designed to facilitate the ability of Wireless Radio Service licensees to lease spectrum usage rights to third parties seeking access to spectrum. *Secondary Markets Report and Order*, *supra* n.59.

³⁵⁵ *Rural Services NPRM* ¶ 1.

³⁵⁶ See 47 C.F.R. § 1.2101 *et. seq.* (Part 1, Subpart Q -- Competitive Bidding Proceedings).

³⁵⁷ In the Part 1 proceeding, the Commission has engaged in an ongoing effort to clarify and amend its general competitive bidding rules for all auctionable services. See Amendment of Part 1 of the Commission's Rules -- Competitive Bidding Procedures, *Part 1 Recon Order/ Fifth Report and Order* and *Fourth Further Notice of Proposed Rule Making*, 15 FCC Rcd 15293 (2000) *recons. pending*; *Part 1 Third Report and Order*, 13 FCC Rcd 374, 376 ¶ 1. The Commission has previously observed that continual changes and improvements "advance our auction program by reducing the burden on the Commission and the public of conducting service-by-service auction rule makings." *Id.*

³⁵⁸ *AWS Service Rules NPRM*, 17 FCC Rcd at 24163 ¶ 73.

2. Provisions for Designated Entities

144. *Background:* In the *Competitive Bidding Second Memorandum Opinion and Order*, the Commission stated that it would define eligibility requirements for small businesses on a service-specific basis, taking into account the capital requirements and other characteristics of each particular service in establishing the appropriate threshold.³⁵⁹ In the *AWS Service Rules NPRM*, we proposed to adopt the same small business size standards that the Commission adopted for broadband PCS³⁶⁰ because comments received suggested that similar services might be provided in AWS.³⁶¹ We also noted that certain commenters, in response to the *AWS Allocation NPRM*, the *AWS Allocation Further NPRM*, and the *NTIA AWS Assessment*, had suggested a variety of advanced wireless services, including, but not limited to, voice, video, internet, and high speed data services for the 1710-1755 MHz and 2110-2155 MHz bands.³⁶² We acknowledged that we did not know precisely the type of services that a licensee may seek to provide in these bands. Nonetheless, we anticipated that the services that will be deployed in these bands may have capital requirements comparable to those in the broadband PCS service. We also believed that the licensees in these bands will be presented with issues and costs similar to those presented to broadband PCS licensees, including those involved in relocating incumbents, and developing markets, technologies, and services. We also noted that at the time the broadband PCS service was established, it was similarly anticipated that it would facilitate the introduction of a new generation of services.³⁶³

145. In light of the similarities we identified, we proposed to define a "small business" as an entity with average annual gross revenues for the preceding three years not exceeding \$40 million, and a "very small business" as an entity with average annual gross revenues for the preceding three years not exceeding \$15 million.³⁶⁴ We also proposed to provide "small businesses" with a bidding credit of 15 percent and "very small businesses" with a bidding credit of 25 percent. The bidding credits we proposed were those set forth in the standardized schedule in Part 1 of our Rules.³⁶⁵ Accordingly, we

³⁵⁹ Implementation of Section 309(j) of the Communications Act—Competitive Bidding, PP Docket No. 93-253, *Second Memorandum Opinion and Order*, 9 FCC Rcd 7245, 7269 ¶ 145 (1994) (*Competitive Bidding Second Memorandum Opinion and Order*); 47 C.F.R. § 1.2110(c)(1).

³⁶⁰ Implementation of Section 309(j) of the Communications Act—Competitive Bidding, PP Docket No. 93-253, *Order on Reconsideration*, 15 FCC Rcd 17384, 17394 ¶ 21 (2000) (summarizing the bidding credits offered in broadband PCS C and F Block auctions); 47 C.F.R. § 24.720 (1994). The Commission also adopted the PCS standards for WCS in the 2.3 GHz band. *Part 27 Report and Order*, 12 FCC Rcd at 10879 ¶ 194 (employing the small business size standards used in broadband PCS because "the advantages of ready availability and familiarity to many small businesses that might be interested in this spectrum").

³⁶¹ *AWS Service Rules NPRM*, 17 FCC Rcd at 24164-65 ¶ 77.

³⁶² Qualcomm Comments at 3, filed on Feb. 22, 2001 in response to the *AWS Allocation NPRM*; Lucent Comments at 1, filed on Aug. 28, 2000 in response to the Office of Engineering and Technology's (OET) request for comment on the petition filed by the Cellular Telecommunications Industry Association (CTIA); and Nokia Comments at 2 filed on Aug. 28, 2000, in response to the Commission's *Public Notice*, DA 00-1673 (rel. July 28, 2000) and the petition filed by CTIA.

³⁶³ Implementation of Section 309(j) of the Communications Act—Competitive Bidding, *Fifth Report and Order*, 9 FCC Rcd 5532, 5534 ¶ 3 (1994) (*Competitive Bidding Fifth Report and Order*).

³⁶⁴ *AWS Service Rules NPRM*, 17 FCC Rcd at 24164-65 ¶ 77. We are coordinating these proposed small business size standards with the U.S. Small Business Administration.

³⁶⁵ In the *Part 1 Third Report and Order*, we adopted a standard schedule of bidding credits, the levels of which were developed based on our auction experience. *Part 1 Third Report and Order*, 13 FCC Rcd at 403-04 ¶ 47; see also 47 C.F.R. § 1.2110(f)(2).

sought comment on the use of these standards and associated bidding credits for applicants to be licensed in the 1710-1755 MHz and 2110-2155 MHz bands, with particular focus on the appropriate definitions of small and very small businesses as they relate to the size of the geographic area to be covered and the spectrum allocated to each license.³⁶⁶

146. We also noted that although AWS services may have significant advantages in terms of economies of scale compared to other services, the development of AWS services may require an unprecedented investment of capital by prospective licensees. Accordingly, we invited comment on whether there may be any distinctive characteristics to the AWS service or these bands that suggest that the adoption of small business size definitions and the use of bidding credits would be inappropriate in this instance. We also sought comment on whether the small business provisions we proposed were sufficient to promote participation by businesses owned by minorities and women, as well as rural telephone companies.³⁶⁷

147. *Discussion:* As explained below, we adopt the small business size standards and accompanying bidding credits proposed in the *AWS NPRM*. Commenters generally supported our proposal to adopt the same small business size standards that the Commission adopted for broadband PCS.³⁶⁸ Two commenters, Mizelle and RCA, however, suggest that the Commission's attempts to assist designated entities through bidding credits have not been effective to level the playing field for small businesses that are without ties to larger companies.³⁶⁹ Further, to the extent we adopt bidding credits or eligibility limitations in this service, RCA asserts that the Commission should not provide any special benefits to designated entities such as rural telephone companies that would not also be available to all small businesses.³⁷⁰

148. Although a lack of adequate capital is a critical barrier to entering business and successful auction participation by bidders, based upon the Commission's experience, the auction process provides the best opportunity to date for designated entities to acquire licenses. The Commission has long recognized that bidding preferences for qualifying bidders provides such bidders with an opportunity to compete successfully against large, well-financed entities.³⁷¹ In the 34

³⁶⁶ *AWS Service Rules NPRM*, 17 FCC Rcd at 24164-65 ¶ 77.

³⁶⁷ We also noted that to the extent that commenters proposed additional provisions to ensure participation by minority-owned or women-owned businesses, they should address how such provisions should be crafted to meet the relevant standards of judicial review. *Adarand Constructors v. Peña*, 515 U.S. 200 (1995) (requiring a strict scrutiny standard of review for Congressionally mandated race-conscious measures); *United States v. Virginia*, 518 U.S. 515 (1996) (applying an intermediate standard of review to a state program based on gender classification).

³⁶⁸ See e.g., CTIA Comments at 15.

³⁶⁹ See RCA Comments at n.3, 8-9. Mizelle argues that bidding credits only increase the price of a license and ultimately that larger companies will always win the license. Mizelle Comments at 2.

³⁷⁰ See RCA Comments at n.3, 8-9. In support of its position, RCA notes that rural wireless carriers compete with rural telephone companies to offer local access services in rural areas. *Id.* Thus, RCA concludes that it would provide rural telephone companies with an unfair competitive advantage if they were provided special benefits.

³⁷¹ See, e.g., Revision of Part 22 and Part 90 of the Commission's Rules to Facilitate Future Development of Paging Systems; Implementation of Section 309(j) of the Communications Act – Competitive Bidding, WT Docket No. 96-18, PR Docket No. 93-253, *Memorandum Opinion and Order on Reconsideration and Third Report and Order*, 14 FCC Rcd 10030, 10091 ¶ 112 (1999).

auctions conducted to date that utilize small business bidding credits, 76 percent of the winning bidders were small or very small businesses, 7 percent of the winning bidders were minority-owned business, 6 percent of the winning bidders were women-owned businesses,³⁷² and 14 percent of the winning bidders were rural telephone companies.³⁷³ (Some of these entities may fall into more than one category *i.e.*, a women-owned business may also be a small or very small business). In addition, an analysis of the Upper 700 MHz Guard Band auctions (Auction Nos. 33 and 38), which employed identical small business size standards with those we adopt today, indicates that small and very small businesses successfully bid for 28 of the 104 licenses, or 27 percent of the licenses sold.³⁷⁴ Accordingly, contrary to the suggestions raised by Mizelle and Goldstein, the record amply demonstrates that bidding credits the Commission has offered to small businesses have allowed small businesses to effectively compete against large, well-financed entities.

149. Accordingly, we adopt the same small business size standards for licenses in the 1710-1755/2110-2155 MHz band that the Commission adopted for broadband PCS. Specifically, we define a "small business" in this band as an entity with average annual gross revenues for the preceding three years not exceeding \$40 million, and a "very small business" as an entity with average annual gross revenues for the preceding three years not exceeding \$15 million. Correspondingly, we will provide "small businesses" with a bidding credit of 15 percent and "very small businesses" with a bidding credit of 25 percent.³⁷⁵ The small business size standards and corresponding bidding credits that we adopt here will provide a variety of businesses, including rural wireless carriers who are "small businesses" or "very small businesses," with opportunities to participate in the auction of licenses for the AWS bands. These standards will also afford licensees substantial flexibility for the provision of services with varying capital costs.³⁷⁶ The Commission has also found that the use of tiered or graduated small business definitions is useful in furthering our mandate under Section 309(j) to promote opportunities for and disseminate licenses to a wide variety of applicants.³⁷⁷ Consequently, the use of small entity definitions for the AWS bands may result in the dissemination of licenses among a wide range of entities, consistent with our obligations under Section 309(j)(3)(B) of the Act.³⁷⁸

³⁷² We note that this information may be underreported because the Commission does not require women or minority-owned entities to indicate their status.

³⁷³ Auction results and related data may be found on the Commission's Web site at: <<http://www.fcc.gov/wtb/auctions>>.

³⁷⁴ See "39 GHz Band Auction Closes," *Public Notice*, Report No. AUC-3D-E (Auction No. 30), DA 00-1035 (rel. May 10, 2000). See also <<http://www.fcc.gov/wtb/auctions>>.

³⁷⁵ AWS Service Rules NPRM, 17 FCC Rcd at 24164-65 ¶ 77. On October 23, 2003, the U.S. Small Business Administration ("SBA") approved the Commission's request to adopt the proposed small business size standards for the auction of licenses in the 1710-1755 MHz and 2110-2155 MHz band. The SBA confirmed that these small business size standards will provide a beneficial and equitable way to assure small business competition for licenses in these bands. See Letter from Hector V. Barretto, Administrator, Office of Size Standards, U.S. Small Business Administration to Margaret W. Wiener, Chief, Auctions and Industry Analysis Division, Wireless Telecommunications Bureau, Federal Communications Commission, dated Oct. 23, 2003.

³⁷⁶ *Id.*

³⁷⁷ 47 U.S.C. § 309(j)(3)(B), (4)(C)-(D).

³⁷⁸ Section 309(j)(3)(B) of the Act provides that in establishing eligibility criteria and bidding methodologies the Commission shall promote "economic opportunity and competition . . . by avoiding excessive concentration of licenses and by disseminating licenses among a wide variety of applicants, including small (continued....)

IV. PROCEDURAL MATTERS

A. Regulatory Flexibility Analysis

150. A Final Regulatory Flexibility Analysis has been prepared for this Report and Order and is included in Appendix B.

B. Paperwork Reduction Analysis

151. This Report and Order contains either new or modified information collections. As part of our continuing effort to reduce paperwork burdens, we invite the general public and the Office of Management and Budget (OMB) to take this opportunity to comment on the information collections contained in the Report and Order, as required by the Paperwork Reduction Act of 1995.³⁷⁹ Comments should address: (a) whether the proposed collection of information is necessary for the proper performance of the functions of the Commission, including whether the information shall have practical utility; (b) the accuracy of the Commission's burden estimates; (c) ways to enhance the quality, utility, and clarity of the information collected; and (d) ways to minimize the burden of the collection of information on the respondents, including the use of automated collection techniques or other forms of information technology.

152. Written comments by the public and agencies on the proposed and/or modified information collections are due 60 days after the date of publication in the Federal Register. Written comments by the OMB on the proposed and/or modified information collections are due on or before 120 days after the date of publication in the Federal Register. In addition to filing comments with the Secretary, a copy of any comments on the information collections contained herein should be submitted to Judith Boley Herman, Federal Communications Commission, 445 12th Street, S.W., Room 1-C804, Washington, D.C. 20554, or via the Internet to <Judith-B.Herman@fcc.gov>, and to Kim A. Johnson, Policy Analyst, Office of Information and Regulatory Affairs (OIRA), Office of Management and Budget (OMB), Docket Library, Room 10236, New Executive Office Building (NEOB), 725 17th Street, N.W., Washington, D.C. 20503 or via the Internet at <Kim_A._Johnson@omb.eop.gov>.

153. The public may view the documents filed in this proceeding during regular business hours in the FCC Reference Information Center, Federal Communications Commission, 445 12th Street, S.W., Room CY-A257, Washington, D. C. 20554, and on the Commission's Internet Home Page: <<http://www.fcc.gov>>. Copies of comments and reply comments are also available through the Commission's duplicating contractor: Qualex International, Portals II, 445 12th Street, S.W., CY-B4202, Washington, D.C. 20554 (telephone 202-863-2893). Accessible formats (computer diskettes, large print, audio recording and Braille) are available to persons with disabilities by contacting Brian Millin, of the Consumer & Governmental Affairs Bureau, at (202) 418-7426, TTY (202) 418-7365, or at <Brian.Millin@fcc.gov>.

C. Further Information

154. For further information concerning this rulemaking proceeding, contact Eli Johnson or John Spencer, at (202) 418-1310, Policy Division, Wireless Telecommunications Bureau, Federal Communications Commission, 445 12th Street, S.W., Room 3-C124, Washington, D.C. 20554; or via the Internet to Eli.Johnson@fcc.gov or <John.Spencer@fcc.gov>.

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businesses, rural telephone companies, and businesses owned by members of minority groups and women." See 47 U.S.C. § 309(j)(3)(B).

³⁷⁹ Pub. L. No. 104-13.

V. ORDERING CLAUSES

155. ACCORDINGLY, IT IS ORDERED, pursuant to sections 1, 2, 4(i), 7, 10, 201, 214, 301, 302, 303, 307, 308, 309, 310, 319, 324, 332, and 333 of the Communications Act of 1934, 47 U.S.C. §§ 151, 152, 154(i), 157, 160, 201, 214, 301, 302, 303, 307, 308, 309, 310, 319, 324, 332, 333, that this Report and Order is hereby ADOPTED.

156. IT IS FURTHER ORDERED that Part 27 of the Commission's Rules ARE AMENDED as specified in Appendix C, effective 60 days after the date of publication in the Federal Register. Information collections contained in these rules will be effective upon OMB approval.

157. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Report and Order, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION



Marlene H. Dortch
Secretary