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

In the Matter of	)	
	)	
Amendment of the Commission's Rules	)	ET Docket No. 98-237
With Regard to the 3650-3700 MHz	)	RM-9411
Government Transfer Band	)	
	)	
The 4.9 GHz Band Transferred from	)	WT Docket No. 00-32
Federal Government Use	)	

FIRST REPORT AND ORDER AND SECOND NOTICE OF PROPOSED RULE MAKING

Adopted: October 12, 2000 **Released:** October 24, 2000

Comment Date: [30 days from publication in the Federal Register]
Reply Comment Date: [60 days from publication in the Federal Register]

By the Commission:

TABLE OF CONTENTS

I. INTRODUCTION

1. By this action, we allocate the 50 megahertz of spectrum in the 3650-3700 MHz band to the fixed and mobile (base stations) terrestrial services on a primary basis. This allocation will facilitate the provision of a broad range of services, including traditional voice telephony and new broadband, high-speed, data and video services. We also believe that this allocation will help foster the introduction of such services to rural areas of the United States, thus promoting the objectives of Section 706 of the Telecommunications Act of 1996 to facilitate the rapid deployment of advanced telecommunications

services and technologies to all Americans.[1] This action will also encourage new and more effective competition to existing wireline local exchange carriers by providing for an economical means to offer competitive "local loop" or "last-mile" facilities.

2. We are "grandfathering" existing fixed satellite service ("FSS") earth station sites in this band and, for a limited time, will accept new applications for FSS earth stations in the vicinity (*i.e.* within 10 miles) of these grandfathered sites to operate on a co-primary basis in the band. We will also permit additional FSS earth station operations on a secondary basis. This will ensure the continuity of FSS operations and permit new FSS operations to help alleviate congestion in the adjacent 3700-4200 MHz FSS band. Finally, to provide for compatibility with both terrestrial fixed service and FSS operations in the band, we are limiting the terrestrial mobile service use of the band to base station operations.

3. In the Second Notice of Proposed Rule Making ("*Second Notice*"), we also propose licensing and service rules for the assignment of fixed and mobile services licenses in this band by competitive bidding. Both new and existing FSS earth stations will be subject to Part 25 of the Commission's rules. Parties who wish to use this spectrum for FSS will have to comply with the Part 25 application and licensing rules. Those who wish to provide fixed and mobile services in the 3650-3700 MHz band will be subject to the application, licensing and services rules we adopt in this proceeding. We propose that 3650-3700 MHz licensees who obtain licenses pursuant to the rules we adopt for fixed and mobile services and who subsequently choose to offer FSS in this band may retain their 3650-3700 MHz licenses if they meet the proposed FSS build-out requirement.[2] These actions and proposals are designed to benefit the public by permitting and encouraging the introduction of new services, particularly in rural areas.

II. BACKGROUND

4. The 3600-3700 MHz band has been allocated for use by the Federal Government on a primary basis for radiolocation services. In 1984, a primary allocation in the 3600-3700 MHz band was added for non-Government FSS (space-to-Earth), but US245 footnote restricted use of this FSS allocation "to international inter-continental systems . . . subject to case-by-case electromagnetic compatibility analysis."[3] The allocation was aimed at meeting "future INTELSAT projected requirements."[4] To date,

[1] *See* Pub.L. 104-104, Title VII, § 706, Feb. 8, 1996, 110 Stat. 153, reproduced in the notes under 47 U.S.C. § 157 ("Section 706"). Section 706(c)(1) defines "advanced telecommunications capability . . . without regard to any transmission media or technology, as high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data graphics, and video telecommunications using any technology." *See generally Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, CC Docket 98-146, Second Report, FCC 00-290, (rel. Aug. 21, 2000) ("*Section 706 Second Report*").

[2] *See* ¶¶ 82-88, *infra*.

[3] *See Amendment of the Commission's Rules with Regard to the 3650-3700 MHz Government Transfer Band*, ET Docket No. 98-237, Notice of Proposed Rule Making and Order, 14 FCC Rcd at 1295, 1297-98 (¶ 3) (1998) ("*Notice and Order*"). *See also Amendment of Part 2 of the Commission's Rules Regarding Implementation of the Final Acts of the World Administrative Radio Conference*, Geneva, 1979, General Docket 80-739, Second Report and Order, 49 FR 2357 (Jan. 19, 1984).

[4] *See Notice and Order*, 14 FCC Rcd at 1297 (¶ 3).

approximately 82 FSS earth stations at 49 sites[5] have been licensed in this spectrum.[6]

5. Pursuant to the Omnibus Budget Reconciliation Act of 1993 ("OBRA-93"),[7] the National Telecommunications and Information Administration ("NTIA") identified the 3650-3700 MHz band for transfer, effective January 1999, from a Government/non-Government shared use status to a mixed-use status.[8] While the band is now predominately available for non-Government use, a condition of the transfer allows Government radiolocation stations to continue to operate indefinitely in the 3650-3700 MHz band at Pascagoula, Mississippi; Pensacola, Florida; and Saint Inigoes, Maryland. NTIA states that the "radius of operation" for these radiolocation stations is 80 kilometers (49.7 miles).[9]

6. Pursuant to the Balanced Budget Act of 1997, NTIA was required to identify 15 megahertz to be reallocated from Government to non-Government use for assignment by competitive bidding within the range 1990-2110 MHz, or to identify alternative spectrum.[10] NTIA subsequently identified the following frequency bands that could be assigned by competitive bidding as a substitute for the 15 megahertz: 944-960 MHz, 1390-1400 MHz, 1427-1432 MHz, 1670-1675 MHz, 2500-2690 MHz, and 3650-3700 MHz.[11]

7. In the *Notice of Proposed Rule Making and Order* ("*Notice and Order*") in this proceeding, we proposed to allocate the 3650-3700 MHz band on a primary basis to the terrestrial fixed service ("FS")

---

[5] *See* Appendix F. Earth stations that operate in the 3600-3700 MHz band require coordination with NTIA. We note that the earth stations listed in Appendix F are being coordinated with NTIA. We are working with NTIA to ensure that all earth stations are coordinated.

[6] Footnote US245 to the Table of Allocations states that "The fixed-satellite service is limited to international inter-continental systems and subject to case-by-case electro-magnetic compatibility analysis." These numbers include four earth stations at three sites used to provide Telemetry, Tracking and Control ("TT&C") functions for satellite systems. Section 25.201 of the Commissions rules defines TT&C operations as follows: Space Telemetering is defined as the use of telemetering for the transmission from a space station of results of measurements made in a spacecraft, including those relating to the functioning of the spacecraft; Space Tracking is defined as determination of the orbit, velocity or instantaneous position of an object in space by means of radiodetermination, excluding primary radar, for the purpose of following the movement of the object; and Space Telecommand is defined as the use of radiocommunication for the transmission of signals to a space station to initiate, modify or terminate function of the equipment on a space object, including the space station. *See* 47 C.F.R. § 25.201.

[7] *See Omnibus Budget Reconciliation Act of 1993* ("OBRA-93"), Pub. L. No. 103-66, Title VI, § 6001(a)(3), 107 Stat. 312 (enacted August 10, 1993). S*ee also* H.R. Rep. No. 103-213, 103rd Cong., 1st Sess. (1993).

[8] *See Spectrum Reallocation Final Report, Response to Title VI - Omnibus Budget Reconciliation Act of 1993*, NTIA Special Publication 95-3l2, released February 1995 ("*Final Report*"). Shared use means that a band of frequencies is generally available for both government and non-government use. *See* 47 C.F.R. § 2.105(b). Mixed use means that government use is limited by geographic area, by time or by other means so as to guarantee that the potential use by government stations is substantially less than the potential use to be made by non-government stations. *See* Section 113(b)(2)(B) of OBRA-93. *See* 47 U.S.C. § 923(b)(2)(B).

[9] *See Final Report* at Sections 4-16 through 4-21.

[10] *See The Balanced Budget Act of 1997*, Section 3002(c), Pub. L. 105-33, 111 Stat. 251-258 (1997) ("BBA").

[11] *See Identification of Alternate Bands*, NTIA Special Pub. 98-39 (1998), at 25-29.

and proposed to grandfather existing FSS earth station sites in the band.[12] In the *Notice and Order* we tentatively concluded against proposing a mobile service allocation in the band.[13] We sought comment on this tentative conclusion, and alternatively, whether we should allocate this band to the land mobile service.[14] Additionally, we sought comment on the need to delete the FSS allocation in the 3650-3700 MHz band in order to preserve the availability of the band for use by the proposed FS.[15] We also proposed to delete the non-Government radiolocation allocation in the band.[16] Further, we proposed to delete the Government radiolocation service allocation, except for three grandfathered sites.[17] We also proposed to delete the unused Government aeronautical radionavigation service (ground based) allocation.[18] We also sought comment on whether to assign licenses in this band through competitive bidding and what would be the optimal size of the licensing blocks and service areas.[19] Moreover, we sought comment on appropriate service rules for fixed service operation in the band.[20]

8. In the *Notice and Order*, we stated that we would no longer accept applications in the 3650-3700 MHz band for: (1) new FSS earth stations, (2) major amendments to pending FSS earth station applications, or (3) applications for major changes in existing FSS earth stations. This action was intended to ensure that adequate opportunities would continue to exist for the provision of fixed operations in the band.[21] Subsequently, we adopted a *Memorandum Opinion and Order* ("*MO&O*") in this proceeding modifying this decision to provide limited relief from the FSS earth station application freeze for immediate needs.[22] Specifically, the *MO&O* stated that the Commission would accept new and major change applications for FSS earth stations and major amendments to pending applications if the subject facilities were located within the vicinity (*i.e.* 10 miles) of an existing FSS earth station operating in the 3650-3700 MHz band.[23]

9. A total of 27 parties filed comments and 18 parties filed reply comments in this proceeding.[24] The majority of the comments were submitted on behalf of telecommunication providers that serve predominately rural areas of the country, terrestrial equipment manufacturers, and satellite operators.

---

[12] *See Notice and Order*, 14 FCC Rcd at 1295-96, 1299-300, 1305-06 (¶¶ 1-2, 6-7, 13).

[13] *See Notice and Order*, 14 FCC Rcd at 1299-300, 1308 (¶¶ 6, 17).

[14] *Id*. at 1308 (¶ 17).

[15] *Id*. at 1306 (¶ 14).

[16] *Id*. at 1307 (¶ 15).

[17] *Id*. at 1307 (¶ 16).

[18] *Id*.

[19] *Id*. at 1303 (¶ 10).

[20] *Id*. at 1302-05 (¶¶ 9-12).

[21] *Id*. at 1296-97 (¶ 2).

[22] *See MO&O*, 15 FCC Rcd at 9341 (¶ 4).

[23] *Id*.

[24] A complete list of commenters is contained in Appendix A.

III. DISCUSSION

A. Reallocation of the 3650-3700 MHz Band for Non-Government Operations

1. Allocation

a. Terrestrial Fixed and Mobile Services

10. In the *Notice and Order*, we proposed to allocate spectrum in the 3650-3700 MHz band on a primary basis to the non-Government fixed service.[25] In making this proposal, we envisioned that this spectrum would be used for a broad range of services, such as traditional voice telephony and a wide variety of new broadband, high-speed, digital data and video services that could be used for both home and business applications.[26] We also recognized that this spectrum may be well suited for wireless connections to the public switched telephone network ("PSTN").[27] We noted that this could provide an economical means to offer competitive "local loop" or "last-mile" facilities, which may lead to more effective competition to existing wireline local exchange carrier services.[28] This type of service is known as Fixed Wireless Access ("FWA"). We also noted that commercial deployment of FWA has already commenced internationally in the 3400-3700 MHz band in several countries.[29] We tentatively concluded that terrestrial mobile operations would not be compatible with the incumbent FSS earth stations.[30] Specifically, we noted that the Commission has traditionally licensed satellite downlinks[31] in bands that are not used by mobile services because of the difficulties associated with sharing of spectrum by low power satellite receive signals and roving mobile units.[32] We sought comment on this tentative conclusion, and alternatively, on whether we should allocate the 3650-3700 MHz band to the land mobile service.[33]

11. Several telecommunications service providers, particularly those serving rural areas, and fixed service equipment manufacturers expressed support for allocating the 3650-3700 MHz band on a primary

---

[25] *See Notice and Order*, 14 FCC Rcd at 1295-96, 1299-1300 (¶¶ 1, 6-7).

[26] *Id*. at 1295-96 (¶ 1).

[27] *Id*. at 1299-300 (¶ 6).

[28] *Id*. at 1295-96 (¶ 1).

[29] For example, the Mexican government has specified that the 3400-3700 MHz band is to be used for local wireless telephony and has recently auctioned this band. Australia also has just announced an auction. The Canadian government has authorized trials of Nortel's Proximity-I system, which is also used in the United Kingdom. *See also* "Update on Fixed Wireless Access in Canada (Updated paper)," at http://www.tsacc.ic.gc.ca/RAST6/DOCS/rast-6-14.html. Domestically, Lucent Technologies and Interdigital Communications Corp. are conducting fixed wireless access ("FWA") experiments in the 3400-3600 MHz band for the export market. Mountain Telecommunications Inc., ("MountainTel") has an experimental license, 0041-EX-ML-1999, for FWA service in the band.

[30] *See Notice and Order*, 14 FCC Rcd at 1299-300 (¶ 6).

[31] Note that FSS earth stations in the 3650-3700 MHz are authorized as space-to-Earth operations (i.e. downlinks).

[32] *See Notice and Order*, 14 FCC Rcd at 1308 (¶ 17).

[33] *Id*.

basis to the fixed service.[34] They agree that a fixed service allocation will permit the introduction of new services to the public and will provide a means for delivery of advanced telecommunications services to rural and traditionally underserved areas of the U.S.[35] In particular, parties representing rural entities believe that a fixed service allocation will allow telecommunications providers to employ potentially cost-effective wireless technology for the deployment of advanced broadband communications services, such as wireless Internet access, in rural areas of the country.[36] Some commenters requested that we allocate additional spectrum in the 3400-3650 MHz band in conjunction with the 3650-3700 MHz band to improve the economic viability of the fixed service.[37] Two commenters note that MountainTel and Saddleback Communications Company ("Saddleback") filed a petition for rule making ("MountainTel/Saddleback petition") on September 30, 1998, requesting that the Commission allocate the 3400-3700 MHz band for use in the provision of FWA by telecommunications carriers.[38] Several parties supported the Commission's tentative conclusion not to provide a mobile service allocation in the band.[39] No comments were filed supporting a mobile service allocation in the 3650-3700 MHz band.

12. Satellite service providers objected to the Commission's proposed fixed service allocation if done in a manner that precludes expansion of FSS. For example, ImpSat USA ("ImpSat") and Wold International, Inc. ("Wold") assert that the proposed fixed service allocation will prevent continued access to the 3650-3700 MHz band and would cripple the development of international telecommunication services provided by the FSS operations in the band.[40] PanAmSat Corporation ("PanAmSat") is concerned that the proposed fixed service operations will cause interference to FSS operations in the 3650-3700 MHz band.[41] Further, COMSAT Corporation ("COMSAT") and MCI WorldCom, Inc. ("MCI WorldCom"), believe that the public interest would best be served by allowing the FSS and new fixed services to share

[34] *See, e.g.* CommNet Cellular, Inc., Kerville Telephone Company, Lincoln County Telephone System, Inc., Minnesota Southern Cellular Telephone Company, Penasco Valley Telephone Cooperative, Inc., Ringgold Telephone Company, Sully Buttes Telephone Cooperative Inc., 3 Rivers Telephone Cooperative Inc. ("Rural Carriers") comments at 2-3 and reply comments at 1; Cheyenne River Sioux Telephone Authority ("CSRT") comments at 1; Lucent Technologies ("Lucent") comments at 3; Motorola comments at 2; Telephone and Data Systems, Inc., ("TDS") comments at 2; The Rural Telecommunications Group ("RTG") comments at 3; SR Telecom Inc. ("SR Telecom") comments at 3; TRANSCOMM, Inc., ("TRANSCOMM") comments at 2; AT&T Corp. ("AT&T") comments at 6; and Western Wireless Corporation ("Western Wireless") comments at 1 and 5.

[35] *See* Rural Carriers comments at 2-3 and reply comments at 1. *See also*: Lucent comments at 3, Motorola comments at 1-3, TDS comments at 2, RTG comments at 3, SR Telecom comments at 3, TRANSCOMM comments at 2, AT&T comments at 6 and Western Wireless comments at 1 and 5.

[36] *See* RTG comments at 1, 4. *See also* Rural Carriers comments at 2-3.

[37] *See* CRST comments at 1, 4. *See also* SR Telecom comments at 3, 6-7; Airspan comments at 1-2; Lucent comments at 2-3; Motorola comments at 2; GTE reply comments at 6; Nortel comments at 4; and TRANSCOMM comments at 4.

[38] *See* CRST comments at 1 and TRANSCOMM comments at 5. While the Commission has not assigned a rulemaking number to this petition, it is available on the Commission's Electronic Comment Filing System (ECFS) at http://www.fcc.gov/e-file/ecfs.html under proceeding number PRM98ET, dated 09/30/1998.

[39] *See* COMSAT comments at 15. *See also* Lucent comments at 6; Motorola comments at 3; and SR Telecom comments at 4.

[40] *See* ImpSat comments at 1. *See also* Wold reply comments at 1-2.

[41] *See* PanAmSat comments at 7.

the 3650-3700 MHz band on a co-primary basis.[42] Lockheed Martin Corporation ("Lockheed") and COMSAT believe that effective sharing criteria can be developed by establishing suitable reference system parameters for calculating coordination contours and for conducting interference analyses.[43]

13. Based on the record in this proceeding and the need to balance competing demands for this spectrum, we are adopting our proposal to allocate the 3650-3700 MHz band for terrestrial fixed service operations on a primary basis. As indicated by the commenting parties, allocation of this band on a primary basis for fixed service will facilitate the operation of a broad range of new advanced services. We believe that the 3650-3700 MHz band is situated low enough in the radiofrequency spectrum so as to permit favorable transmission characteristics which will allow the establishment of service links that can cover significant distances. In addition, 50 megahertz will provide enough bandwidth to allow for high speed digital data and video services. These characteristics should prove useful in establishing basic and advanced telecommunications services within rural areas of the country. The need for advanced services in rural areas has been well documented in recent studies. These studies conclude that Americans living in rural areas and inner cities do not have access to advanced services that are comparable to services available to people living in other areas.[44] A lack of broadband infrastructure could limit the potential of these communities to attract and retain businesses and jobs, especially businesses that are dependent on electronic commerce. Lack of infrastructure could also restrict community access to education, health care, and recreational services.[45] We conclude that allocation of the 3650-3700 MHz band for the fixed service will serve the public interest by providing broadband data services to residential and business consumers, particularly in rural areas. Additionally, this allocation will facilitate an alternative means of providing basic telephone service, thus fostering a competitive market structure for direct PSTN access for rural and underserved areas of the U.S. For example, it could be used to provide unserved persons with a wireless connection to the PSTN and to economically serve high-cost wireline service areas, including rural areas.

14. While we recognize that the desirability of providing fixed service operations access to additional spectrum, spectrum in the adjacent 3400-3650 MHz band is not available. That band is currently allocated on a primary basis for Federal Government use. The Commission consulted with NTIA concerning access to this band on a co-primary basis, but NTIA determined that non-Government fixed service operations are incompatible with the incumbent Government operations.[46] Given NTIA's determination, we do not anticipate gaining access to spectrum in the 3400-3650 MHz band in the near term and, therefore, must deny the MountainTel/Saddleback petition requesting allocation of this band for non-Government operations.

15. Although additional spectrum for fixed service operation is not available, we find that the 50 MHz at 3650-3700 MHz can support viable fixed service operations. We are encouraged by comments in the record indicating that technologies such as time division duplexing ("TDD") could be used to provide

[42] *See* COMSAT comments at 17-18. *See also* MCI WorldCom reply comments at 1.

[43] *See* Lockheed reply comments at 4. *See also* COMSAT comments at 11-12.

[44] *See generally* National Telecommunications and Information Administration, *Falling Through the Net* (July 1999). *See also Section 706 Second Report*, at 6-7, 89-90.

[45] *See Section 706 Second Report*, at 88.

[46] *See* letter dated June 30, 2000 from William T. Hatch, Associate Administrator, NTIA to Dale Hatfield, Chief OET.

service in this band.[47] To further enhance the viability of terrestrial fixed and mobile services, we seek comment in the *Second Notice* on the feasibility of pairing the 3650-3700 MHz band with the 4940-4990 MHz band and whether such a pairing will encourage synergies in use of both portions of spectrum.[48] In some areas of the country it may be useful to utilize the 4940-4990 MHz band to serve areas near grandfathered FSS earth station sites operating in the 3650-3700 MHz band. In addition, given the frequency separation of these bands could allow the use of frequency division duplexing ("FDD") technology. These two bands may complement one another and allow for ubiquitous deployment of new terrestrial fixed services.

16. We decline to adopt our tentative conclusion concerning a mobile service allocation in the 3650-3700 MHz band in its entirety. Given the challenging spectrum sharing environment involving the relatively weaker satellite receive signals, we remain concerned about mobile station (*i.e.* roving handset) operations in the 3650-3700 MHz band.[49] However, while we agree with COMSAT, Lucent, Motorola and SR Telecom that mobile station operations may raise interference concerns, we find that land mobile base stations should be allowed to operate within the 3650-3700 MHz band. Mobile base stations are fixed and thus do not raise the same interference concerns as mobile handset operations. Mobile base stations in the 3650-3700 MHz band might operate with land mobile services offered in the 4940-4990 MHz band. Specifically, the land mobile base stations could transmit in the 3650-3700 MHz band, and the land mobile receivers could use the 4940-4990 MHz band to transmit back to the land mobile base station. We therefore allocate the 3650-3700 MHz band to the mobile service on a nationwide co-primary basis with the fixed service. However, we limit this allocation to base station operations only. Consistent with the international allocation in this band, we are not permitting aeronautical mobile operations. Land mobile base stations in the 3650-3700 MHz band will be subject to the same coordination procedures as FS stations concerning grandfathered Government radiolocation and grandfathered FSS operations.[50]

17. Motorola requests that the Commission allow for "nomadic" or "temporary-fixed" operation in the band.[51] Motorola indicates that "nomadic" operation differs from traditional mobile operations in that the nomadic transmissions do not generally occur when the radio is in rapid high-speed motion.[52] Motorola's description of nomadic operation does not clearly distinguish that operation from mobile operation and we do not see a clear definitional or technical distinction. Our rules define mobile service as a radiocommunication service between mobile and land stations or between mobile stations[53] and fixed

[47] *See* Innowave comments at 2. Additionally, Rural Carriers notes that a 50 MHz block of spectrum in the 3 GHz band could potentially support wireless Internet access with data rates surpassing digital subscriber line ("DSL") services, such as cable modems into remote, rural areas of the country. *See* Rural Carriers comments at 4.

[48] *See The 4.9 GHz Band Transferred from Federal Government Use*, WT Docket No. 00-32, Notice of Proposed Rulemaking, 15 FCC Rcd 4778 (2000) ("*4.9 GHz Notice*").

[49] *See* 47 C.F.R. § 2.1(c). A mobile station is defined as station in the mobile service intended to be used while in motion or during halts at unspecified points. *See also* 47 U.S.C. § 3(23) (defining land station), § 3(27) (defining mobile service), and § 3(28) (defining mobile station).

[50] *See* ¶¶ 103-109, *infra*.

[51] *See* Motorola comments at 3.

[52] *Id*.

[53] *See* 47 C.F.R. § 2.1(c).

service as a radiocommunication service between fixed points.[54] Given these definitions it appears that Motorola's "nomadic" operation would fall under our definition of mobile station operations and thus not be permitted in this band. To the extent that Motorola can provide a detailed demonstration that its proposed "nomadic" operations are consistent with our policies in this band and fall within the Commission's definition of temporary fixed operations, they will be permitted to operate.

b. Sharing With Fixed Satellite Service Operations

18. In the *Notice and Order*, we imposed a freeze on the acceptance of applications for earth station operations in the 3650-3700 MHz band.[55] We proposed to permanently implement this action, but sought comment on alternative methods to meet the terrestrial fixed service needs while minimizing the effect on FSS operations.[56] While some satellite providers indicate that sharing on a co-primary basis is possible, we decline to adopt such a proposal. We recognize that fixed operations and FSS share spectrum in some bands. We will permit sharing to the extent it is technically possible and promotes efficient use of the spectrum. However, in this band, allowing FSS on an unrestrained co-primary basis would impede any potential widespread use of the band for terrestrial services. Due to the weak signals that are received in the FSS, coordination with the higher-powered terrestrial operations would result in potentially large geographic areas where terrestrial services could not operate to avoid interference to FSS. The size and shape of these "exclusion zones" may be different for each FSS earth station site because factors such as shielding, antenna orientation and terrain elevation will vary from site to site.[57] These coordination requirements and the presence of exclusion zones would significantly increase transaction costs and create a disincentive for deployment of new terrestrial operations. Thus, we find that unrestrained deployment of FSS earth stations could hinder or greatly inhibit the opportunities for terrestrial operations in the band.

c. Statutory Considerations

19. As previously mentioned, NTIA identified the 3650-3700 MHz band as a possible substitute for 15 megahertz at 1990-2110 MHz for assignment by competitive bidding pursuant to the requirements of the BBA.[58] A statutory condition of the substitution requires that alternative spectrum "better serve the public interest, convenience, and necessity" and that "the alternative could reasonably be expected to produce comparable receipts."[59] The other bands identified by NTIA as alternatives to the 15 megahertz at 1990-2110 MHz include: 944-960 MHz, 1390-1400 MHz, 1427-1432 MHz, 1670-1675 MHz, and 2500-2690 MHz. As noted in our *Spectrum Policy Statement*, the 944-960 MHz and 2500-2690 MHz bands are already used extensively for non-Government services.[60] We also observe that portions of the 1390-1400

[54] *Id*.

[55] *See Notice and Order*, 14 FCC Rcd at 1296-97, 1305-06 (¶¶ 2, 13).

[56] *Id*. at 1305-06 (¶ 13).

[57] *See* ¶ 26, *infra* (discussing the difference between coordination zones and exclusion zones).

[58] *See* ¶ 6, *supra*.

[59] *See* BBA at Section 3002(a)(4). *See also* 47 U.S.C. § 309(j).

[60] *See Principles for Reallocation of Spectrum to Encourage the Development of Telecommunications Technologies for the New Millennium*, Policy Statement, 14 FCC Rcd 19868, 19880-81 (1999) ("*Spectrum Policy Statement*") at ¶ 27.

MHz and 1427-1432 MHz have already been allocated and assigned to non-Government use.[61] The remaining portions of these bands and the 1670-1675 MHz band are small, non-contiguous segments and thus we believe are unlikely to raise comparable receipts as required by the BBA.[62] Thus, with the exception of 3650-3700 MHz, none of the bands identified by NTIA is available to satisfy the requirements of the BBA. Because this 50 megahertz is at a higher frequency than 15 megahertz of spectrum identified in the 1990-2110 MHz band, additional bandwidth is required to compensate for increased path losses that occur in the 3650-3700 MHz band. For these reasons, we find that the 3650-3700 MHz band is an equivalent and viable substitute for 15 megahertz of spectrum at 1990-2110 MHz, taking into account differences in propagation characteristics between the two bands.

20. Because we are substituting the 3650-3700 MHz band for 15 megahertz of spectrum in the 1990-2110 MHz band, we must assign licenses for this spectrum by competitive bidding to satisfy the requirements of the BBA.[63] Our allocation to the terrestrial services will enable us to establish service rules consistent with the statutory mandate to auction licenses for this spectrum. We seek comment in the *Second Notice* on various service rules necessary to conduct an auction.[64]

21. Recently enacted legislation states that the Commission "shall not assign spectrum used for international or global satellite services by competitive bidding."[65] FSS in this band has historically been restricted to international, intercontinental services.[66] Given that this band is allocated for space-to-Earth or downlink services, this footnote implies that data is being transmitted from another country. Even if this

---

[61] *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 (1997); *Amendment of Parts 2 and 95 of the Commission's Rules to Create a Wireless Medical Telemetry Service*, ET Docket 99-255, Report and Order, 15 FCC Rcd. 11206.

[62] *See* BBA at Section 3002(c)(4).

[63] *Id. See also* NTIA Special Publication 98-39.

[64] *See* ¶¶ 120-127, *infra*. As discussed, recently enacted legislation prohibits the Commission from assigning licenses for international or global satellite services by competitive bidding. *See* ¶ 21, *infra*. The assignment of licenses for terrestrial services by competitive bidding, however, is not prohibited by this legislation. We note that the 24 GHz band is allocated for terrestrial fixed services and satellite services, and we recently adopted rules for awarding licenses for terrestrial fixed service in that band by competitive bidding. *See Amendments to Part 1, 2, 87 and 101 of the Commission's Rules to License Fixed Services at 24 GHz*, Report and Order, FCC 00-272, WT Docket No. 99-327 (rel. July 31, 2000). Terrestrial services and satellite services also share the 39 GHz band, and we have auctioned terrestrial service licenses in that band. *See Amendment of the Commission's Rules Regarding the 37.0-38.6 GHz and 38.6-40.0 GHz Bands*, Report and Order and Second Notice of Proposed Rule Making, 12 FCC Rcd 18600 (1997); "39 GHz Band Auction Closes", Public Notice, DA 00-1035, Report No. AUC-30-E (rel. May 10, 2000).

[65] *See Open-Market Reorganization for the Betterment of International Telecommunications Act*, Pub. L. No. 106-180, 114 Stat. 48 (2000) ("ORBIT Act"). Specifically, Section 647 of the ORBIT Act provides:

> Notwithstanding any other provision of law, the Commission shall not have the authority to assign by competitive bidding orbital locations or spectrum used for the provision of international or global satellite communications services. The President shall oppose in the International Telecommunication Union and in other bilateral and multilateral fora any assignment by competitive bidding of orbital locations and or spectrum used for provision of such services.

[66] *See* ¶ 4, *supra*.

restriction were not in place, the international inter-continental nature of the satellite systems deployed in this band results in a footprint that extends well beyond the U.S. border into other countries. Because FSS is, or may be, used for the provision of international satellite services in this band, we believe that the assignment of FSS licenses by competitive bidding would be inconsistent with the ORBIT Act. While we do not plan to assign FSS licenses for the 3650-3700 MHz band by competitive bidding, we are taking a number of steps to continue to accommodate FSS use of the band. Specifically, we are: (1) grandfathering existing FSS earth station sites on a co-primary basis; (2) providing a limited opportunity to request additional co-primary FSS earth station sites within 10 miles of existing grandfathered FSS earth station sites; and (3) allowing other new FSS earth station sites on a secondary basis. In addition, we note that the 3600-3650 MHz band remains available for FSS earth station operations on a primary basis.

2. Fixed Satellite Service Transition Issues

a. Existing Fixed Satellite Service Operations

22. In the *Notice and Order*, we proposed to grandfather existing FSS earth station sites operating in the 3650-3700 MHz band.[67] In addition, we sought comment on whether new terrestrial licensees should have the right to require existing FSS earth stations to vacate the band, subject to reimbursement, in a manner consistent with the Commission's emerging technologies relocation policies.[68] We also sought comment on whether we should change the allocation status of FSS earth stations to secondary after a specified time period.[69]

23. Several commenters support grandfathering existing FSS earth station sites.[70] For example, Sprint argues that grandfathering existing FSS earth station sites is important in order for common carriers to continue to provide voice and data services within the Americas using INTELSAT.[71] Some commenters objected to grandfathering existing FSS earth station sites and argue that the band should be cleared.[72] For example, SR Telecom believes that FSS operations should be relocated, but argues that relocation costs should not be borne by FS providers because they may not have sufficient market demand to justify the additional associated costs.[73]

24. While incumbent FSS operations could relocate to other bands that are available for FSS, relocation would necessitate significant reconfiguration costs and disrupt continuity of operations. Recognizing the importance of providing continuity of service to the public, we will grandfather existing

[67] *See Notice and Order*, 14 FCC Rcd at 1306 (¶ 14).

[68] *Id.*

[69] *Id.*

[70] *See* COMSAT comments at 2 and 6. *See also* Sprint comments at 2; SIA comments at 2; PetroCom comments at 3; MCI WorldCom reply comments at 2-4; ICG reply comments at 1; and Sprint reply comments at 2.

[71] *See* Sprint comments at 3.

[72] *See* SR Telecom comments at 5. *See* also Rural Carriers reply comments at 9.

[73] *See* SR Telecom comments at 5.

FSS earth station sites indefinitely.[74] We also believe that the Commission should not mandate relocation of FSS operations to other bands because FSS and terrestrial operations, as limited by this *First Report and Order*, are not fundamentally incompatible.[75] We are not, however, precluding voluntary negotiations between existing FSS licensees and new terrestrial licensees for relocation where feasible.

25. We realize that grandfathering existing FSS earth station sites will impose constraints on new terrestrial operations. However, in many cases these new terrestrial fixed and mobile operations should be able to co-exist with existing FSS earth stations by "engineering in" facilities to avoid interference. Furthermore, many rural, remote and less densely populated areas that could benefit significantly from deployment of terrestrial fixed and mobile services are not effected by existing grandfathered FSS earth station sites. Thus, we conclude that grandfathering existing FSS earth station sites will not unreasonably constrain the new terrestrial services.

26. In order to facilitate continued grandfathered FSS operations, we consider the establishment of coordination zones around grandfathered FSS earth station sites as part of the service rules which are discussed in the *Second Notice* below.[76] Within these coordination zones we propose that, terrestrial service operations must be coordinated with grandfathered FSS operations to ensure that the FSS operations are protected from interference from terrestrial service operations. Within these coordination zones, grandfathered FSS operations will have co-primary status with the new terrestrial services. We recognize that within these coordination zones, there will be exclusion zones where terrestrial services will not be able to operate without causing harmful interference to FSS. Such exclusion zones cannot be generally determined and will vary from site to site. These coordination zones differ from the exclusion zones mentioned earlier. A coordination zone refers to a specified geographical area where terrestrial and satellite licensees can co-exist subject to coordination procedures. An exclusion zone is not geographically defined and refers to the area within the coordination zone where sharing is not technically feasible.

b. New Fixed Satellite Service Operations

27. In the *Notice and Order*, the Commission stated that it would no longer accept applications in the 3650-3700 MHz band for new FSS earth stations, major amendments to pending FSS earth station applications, or applications for major changes in existing FSS earth stations.[77] This freeze was imposed to ensure that adequate opportunities would continue to exist for the provision of FS operations in the band.[78]

28. In response to concerns raised by satellite operators and their accompanying requests for emergency relief from the freeze, the Commission issued a *Memorandum Opinion and Order* ("*MO&O"*) modifying the earth station freeze by allowing the acceptance of applications for earth station facilities that were located within 10 miles of an existing grandfathered extended C-band earth station in the 3650-3700

[74] Earth station sites are grandfathered for the frequencies they are authorized to operate on pursuant to their license. We note that some existing earth stations are not authorized to use the entire 3650-3700 MHz band. *See* Appendix F at Table 2.

[75] *See* ¶¶ 102-106, *infra*.

[76] *Id*.

[77] *See Notice and Order*, 14 FCC Rcd at 1296-97 and 1305-06 (¶¶ 2, 13-14).

[78] *Id*. at 1296-97 (¶ 2).

MHz band.[79] The Commission found that this limited relief from the freeze would enable satellite operators to meet immediate needs without jeopardizing future availability of the 3650-3700 MHz band for FS operations.[80]

29. In the *MO&O,* the Commission did not establish a time limit for the filing of FSS earth station applications. However, because the new FSS facilities permitted by the *MO&O* could affect the use of the 3650-3700 MHz band by the terrestrial services, we now find it necessary to establish a limit on the acceptance of such applications and on the construction of FSS facilities. Accordingly, applications for FSS earth stations in the 3650-3700 MHz band within 10 miles of the authorized coordinates of an existing grandfathered earth station submitted prior to December 1, 2000 and subsequently authorized for service by the Commission will be co-primary with the terrestrial services. Such FSS earth stations will be grandfathered as described above.[81] We consider the filing of an FSS earth station application before the cut-off date to be an expression of immediate need consistent with the intent of the *MO&O*. However, applicants will be required to complete construction and be operational within one year from the date of initial authorization.[82] If a license for an FSS earth station at a grandfathered site is assigned or transferred, the earth station will retain its grandfathered status, provided there is no change in the site coordinates. In addition, certain modifications are permitted to the extent there is no change in the site coordinates.[83] Such modifications should be minor in nature and can include changes in the polarization and antenna orientation. However, changes such as an increase in the height of the center line of the dish or a change in geographical coordinates of greater than one second in either latitude or longitude would not be considered minor. Further, any change in the earth station antenna dish size that increases the likelihood of receiving interference will not be considered a minor change in facilities. If a license for a grandfathered FSS station is forfeited pursuant to Section 25.161(c) of the Commission's rules, the site will no longer be considered primary and will lose its grandfathered status.[84]

30. Subsequent to the end of the filing window, we will continue to accept applications for additional FSS earth stations. These authorizations, however, will be provided on a secondary basis only in the 3650-3700 MHz band. Secondary status will apply for new earth station sites located both inside and outside the coordination zones. We note that FSS earth stations only receive signals in this band, and thus cannot cause interference. We also note that secondary FSS earth stations are not entitled to protection from primary terrestrial operations. We find that allowing additional FSS expansion on a secondary basis will help alleviate congestion in the adjacent C-band (3700-4200 MHz) and allow FSS providers to market available capacity, while preserving opportunities for a viable terrestrial services. In addition, allowing additional FSS earth stations on a secondary basis may enable FSS providers licensed under Part 25 to

[79] *See MO&O*, 15 FCC Rcd at 9340 (¶ 2).

[80] *Id*. at 9341-42 (¶ 4).

[81] A list of the coordinates of the currently existing FSS earth station sites that must be protected is included in Appendix F. The Commission will issue a public notice after the December cutoff date which will include the coordinates of any additional FSS sites that attain grandfathered status and must be protected. In addition, a subsequent Report and Order in this proceeding and Public Notices will provide the coordinates of all known sites requiring protection.

[82] *See* 47 C.F.R. § 25.133(a).

[83] Consistent with our current practice, we would not view a change of one second in latitude or longitude as a change in coordinates.

[84] *See* 47 C.F.R. § 25.161(c).

enter into private arrangements with terrestrial service licensees in the secondary market for access to this spectrum. We note, however, that an agreement between a terrestrial service licensee and an FSS operator would not elevate an FSS earth station in this band to primary status relative to other FS licensees. [85]

c. Telemetry, Tracking, and Control (TT&C) Operations

31. Echostar requests that the Commission clarify, as part of this proceeding, that Directsat will be able to continue its TT&C operations in the 3650-3700 MHz band.[86] Echostar notes that the Commission's authorization allowing Directsat to provide TT&C operations from 3698.3-3699.7 MHz was conditioned based on a "non-interference, non-protected basis."[87] Echostar asserts that it is essential to the continued safety of its satellite system that new services not cause interference to its TT&C operations, and that it not be required to protect new services.[88] Echostar states that it is confident that its TT&C operations can be accommodated without imposing undue restrictions on these services except in a "sliver" of spectrum and in a "few geographical locations."[89] Echostar further notes that loss of its satellite system would not be in the public interest since it would disrupt its ability to provide service to its more than to 2 million DBS subscribers and would greatly diminish its ability to furnish competition to incumbent cable operators.[90] Consistent with our regulatory treatment of existing FSS earth stations, we will grandfather the sites currently used to provide TT&C operations, including Echostar's.[91] As a result those sites will receive the same protections as the other grandfathered FSS earth stations in the 3650-3700 MHz band, except that they will be protected only for the frequencies they are authorized to use for TT&C operations. Any other TT&C operations site that receives grandfathering protection in the 3650-3700 MHz band will also be protected only for the specific frequencies the site is authorized to operate on pursuant to the license it holds.

32. Several commenters assert that the Commission failed to consider a petition ("TT&C petition") that was filed jointly by Echostar, GE Americom, HCI, KaStar, Lockheed Martin Corporation, Orion, PanAmSat and Visionstar, Inc., requesting that 10 MHz of spectrum in the 3600-3700 MHz band be designated for TT&C use for satellite systems operating above the Ka band (*i.e.* above 15 GHz).[92] The Commission did place the TT&C petition on *Public Notice* seeking comment on the requested 10 MHz allocation.[93] We also referred this petition to NTIA, via the Interdepartment Radio Advisory Committee

[85] The terms under which a licensee can enter into a lease or other private contractual arrangement regarding use of licensed spectrum is one of the issues that the Commission has under consideration as part of its secondary markets initiative. *See* "FCC Announces Public Forum on Secondary Markets in Radio Spectrum," *Public Notice* (rel. April 13, 2000) (announcing public forum in connection with Commission initiative to develop rules and policies to promote secondary markets in radio spectrum).

[86] *See* Echostar comments at 2.

[87] *See In the Matter of Directsat Corporation*, Order, 11 FCC Rcd 22375, 22378-79 (¶ 11).

[88] *See* Echostar comments at 2.

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

[90] *Id.*

[91] *See* Appendix F at Tables 3 and 4.

[92] *See* Petition for Rulemaking filed on August 7, 1997 in RM-9411.

[93] *See Public Notice*, Report Number 2306, dated November 23, 1998.

("IRAC"), requesting that it consider the proposed operations in the 3600-3650 MHz band.[94] NTIA has responded that the proposed TT&C operations appear to be incompatible with Government operations in the 3600-3650 MHz band. NTIA recommends using non-Government spectrum in the 3650-4200 MHz band to satisfy the requirements indicated in the TT&C petition.[95]

33. We deny the TT&C petition's request for a reservation of 10 MHz of spectrum in the 3650-3700 MHz band for TT&C operations. We find that reserving 10 MHz of spectrum for TT&C operations for a few earth station sites would be an inefficient use of limited spectrum resources. We have determined that the public interest will be best served by adopting a regulatory framework that will foster the development and deployment of terrestrial services in the 3650-3700 MHz band. Nothing in Part 2 of the Commission's rules prohibits TT&C operations under the FSS allocation in this band, or from grandfathered FSS earth station locations, provided the non-TT&C operations of the satellite system include operations in the fixed satellite service. We address the other aspects of the petition in the *Second Notice*. Specifically, we seek comment on whether Part 25 of the Commission's rules should be modified to permit TT&C operations in the extended C-bands, even though those bands may be outside the band through which a satellite's principal services are offered.[96]

3. Non-Government Radiolocation Operations

34. In the *Notice and Order*, the Commission requested comment on a proposal to delete the unused secondary non-Government radiolocation service allocation in the 3650-3700 MHz band.[97] Northern Telecom, Inc. ("Nortel") supports the proposal and encourages the Commission to align U.S. policy with ITU radio regulations that do not allow commercial radiolocation operations in the band.[98] No comments were filed supporting the continued secondary allocation for the unused non-Government radiolocation service and we find no sufficient reason to maintain the secondary unused allocation. Accordingly, we adopt the proposal and delete the unused secondary non-Government radiolocation allocation to preserve the availability of the spectrum for use by the terrestrial services and FSS operations. We note that sufficient spectrum remains available within the 2900-3650 MHz band, on a secondary basis, to accommodate non-Government radiolocation service needs.

B. Federal Government Operations

1. Radiolocation Operations

35. In the *Notice and Order*, we noted that, as a condition of the transfer of the 3650-3700 MHz band to a mixed-use status, three Government radiolocation sites would be allowed to operate indefinitely in the band within an 80-kilometer "radius of operation" surrounding each site.[99] NTIA indicates that a

[94] *See* letter dated March 12, 1999, from Dale Hatfield, Chief, OET to Mr. William Hatch, Acting Associate Administrator, NTIA.

[95] *See* letter dated November 2, 1999 from William T. Hatch, Acting Associate Administrator, NTIA to Dale Hatfield, Chief, OET ("*November NTIA letter*").

[96] See ¶¶ 129-132, *infra*.

[97] *See Notice and Order*, 14 FCC Rcd at 1307 (¶ 15).

[98] *See* Nortel comments at iii, 13.

[99] *See Notice and Order*, 14 FCC Rcd at 1298-99 (¶ 4). The three grandfathered sites are at St. Inigoes, Maryland, Pascagoula, Mississippi, and Pensacola, Florida.

coordination distance of 80 kilometers around these three sites will provide adequate identification of spectrum conflicts, and that the Commission should coordinate any non-Government terrestrial service or FSS station within 80 kilometers of these sites with NTIA's Frequency Assignment Committee on a case-by-case basis.[100] In the *Notice and Order*, we requested comment on what actions should be taken to achieve this coordination in a manner to promote the ability of new non-Government services to co-exist with extremely high powered Government mobile radar systems in the adjacent 3300-3650 MHz band as well as with occassional high powered in-band use at three grandfathered Government radiolocation sites.[101]

36. We did not receive any proposals specifically addressing the questions raised in the *Notice and Order* regarding coordination with these sites.[102] Innowave expressed support for NTIA's proposal for coordination of any station within 80 kilometers of the Government radars; however, it recommends that the coordination range apply to base stations only, and not to stations located at customer premises.[103] Because the requirement to protect the three grandfathered Government radiolocation sites at an 80 kilometer distance is a condition of the transfer of this spectrum, we adopt NTIA's proposal for an 80 kilometer coordination radius to ensure that these sites will be protected from interference. This requirement means that non-Government terrestrial service and FSS stations located within 80 kilometers of the three grandfathered Government radiolocation stations may not cause interference to the grandfathered Government radiolocation operations, that they must accept any interference received from such operations, and that they must be coordinated before commencing operation. The coordination requirement will apply to all non-Government stations, not just base station operations as requested by Innowave, because any station within the coordination zone could potentially cause interference to the protected Government operations. Given that coordination is required only for areas within 80 kilometers of three grandfathered Government radiolocation sites, we find that this should affect a limited number of non-Government stations. We adopt this coordination requirement in a footnote to the Table of Allocations contained in Section 2.106 of the Commission's rules. The coordination procedures will be addressed as part of the service rules in the attached *Second Notice*.[104]

37. In the *Notice and Order*, the Commission proposed to delete the Government radiolocation service allocation from the 3650-3700 MHz band, except for grandfathering three Government radiolocation sites that would continue operations in the band.[105] The Commission also proposed to permit Government radiolocation operations in the 3650-3700 MHz band on Naval vessels at an appropriate distance from shore.[106] NTIA recommends the inclusion of a footnote to the Table of Frequency Allocations indicating that off-shore Government radiolocation operations may operate on a non-interference basis with authorized non-Government operations, and may not hinder the implementation of

[100] *See November NTIA letter* referenced at note 95, *supra*.

[101] *See Notice and Order*, 14 FCC Rcd at 1303-04 (¶ 11).

[102] Petroleum Communications, Inc. ("PetroCom") made general comments about coordination with military operations, however, these were directed at adjacent band operations.

[103] *See* Innowave comments at 4.

[104] *See* ¶¶ 102-109, *infra*.

[105] *See Notice and Order*, 14 FCC Rcd at 1307 (¶ 16).

[106] *See Notice and Order*, 14 FCC Rcd at 1307 (¶ 16).

any non-Government operations.[107] NTIA recommends that a distance of 30 nautical miles (55.5 kilometers) from shore be specified.[108] It notes that this recommended distance is based upon limited information, and that a different distance may later be found appropriate after further measurements and experience with non-Government use of the 3650-3700 MHz band.[109] SR Telecom believes that the Government radiolocation allocation should be deleted or restricted to areas beyond 50-70 statute miles from shore.[110] PetroCom recommends that the limit be set at no more than 3 nautical miles.[111] Neither PetroCom nor SR Telecom submitted detailed technical analysis justifying alternative distances.

38. After carefully reviewing the comments concerning this issue, we find that NTIA's recommended distance of 30 nautical miles[112] from the shore of the U.S. or its territories may be insufficient to protect non-Government services that will operate in the band. We note that NTIA has indicated previously that the operational radius of the three grandfathered Government radiolocation operations is 80 kilometers.[113] We note that 80 kilometers is approximately equal to 44 nautical miles.[114] We are concerned that allowing operation of Government radiolocation stations any closer than 44 nautical miles (80 kilometers) to the U.S. or its territories will have the potential to cause interference to non-Government operations in the band. Therefore, we specify a distance of 44 nautical miles, which is equivalent to the 80 kilometers grandfathered Government radiolocation "radius of operation" as described in the *Notice and Order*.[115] NTIA's request to include the Government radiolocation allocation via a footnote, as described, will not hinder the introduction of non-Government services in the band, given the 80-kilometer protection limit. Additionally, offshore Government radiolocation stations will not be allowed to cause interference to non-Government stations, irrespective of their location. Further, if additional technical information and analysis is made available to us concerning any change in the distance requirements, we will consider altering the distance as appropriate.

2. Aeronautical Radionavigation Allocation

39. In the *Notice and Order*, we proposed to delete the unused Government aeronautical radionavigation service (ground based) allocation in the 3650-3700 MHz band.[116] SR Telecom believes that the aeronautical radionavigation allocation should be deleted because it may limit future use of the

[107] *See November NTIA letter* referenced at note 95, *supra*.

[108] *Id.*

[109] *Id.*

[110] *See* SR Telecom comments at 5-6.

[111] *See* PetroCom comments at 4.

[112] 1 nautical mile = 1.15 statute miles.

[113] *See Spectrum Reallocation Final Report, Response to Title VI - Omnibus Budget Reconciliation Act of 1993,* NTIA Special Publication 95-32, released February 1995.

[114] 1 statute mile = 1.609 kilometers

[115] *See Notice and Order* 14 FCC Rcd at 1298-99 (¶ 4).

[116] *See Notice and Order*, 14 FCC Rcd at 1307 (¶ 16).

3650-3700 MHz band.[117] NTIA did not object to this proposal. We see no useful purpose in continuing this allocation. Therefore, for the reasons set forth in the *Notice and Order*, we adopt our proposal to delete the Government aeronautical radionavigation service (ground based) allocation from the 3650-3700 MHz band to preserve the band for non-Government use.

IV. SECOND NOTICE OF PROPOSED RULE MAKING

40. In this *Second Notice*, we propose licensing and operating rules for FS and mobile service (base stations only) operations in the 3650-3700 MHz band. In light of the fact that this spectrum has been allocated to terrestrial service operations on a co-primary basis for assignment by competitive bidding pursuant to Section 3002 of the BBA,[118] we propose to assign terrestrial service licenses in this band pursuant to the Commission's Part 1 competitive bidding rules. We also propose to license the 3650-3700 MHz band under Part 27 of the Commission's rules, as modified herein, to reflect the particular characteristics and circumstances of services offered through the use of spectrum in the 3650-3700 MHz band. In addition, we seek comment on the feasibility of pairing this band with the 4940-4990 MHz ("4.9 GHz") band for use for fixed and mobile services.

A. Application, Licensing, and Processing Rules

41. In the *Notice and Order* in this proceeding, we sought comment on whether the 3650-3700 MHz band should be licensed under the Local Multipoint Distribution Service ("LMDS" or Part 101, Subparts L and M) rules or under the Wireless Communications Service ("WCS" or Part 27) service rules, or under an entirely new set of service rules.[119] In addition, we sought comment on the initial spectrum licensing blocks.[120] Specifically, we sought comment on whether the 3650-3700 MHz band should be licensed as a single 50-megahertz block or broken down into two or more blocks.[121] If the latter, we asked if the spectrum should be initially offered as contiguous or paired blocks and, if paired blocks, whether they should be symmetric or asymmetric.[122] In addition, we sought comment on the appropriate geographic size of service areas for initial licensing.[123] Specifically, we sought comment on whether the band should be initially licensed for a single nationwide service area, for several large regional service areas, or for some other choice of smaller geographic areas.[124]

42. Since the release of the *Notice and Order*, there have been several developments that lead us to seek additional comment on these issues, as well as the additional proposals set forth below. As discussed above, we have allocated the 3650-3700 MHz band to the terrestrial services on a nationwide basis and

---

[117] *See* SR Telecom comments at 5.

[118] As explained above, the 3650-3700 MHz band is a permissible substitute for 15 MHz of spectrum at 1990-2110 MHz, which the BBA directs the Commission to assign by competitive bidding. *See* ¶¶ 6, 19, *supra*.

[119] *See Notice and Order*, 14 FCC Rcd at 1303 (¶ 10).

[120] *Id.*

[121] *Id.*

[122] *Id.*

[123] *Id.*

[124] *Id.*

have grandfathered 82 non-Federal Government FSS earth stations at 49 sites[125] and three Federal Government radiolocation operations sites on a co-primary basis. We have also decided to accept on a secondary basis new FSS earth station applications. In addition to these decisions, earlier this year we released a Notice of Proposed Rulemaking for the 50 megahertz of spectrum in the 4940-4990 MHz band ("*4.9 GHz Notice*").[126] In the *4.9 GHz Notice*, we proposed to allocate the 4.9 GHz band to the non-Federal Government fixed and mobile services, except aeronautical mobile service, on a nationwide co-primary basis. We also proposed to license the 4.9 GHz band under Part 27 of the Commission's rules and sought comment on the appropriate spectrum licensing blocks and geographic service areas to be adopted.

43. Both the 4.9 GHz band and the 3650-3700 MHz bands have been transferred from Federal Government use to private sector use. Both bands include 50 megahertz of spectrum. The 3650-3700 MHz band is allocated for fixed and mobile services on a nationwide co-primary basis and we have proposed to allocate the 4.9 GHz band for fixed and mobile services on a nationwide co-primary basis. We believe that a possibility exists that fixed and mobile service providers could pair these two frequency bands and we seek comment on this possibility and on what licensing and service rules we should adopt to encourage this result. We recognize that the mobile allocation for the 3650-3700 MHz band is restricted to base stations only. However, we believe that land mobile receivers might be able to use the 4940-4990 MHz band to transmit to land mobile base stations operating in the 3650-3700 MHz band. We are hopeful that if these two bands are paired they could be used to provide a broad range of new fixed and mobile services, directly linking residences, businesses, and other locations to an ever-developing array of networks. Given the allocation we have adopted for the 3650-3700 MHz band and the possibility of pairing that band with the 4.9 GHz band, we seek additional comment on the application and licensing issues raised in the *Notice and Order*.

44. We wish to develop a record on whether technical requirements or other reasons justify licensing the 3650-3700 MHz and 4.9 GHz bands at the same time. Commenters have voiced support for the adoption of certain modulation standards, such as TDD or FDD, and the use of associated pairing schemes.[127] We are encouraged by comments in the record indicating that TDD technology is well suited for operation in the 3650-3700 MHz band and could be used to provide service in this band.[128] Additionally, SR Telecom, Airspan, CSRT, Lucent, and Motorola observe that FDD technology in this region of the spectrum generally requires a separation of between 50 MHz and 100 MHz between transmit and receive frequencies, with a wider separation in higher bandwidth services.[129] We invite comment on the implications that the use of certain technologies and channelization requirements may have upon our decision whether to couple these bands. Some commenters have also taken the view that the 50 MHz of

[125] Existing incumbent earth stations and any new applications meeting the criteria articulated in the *MO&O*, submitted prior to December 1, 2000, and subsequently authorized for service by the Commission and that commence operation within one year of initial authorization will be grandfathered on a co-primary basis.

[126] *See 4.9 GHz Notice*, 15 FCC Rcd at 4778.

[127] *See* InnoWave comments at 3-4. *See also* SR Telecom comments at 9-10; Rural Carriers comments at 5-6.

[128] *See* Innowave comments at 2. Additionally, Rural Carriers notes that a 50 MHz block of spectrum in the 3 GHz band could potentially support wireless Internet access with data rates surpassing digital subscriber line ("xDSL") services, such as cable modems into remote, rural areas of the country. *See* Rural Carriers comments at 4.

[129] *See* SR Telecom comments at 7; Airspan comments at 1-2. *See also* CRST comments at 1; Lucent comments at 2-3; Motorola comments at 2.

spectrum in the 3650-3700 MHz band will provide insufficient capacity for the development of fixed broadband wireless competition.[130] In light of this contention, we seek comment on whether the pairing of the 4.9 GHz band with the 3650-3700 MHz frequencies is necessary or appropriate. If commenters believe that pairing the two bands is necessary or appropriate, we seek comment on whether any of our proposals for licensing the 4.9 GHz band need to be changed in order to facilitate the pairing of the two bands.

45. We tentatively conclude that all services, other than FSS earth stations, in the 3650-3700 MHz band should be governed by Part 27 of the Commission's rules.[131] This proposal is consistent with our proposal to regulate the 4.9 GHz band under Part 27 of the Commission's rules, and regulating both bands under the same rule part should help those licensees who wish to pair the two bands to provide fixed and mobile service offerings. We also propose to modify Part 27 of the Commission's rules to the extent necessary to reflect the particular characteristics and circumstances of services to be offered. We seek comment on our tentative conclusion that we should regulate the 3650-3700 MHz band under Part 27 of the Commission's rules.

46. As discussed above in the *First Report and Order*, we are not restricting the types of fixed services that can be provided in the 3650-3700 MHz band. We are restricting the mobile service to base station use only. Consistent with this approach, we note that fixed and mobile service licensees may be required to comply with rules contained in other Parts of the Commission's rules. For example, to the extent a licensee provides a Commercial Mobile Radio Service ("CMRS"), such service will also be subject to the provisions of Part 20 of the Commission's rules.[132] Part 20 applies to all CMRS providers, even though the stations may be licensed under other Parts of the Commission's rules. We seek comment generally on any provisions in existing, service-specific rules that may require specific recognition or adjustment to comport with the supervening application of Part 27, as well as any provisions that may be necessary in Part 27 to fully describe the scope of covered services and technologies. For instance, if a 3650-3700 MHz licensee provides a fixed service, we seek comment on whether there are any specific provisions in Part 101 of the Commission's rules that the licensee should be subject to even though the licensee's stations will be licensed under Part 27.[133]

47. Wireless licensees operating in the 3650-3700 MHz band will be subject to the Universal Licensing System ("ULS").[134] ULS is the interactive licensing database developed by the Wireless Telecommunications Bureau to consolidate and replace eleven existing licensing systems used to process application and grant licenses in the wireless services. ULS provides numerous benefits, including fast and easy electronic filing via the Internet, improved data accuracy through automated checking of applications,

---

[130] *See* Motorola comments at 2. *See also* SR Telecom comments at 6-7.

[131] *See* 47 C.F.R. Part 27 (WCS).

[132] *See* 47 C.F.R. § 27.3(g). *See also* Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules, WT Docket No. 99-168, *First Report and Order*, 15 FCC Rcd 476 (2000) ("*700 MHz First Report and Order*").

[133] *See* 47 C.F.R. Part 101 (Fixed Microwave Services).

[134] *See* Biennial Regulatory Review -- Amendment of Parts 0, 1, 13, 22, 24, 26, 27, 80, 87, 90, 95, 97, and 101 of the Commission's Rules to Facilitate the Development and Use of the Universal Licensing System in the Wireless Telecommunications Services, WT Docket No. 98-20, Amendment of the Amateur Service Rules to Authorize Visiting Foreign Amateur Operators to Operate Stations in the United States, WT Docket No. 96-188, RM-8677, *Report and Order*, 13 FCC Rcd 21027 (1998) ("*ULS Report and Order*").

and enhanced electronic access to licensing information via the Internet.[135] License applications filed by Part 27 licensees must be filed electronically via ULS. These filings include initial applications, major modifications, construction notifications, transfers and assignments, and renewals.[136]

48. The fixed satellite service will continue to be regulated under Part 25 of the Commission's rules.[137] FSS earth stations receive signals in the 3650-3700 MHz band and typically transmit at frequencies in the 5850-5925 and 6425-6525 MHz bands. Authorization of earth station transmissions in these bands will continue to be on a co-primary basis with terrestrial users, and subject to coordination.

49. While we seek comment from the public in general concerning the proposals set forth in this *Second Notice*, we specifically seek comment from Indian Tribal governments on the proposals below. As detailed in the *Tribal Government Policy Statement*, adopted earlier this year, the Commission is committed to (1) working with Indian tribes on a government-to-government basis to ensure that Indian tribes have adequate access to communications services, and (2) consulting with Tribal governments prior to implementing any regulatory action or policy that will significantly affect Tribal governments, their land, and resources.[138] We believe the proposals set forth in this *Second Notice* have the potential to foster the development and, ultimately, the deployment of new technologies and services to many communities, including tribal communities. In keeping with the principles of *the Tribal Government Policy Statement*, we welcome the opportunity to consult with Tribal governments on the issues raised by this *Second Notice* and we seek comment both from Tribal governments and other interested parties on the potential for the spectrum proposals set forth herein to serve the communications needs of tribal communities.

1. Regulatory Status; Flexible Use

50. To fulfill its enforcement obligations and ensure compliance with the statutory requirements of Titles II and III of the Communications Act, the Commission has often required applicants to identify whether or not they seek to provide common carrier services. The Commission's current mobile service license application, for example, requires an applicant for mobile services to indicate whether the service it intends to offer will be CMRS, Private Mobile Radio Service ("PMRS"), or both. In the *LMDS Second Report and Order,* the Commission required applicants for fixed services to indicate if they planned to offer services as a common carrier, a non-common carrier, or both, and to notify the Commission of any changes in status even though no prior authorization is required.[139] In adopting a similar licensing

---

[135] *See* http://www.fcc.gov/wtb/uls.

[136] *See* ¶¶ 102-109, *infra*.

[137] *See* 47 C.F.R. Part 25 (Satellite Communications).

[138] *See* Statement of Policy on Establishing a Government-to-Government Relationship with Indian Tribes, FCC 00-207 (rel. June 23, 2000) ("*Tribal Government Policy Statement*").

[139] *See Rulemaking to Amend Parts 1, 2, 21, 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, To Reallocate 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, 12636-38, 12644-45, 12652-53 (¶¶ 205-208, 225-226, 245-251) (1997) ("*LMDS Second Report and Order*"); *aff'd*, Melcher v. FCC, 134 F.3d 1143 (D.C. Cir. 1998); *Erratum*, rel. Apr. 7, 1997 (*First Erratum*); *Erratum*, rel. May 1, 1997; Order on Reconsideration, 12 FCC Rcd 6424 (1997); Second Order on Reconsideration, FCC 97-323, rel. Sept. 12, 1997; Third Report and Order, FCC 97-378, rel. Oct. 15, 1997; Third Order on Reconsideration, FCC 98-15, 63 Fed. Reg. 9443, rel. Feb. 11, 1998; (continued….)

framework for Part 27, the Commission has permitted applicants to request common carrier status as well as non-common carrier status for authorization in a single license, rather than require the applicant to choose between common carrier and non-common services.[140] As with the 4.9 GHz band,[141] we propose to adopt this same procedure for licensing services in the 3650-3700 MHz band.[142] The licensee will be able to provide all allowable services anywhere within its licensed area at any time, consistent with its regulatory status. We tentatively conclude that, in the case of services offered in the 3650-3700 MHz band, this approach is likely to achieve efficiencies in the licensing and administrative processes.

51. In adopting Part 27, the Commission stated that, apart from this designation of regulatory status, the Commission would not require applicants to describe the services they seek to provide.[143] The Commission stated that it is sufficient that an applicant indicate its choice of regulatory status in a streamlined application process.[144] In providing guidance on this issue to applicants, the Commission pointed out that an election to provide service on a common carrier basis requires that the elements of common carriage be present in the type of service the license applicant seeks to provide; otherwise, the applicant must choose non-common carrier status.[145]

52. The 1996 Act provides that a telecommunications carrier shall be treated as a common carrier only to the extent that it is engaged in providing telecommunications services.[146] Telecommunications services are defined as the offering of telecommunications for a fee directly to the public, or to such classes of users as to be effectively available to the public, regardless of the facilities used.[147] As stated in the *24 GHz Report and Order*, we depend on the license applicant to notify the Commission of its intent to provide common carrier services, thereby enabling us to determine whether to apply the statutory requirements of Title II of the Communications Act.[148] We note that to the extent that a 3650-3700 MHz

(Continued from previous page)

Fourth Report and Order, 13 FCC Rcd 11655 (1998) ("*LMDS Fourth Report and Order*"); *see also* 47 C.F.R. § 101.1017.

[140] *See Amendment of the Commission's Rules to Establish Part 27*, the Wireless Communications Services (WCS), GN Docket No. 96-228, Report and Order, 12 FCC Rcd 10785, 10846, 10848 (¶¶ 119, 122) (1997) ("*Part 27 Report and Order*").

[141] *See 4.9 GHz Notice*,15 FCC Rcd at 4792 (¶ 31).

[142] *See* 47 C.F.R. § 27.10, as amended by *700 MHz First Report and Order*.

[143] *See Part 27 Report and Order*, 12 FCC Rcd at 10848 (¶ 121). *See also LMDS Second Report and Order*, 12 FCC Rcd at 12644 (¶ 223); 47 C.F.R. § 101.1013.

[144] *Id.*

[145] *See Part 27 Report and Order*, 12 FCC Rcd at 10790 (¶ 12). 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. *See also LMDS Second Report and Order*, 12 FCC Rcd at 12639-41 (¶¶ 213-215). Thus, any applicant intending to provide a video programming service would appropriately indicate a choice of non-common carrier regulatory status.

[146] *See* 47 U.S.C. § 153(44).

[147] *See* 47 U.S.C. § 153(46).

[148] *See* Amendments to Parts 1, 2 and 101 of the Commission's Rules To License Fixed Services at 24 GHz, WT Docket 99-327, *Report and Order*, FCC 00-272, ¶ 27, (rel. Aug. 1, 2000) ("*24 GHz Report and Order*").

licensee is a telecommunications carrier it will be governed by the duties required under Part 51, including interconnection with other telecommunications carriers.[149] Also to the extent that a 3650-3700 MHz provider meets the definition of a local exchange carrier it will also be governed by the requirements set forth in Subpart C of Part 51 of our rules.[150] 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.[151]

53. We propose that applicants and licensees in the 3650-3700 MHz band also not be required to describe their proposed services, but be required to indicate a regulatory status based on any services they choose to provide. We also propose that if licensees change the service or services they offer, such that it would change their regulatory status, they must notify the Commission, even if such change would not require prior Commission authorization.[152] We propose that licensees be required to notify the Commission within 30 days of the change, unless the change results in the discontinuance, reduction, or impairment of the existing service, in which case a different time period may apply.[153] In this instance, the licensee is governed by Section 101.305 of the Commission's rules and must submit an application under Section 1.947 of the Commission's rules in conformance with the deadlines established by Section 101.305.[154] We proposed these same procedures for the 4.9 GHz band.[155] Under our proposal here, a 3650-3700 MHz licensee would be authorized to provide a variety or combination of fixed, mobile (for base stations only), common carrier, and non-common carrier services. We seek comment on these proposals.

54. In addition, we tentatively conclude that permitting this kind of flexible use for fixed and mobile services in the 3650-3700 MHz band is consistent with Section 303(y)(2) of the Communications Act,[156] as amended by the Balanced Budget Act of 1997.[157] We seek comment on this tentative conclusion. Section 303(y)(2) grants the Commission authority to permit flexible use of this spectrum if the Commission finds that such use: (1) is in the public interest; (2) would not deter investment in communications services and systems, or technology development; and (3) would not result in harmful interference among users. We tentatively find that permitting the 3650-3700 MHz band to be used for a variety of terrestrial service uses and making the spectrum available for commercial use under the Part 27 Rules is in the public interest because it will contribute to technological and service innovation and improve

[149] *See* 47 C.F.R. § 51.100.

[150] *See* 47 C.F.R. §§ 51.201 - 51.223.

[151] *See Part 27 Report and Order*, 12 FCC Rcd at 10848 (¶ 121).

[152] *See* Sections 101.61(b)(3) and 101.61(c)(9) of the Commission's rules, 47 C.F.R. §§ 101.61(b)(3), 101.61(c)(9). A change in regulatory status would require Commission prior authorization, however, if the change raised issues concerning the benchmark contained in Section 310(b)(4) of the Act. 47 U.S.C. § 310(b)(4). *See also* note 182, *infra*.

[153] *See* 47 C.F.R. § 27.66, as codified by *700 MHz First Report and Order*.

[154] *See* 47 C.F.R. §§ 1.947 and 101.305.

[155] *See 4.9 GHz Notice*, 15 FCC Rcd 4793 (¶ 33)

[156] *See* 47 U.S.C. § 303(y)(2).

[157] *See* BBA, Pub. L. No. 105-33, 111 Stat. 251.

the national telecommunications infrastructure. We note that one commenter urges the Commission to restrict the 3650-3700 MHz band to point-to-multipoint uses only.[158] However, this type of restriction is contrary to our policies favoring flexible use of the spectrum.[159] We seek comment on these tentative findings.

55. To satisfy the requirements of Section 303(y)(2)(B) of the Act, we seek comment on whether permitting flexible use of this spectrum would deter investment in communications services and systems, or technology development.[160] To the extent commenters believe such flexibility will deter investment, they should also suggest specific restrictions on how spectrum should be used by a licensee, and detailed analyses of the economic trade-offs between flexibility and investment that justify the recommended use restriction. We seek to develop a record to help quantify any trade-offs between flexibility and investment in technology and new services. Such a record will assist us in structuring these rules so as to avoid deterring investment in new technology and communications services. We also seek comment regarding the extent to which significant flexibility in service rules may encourage such investments.

56. Finally, we tentatively find that the technical rules that we are proposing in this *Second Notice* for the 3650-3700 MHz band satisfy the requirements of Section 303(y)(2)(C).[161] These rules provide licensees with a framework to provide a wide variety of services with a minimum of interference. As the Commission stated in the *700 MHz First Report and Order*, any interference issues that may arise among licensees can be satisfactorily resolved by general non-interference standards and technical rules.[162] We believe that this conclusion applies for licensees in the 3650-3700 MHz band. We seek comment on this tentative finding.

2. Eligibility; Spectrum Aggregation

57. Sections 27.12 and 27.302 of the Commission's rules[163] impose no restrictions on eligibility, other than the foreign ownership restrictions set forth in Section 310 of the Communications Act,[164] and

[158] *See* SR Telecom Comments at 4. SR Telecom also advocates restricting the use of the 6 GHz, 11 GHz and 18 GHz bands to point-to-point systems. *See id.* That proposal, however, falls outside of the scope of this proceeding.

[159] The Commission has recognized that "[f]lexible allocations may result in more efficient spectrum markets." *Spectrum Policy Statement*, 14 FCC Rcd at 19870-71 ¶ 9 (1999). As the Commission observed when it adopted service rules for the 39 GHz bands: "It is in the public interest to afford [] licensees flexibility in the design of their systems to respond readily to consumer demand for their services, thus allowing the marketplace to dictate the best uses for this band." *Amendment of the Commission's Rules Regarding the 37.0-38.6 GHz and 38.6-40 GHz Bands*, Report and Order and Second Notice of Proposed Rulemaking, 12 FCC Rcd 18,600, 18,616 ¶ 26 (1997). In addition, the BBA, which mandates the assignment of this band through competitive bidding (*see* ¶¶ 19-20, *supra*), requires the Commission to "seek to promote the most efficient use of the electromagnetic spectrum" in the spectrum allocations made pursuant to the statute. BBA, Section 3002(c)(2)(A).

[160] *See* 47 U.S.C. § 303(y)(2)(B).

[161] *See* 47 U.S.C. § 303(y)(2)(C).

[162] *See 700 MHz First Report and Order*, 15 FCC Rcd at 486 (¶ 22). *See also Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, 4660-4685 MHz*, ET Docket No. 94-32, Second Report and Order, 11 FCC Rcd 624, 633 (¶ 18) (1995) ("*GWCS Second Report and Order*").

[163] *See* 47 C.F.R. §§ 27.12 and 27.302.

[164] *See* 47 U.S.C. § 310.

discussed below. Consistent with these sections of the existing rules in Part 27, we propose that there be no additional restrictions on eligibility for a license in the 3650-3700 MHz band.[165] This approach is also consistent with the approach we took with regard to the 4.9 GHz band.[166] We believe that opening the 3650-3700 MHz market to a wide range of applicants will permit and encourage entrepreneurial efforts to develop new technologies and services, while helping to ensure efficient use of this spectrum.[167] We seek comment on this tentative conclusion.

58. Part 27 of the Commission's rules does not contain a limitation on the amount of spectrum a licensee may aggregate in each geographic area. Consistent with the existing Part 27 rules, we tentatively conclude that we will permit licensees in the 3650-3700 MHz band to obtain all of the 3650-3700 MHz licenses in a given geographic area if we eventually decide to divide the 3650-3700 MHz band into more than one licensee per geographic area. This tentative conclusion is consistent with our proposal for the 4.9 GHz band.[168] We believe that the flexibility this approach permits will help licensees operating in the 3650-3700 MHz band offer regional and national services, and will therefore create interest in the commercial development of the 3650-3700 MHz band. We also believe that this approach will permit licensees who are so inclined to pair the 3650-3700 MHz band with the 4.9 GHz band. By permitting licensees to acquire all of the spectrum in these bands in a given geographic area, licensees will be able to offer a wider variety of services and this flexibility in turn should stimulate more consumer interest in these services. The more consumer interest there is in a service, the more likely this service will be deployed broadly and to underserved areas.

59. In addition, as with the 4.9 GHz band, we tentatively conclude that a spectrum cap is not necessary to prevent a 3650-3700 MHz licensee from exercising market power.[169] The Commission has made available ample spectrum in other bands for licensees to offer services that likely will compete with those offered by 3650-3700 MHz licensees.[170] We seek comment on our tentative conclusion that we should not impose a geographic area spectrum aggregation limit on 3650-3700 MHz licensees.

---

[165] For Commission decisions regarding relevant factors in deciding whether license eligibility restrictions are necessary or appropriate, *see Amendment of the Commission's Rules Regarding the 37.0-38.6 GHz and 38.6-40.0 GHz Bands*, ET Docket No. 95-183, RM-8553, *Implementation of Section 309(j) of the Communications Act Competitive Bidding, 37.0-38.6 GHz and 38.6-40.0 GHz*, PP Docket No. 93-253, Report and Order and Second Notice of Proposed Rulemaking, 12 FCC Rcd 18600, 18619-20 (¶¶ 32-35) (1997) ("39 GHz Report and Order"); LMDS Second Report and Order, 12 FCC Rcd at 12614-16 (¶¶ 157-161); *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, Sixth Notice of Proposed Rule Making, 14 FCC Rcd 21520 (1999); Third Report and Order and Memorandum Opinion and Order, FCC 00-223 (rel. June 27, 2000).

[166] *See 4.9 GHz Notice*, 15 FCC Rcd at 4793-94 (¶ 34).

[167] *See GWCS Second Report and Order*, 11 FCC Rcd at 649 (¶ 60).

[168] *See 4.9 GHz Notice*, 15 FCC Rcd at 4794 (¶ 35).

[169] *Id.* at 4794 (¶ 36).

[170] *See Part 27 Report and Order*; *LMDS Second Report and Order; Amendment of the Commission's Rules Regarding the 37.0-38.6 GHz and 38.6-40.0 GHz Band*, ET Docket No. 95-183, Memorandum Opinion and Order, 14 FCC Rcd 12428 (1999); *Amendments to Parts 1, 2 and 101 of the Commission's Rules To License Fixed Services at 24 GHz*, WT Docket No. 99-327, Notice of Proposed Rulemaking, 14 FCC Rcd 19263, 19269-70 (¶¶ 9-10) (1999); *700 MHz First Report and Order*.

Commenters that oppose our proposal should provide a rationale for whatever limit they deem appropriate, considering the varying bandwidth requirements of the different types of services that could be offered over the 3650-3700 MHz band. In addition, commenters who advocate a spectrum cap should discuss why the availability of spectrum in other bands does not eliminate the need for a spectrum cap and, wherever possible, provide copies of any studies or analyses upon which their assertions are based.

60. The current spectrum cap applicable to CMRS licensees covers broadband Personal Communications Service ("PCS"), cellular, and certain covered Specialized Mobile Radio ("SMR") services, and, therefore, by its terms does not apply to licensees in the 3650-3700 MHz band.[171] As we did in the *4.9 GHz Notice*,[172] we tentatively conclude not to extend this cap with respect to those licensees in the 3650-3700 MHz band who may be operating as CMRS providers. This approach is consistent with the decision the Commission reached in the *GWCS Second Report and Order*[173] and the *700 MHz First Report and Order*.[174] We seek comment on this tentative conclusion.

3. Foreign Ownership Restrictions

61. Sections 310(a) and 310(b) of the Communications Act[175] impose certain foreign ownership and citizenship requirements that restrict the issuance of licenses to certain applicants. Section 310(a) prohibits any foreign government or its representative from holding a station license subject to a control test.[176] Section 310(b) prohibits certain defined foreign ownership interests in common carrier and other licenses. Section 27.12 of the Commission's rules, which implements Section 310 of the Act, would by its terms apply to applicants for licenses in the 3650-3700 MHz band, as well as applicants in the 4.9 GHz band.[177] An applicant requesting authorization only for non-common carrier services would be subject to Section 310(a) but not to the additional prohibitions of Section 310(b). An applicant requesting authorization for common carrier services (or for both common carrier and non-common carrier services) would be subject to both Section 310(a) and 310(b). Under the Commission's *Foreign Participation Order*, we now presume that ownership by entities based in countries that are WTO members serves the public

[171] *See* 47 C.F.R. § 20.6(a); *see also 1998 Biennial Regulatory Review Spectrum Aggregation Limits for Wireless Telecommunications Carriers. Cellular Telecommunications Industry Association's Petition for Forbearance From the 45 MHz CMRS Spectrum Cap*, WT Docket No. 98-205, *Amendment of Parts 20 and 24 of the Commission's Rules - Broadband PCS Competitive Bidding and Commercial Mobile Radio Service Spectrum Cap*, WT Docket No. 96-59, *Implementation of Sections 3(n) and 332 of the Communications Act, Regulatory Treatment of Mobile Services*, GN Docket No. 93-252, Report and Order, FCC 99-244, rel. Sept. 22, 1999; *Amendment of Parts 20 and 24 of the Commission's Rules Broadband PCS Competitive Bidding and the Commercial Mobile Radio Service Spectrum Cap*, WT Docket No. 96-59, Report and Order, 11 FCC Rcd 7824, 7869-76 (¶¶ 94-107) (1996) (maintaining the 45 megahertz CMRS spectrum cap and eliminating the 35 megahertz cellular and PCS spectrum cap, and the 40 megahertz PCS spectrum cap).

[172] *See 4.9 GHz Notice*, 15 FCC Rcd at 4795 (¶ 37).

[173] *See GWCS Second Report and Order*, 11 FCC Rcd at 645 (¶ 50).

[174] *See 700 MHz Report and Order*, 15 FCC Rcd at 497-98 (¶¶ 51-53).

[175] *See* 47 U.S.C. §§ 310(a), 310(b).

[176] *See, e.g.*, Orion Satellite Corp., 5 FCC Rcd 4937, 4944, n.26 (1990).

[177] *See* 47 C.F.R. §§ 27.12 and 27.302.

interest.[178] However, ownership by entities from countries that are not WTO members continues to be subject to the effective competitive opportunities test established by the Commission.[179]

62. In the filing of an application under the Multipoint Distribution Service ("MDS"), satellite, and LMDS rules, the Commission requires any applicant electing non-common carrier status to submit the same information that common carrier applicants submit to address the foreign ownership restrictions under Section 310(b) of the Act.[180] We proposed to follow this same approach with respect to applicants in the 4.9 GHz band, and we also propose to follow this approach with respect to applicants for the 3650-3700 MHz band who wish to use the spectrum for fixed and mobile services.[181] Because these licensees will be permitted to offer both common and non-common carrier services, we believe this requirement is necessary in order to enable us to ascertain compliance of all these licensees with the alien ownership restrictions set forth in Section 27.12 of the Commission's rules and the Communications Act of 1934, as amended. This information can be used whenever the licensee changes to common carrier status without imposing an additional filing requirement when the licensee makes the change.[182] We note, moreover, that we would not disqualify an applicant requesting authorization exclusively to provide non-common carrier service from obtaining a 3650-3700 MHz license to provide fixed and mobile services solely on the basis that its citizenship information would disqualify it from receiving a common carrier license.

63. Accordingly, we propose that common carrier and non-common carrier licensees who wish to use the 3650-3700 MHz band to provide fixed and mobile services be required to provide the alien ownership information requested by FCC Form 601. Moreover, we propose that both common carrier and non-common carrier licensees who provide fixed and mobile services in the 3650-3700 MHz band must amend their FCC Form 602 to reflect any changes in foreign ownership information. We seek comment on these proposals.

4. Geographic Areas and Spectrum Blocks

64. As indicated above, in the *Notice and Order* in this proceeding, we sought comment on the appropriate geographic service areas to use for licensing the 3650-3700 MHz band.[183] We received several

---

[178] *See Rules and Policies on Foreign Participation in the U.S. Telecommunications Market and Market Entry and Regulation of Foreign-Affiliated Entities*, IB Docket Nos. 97-142 and 95-22, Report and Order and Order on Reconsideration, 12 FCC Rcd 23891, 23935-47 (¶¶ 97-132) (1997).

[179] *Id.*

[180] *See* 47 U.S.C. § 310(b). *See also Revisions to Part 21 of the Commission's Rules regarding the Multipoint Distribution Service*, CC Docket No. 86-179, Report and Order, 2 FCC Rcd 4251, 4253 (¶ 16) (1987) ("*MDS Report and Order*"); *Streamlining the Commission's Rules and Regulations for Satellite Application and Licensing Procedures*, IB Docket No. 95-117, Report and Order, 11 FCC Rcd 21581, 21599 (¶ 43) (1996) ("*Satellite Rules Report and Order*"); *LMDS Second Report and Order*, 12 FCC Rcd at 12650-51 (¶ 243).

[181] *See 4.9 GHz Notice*, 15 FCC Rcd at 4795-96 (¶ 39).

[182] We note, however, that to the extent that a licensee's decision to change its regulatory status raises issues with respect to that licensee exceeding the benchmark contained in Section 310(b)(4), the rules require the Commission's prior approval before the licensee can make this change. *See Rules and Policies on Foreign Participation in the U.S. Telecommunications Market and Market Entry and Regulation of Foreign-Affiliated Entities*, IB Docket Nos. 97-142 and 95-22, Report and Order and Order on Reconsideration, 12 FCC Rcd 23891, 23940-41 (¶¶ 111-118) (1997).

[183] *See Notice and Order*, 14 FCC Rcd at 1303 (¶ 10).

comments on this issue, with some commenters, including rural and smaller carriers, advocating that the band be licensed using small geographic areas, such as Basic Trading Areas ("BTAs"), or Metropolitan Statistical Areas ("MSAs") and Rural Statistical Areas ("RSAs"),[184] while a few commenters suggest that the band should be licensed on a large regional basis, such as Economic Areas ("EAs") or nationwide basis.[185] Given the allocation that we have adopted for this band and the possibility of pairing the 50 megahertz of spectrum in the 3650-3700 MHz band with the 50 megahertz of spectrum in the 4.9 GHz band, we believe it is appropriate to supplement the record on this issue.

65. Consistent with the *Notice and Order*, we tentatively conclude that a geographic area licensing approach should be used to assign licenses in the 3650-3700 MHz band.[186] Our experience has been that wide-area licensing (as opposed to site-by-site licensing) affords licensees substantial flexibility to respond to market demand and may result in significant improvements in spectrum utilization.[187] In particular, geographic area licensing allows licensees to coordinate usage across an entire geographic area to maximize the use of spectrum in areas of highest demand. Wide-area licenses also provide the flexibility to dynamically adjust spectrum usage depending upon market demands. Such adjustments may be significantly more difficult under a site-by-site licensing regime where prior Commission approval is needed before a licensee can address growth or changes in demand. We note that we have proposed to use a wide-area licensing approach with the 4.9 GHz band.[188] We seek comment on our tentative conclusion to use geographic areas to license the 3650-3700 MHz band.

66. Assuming we adopt a wide-area approach to licensing the 3650-3700 MHz band, there are a number of geographic area options. In the past the Commission has licensed spectrum using the 306 MSAs and the 428 RSAs. When combined, these two geographical service areas create the 734 geographic areas that were originally used to license cellular service. The Commission has also licensed or proposed to license spectrum using other geographic service areas, such as Economic Areas (“EAs”) and EA-like areas. There are 172 EAs, as defined by the U.S. Department of Commerce, and three additional Commission-defined EA-like areas.[189] Specifically, the Commission has licensed the bands 37.0-38.6 GHz and 38.6-

[184] *See, e.g.*, Rural Carriers comments at 5 and reply comments at 2-6; Innowave comments at 3; NTCA comments at 2; RTG comments at ii, 6-7; TDS comments at 2-3 and reply comments at 1-2; SR Telecom comments at 9-10; Nortel comments at 10; GTE reply comments at 3; Western Wireless reply comments at 4-5; OPASTCO reply comments at 1-2.

[185] *See* TDS comments at 2; PetroCom comments at 2.

[186] *See Notice and Order*, 14 FCC Rcd at 1303 (¶ 10).

[187] *See, e.g., Amendment of Part 90 of the Commission's Rules to Facilitate Future Development of SMR Systems in the 800 MHz Frequency Band*, PR Docket No. 93-144, First Report and Order, Eighth Report and Order, and Second Further Notice of Proposed Rule Making, 11 FCC Rcd at 1463 (1995) (restructuring licensing framework for 800 MHz Specialized Mobile Radio Service and adopting wide-area licensing). *See also* Gregory L. Rosston & Jeffrey S. Steinberg, *Using Market-Based Spectrum Policy to Promote the Public Interest*, 50 Fed. Comm. L.J. 87, 94 (1997).

[188] *See 4.9 GHz Notice*, 15 FCC Rcd at 4797 (¶ 43).

[189] The three additional EA-like services areas are: (1) Guam and the Northern Mariana Islands (combined as one service area); (2) Puerto Rico and the United States Virgin Islands (combined as one service area); and (3) American Samoa.

40.0 GHz using EAs and has used EAs to license the 24 GHz band.[190] The Commission has also used larger geographic areas to license spectrum. For instance, the Commission licensed the 2.3 GHz band using the twelve Regional Economic Area Groupings ("REAs") and the 52 Major Economic Areas ("MEAs").[191] REAs and MEAs are also based on the 172 EAs, as modified by the Commission. More recently, the Commission has chosen to license the bands 746-764 MHz and 776-794 MHz using the even larger Economic Area Groupings ("EAGs").[192] There are six EAGs and these are as well based on EAs.

67. If we adopt a wide-area licensing approach to license the 3650-3700 MHz band, we seek comment on the appropriate geographic area to be used and what impact this choice of service territory will have on the possible pairing of the 3650-3700 MHz band with the 4.9 GHz band. We are mindful of the competing need to provide large enough service areas for those wishing to provide national services in the 3650-3700 MHz band, and possibly the 4.9 GHz band, and the need to choose a geographic licensing area that will permit the dissemination of 3650-3700 MHz licenses among a wide variety of applicants.[193] We also wish to ensure service to rural areas[194] and to promote investment in and rapid deployment of new technologies and services.[195] We seek comment on the possibility of licensing part of the 3650-3700 MHz band and the 4.9 GHz band on a regional or national basis and the remaining part of the bands on a smaller scale.[196] If commenters support licensing based on service territories other than those discussed above, they should discuss why other types of service areas are more appropriate.[197]

68. We note that, whatever service area is used to license the 3650-3700 MHz band, some of those service areas will be contained within the coordination zones for the grandfathered FSS earth stations sites and the three grandfathered Federal Government radiolocation operations sites. In the *Notice and Order* in this proceeding, we identified the location of the three grandfathered Government radiolocation sites[198] and in the *Report and Order* we established an 80 kilometer coordination zone around each of these sites.[199] Likewise, below we propose to establish coordination zones around the grandfathered FSS earth station

---

[190] *See Amendment of the Commission's Rules Regarding the 37.0-38.6 GHz and 38.6-40.0 GHz Band*, ET Docket No. 95-183, Memorandum Opinion and Order, 14 FCC Rcd at 12428 (1999). *See also 24 GHz Report and Order*, FCC 00-272 at ¶¶ 13-18.

[191] *See* 47 C.F.R. § 27.6. *See also Part 27 Report and Order*, 12 FCC Rcd at 10814-16 (¶¶ 54-60). At the time of the 2.3 GHz auction, REAs were know as Regional Economic Area Groupings ("REAGs").

[192] *See 700 MHz First Report and Order*, 15 FCC Rcd at 500 (¶ 56).

[193] *See* 47 U.S.C. §§ 309(j)(3)(B), (4)(C).

[194] *See* 47 U.S.C. § 309(j)(3)(A).

[195] *Id.* at 309(j)(4)(C)(iii).

[196] In order to permit licensees to develop regional or national services, we seek comment below on whether we should modify our competitive bidding rules to promote bidder flexibility. *See* ¶ 120, *infra*.

[197] One such approach might be the use of Component Economic Areas ("CEAs") which are a subset of EAs. CEAs were developed by the Commerce Department and there are 348 CEAs. While the Commission has not used CEAs before to license spectrum, commenters may wish to address their appropriateness for this band.

[198] *See Notice and Order*, 14 FCC Rcd at 1307 (¶ 16).

[199] *See* ¶ 36, *supra*.

sites.[200] No matter what geographic licensing areas we choose to license in this band, we do not propose to adjust these licensing areas to take into account these coordination zones. Licensees will acquire their licenses with knowledge of these coordination requirements. We seek comment on this tentative conclusion.

69. We also seek comment on whether we should license the Gulf of Mexico as part of larger service areas, as we did for the upper 700 MHz bands, or whether we should separately license a service area or service areas to cover the Gulf of Mexico.[201] Commenters who advocate a separate service area or areas to cover the Gulf of Mexico should discuss what boundaries should be used and whether special interference protection criteria or performance requirements are necessary due to the unique radio propagation characteristics and antenna siting challenges that exist for Gulf licensees.

70. We requested comment in the *Notice and Order* on the appropriate size for spectrum blocks in the 3650-3700 MHz band.[202] We received numerous comments on this issue, with many commenters advocating the use of one 50 megahertz block[203] while others recommend dividing up the 50 megahertz of spectrum into smaller blocks.[204] For the reasons discussed above, we are seeking additional comment on the size of geographic licensing areas to be used to license the 3650-3700 MHz band, we also believe it is appropriate to seek additional comment on the size spectrum block or blocks that should be used to license this band. We are particularly interested in seeking comment on what size spectrum block or blocks should be used to license this band so as to facilitate the pairing of this band with the 4.9 GHz band. With this goal in mind, we seek comment on whether this spectrum should be auctioned in 50 megahertz block licenses. We seek to develop a record on whether 50 megahertz block licenses or smaller block licenses would provide licensees with more options for services in this band and the 4.9 GHz band. For instance, the choice of 50 megahertz block licenses might better facilitate provision of broadband services by licensees. On the other hand, smaller blocks, such as 5 MHz, may provide a valuable option for licensees relocating from the 18 GHz band.[205]

71. We also request comment on whether we should adopt a licensing plan for this band that provides for different sized blocks. If we allocate spectrum in different sized blocks, licensees would not be required to acquire more spectrum than they need for their operations. This alternative approach could save time and resources, and also could expedite the development and offering of services. We further

[200] *See* ¶¶ 107-109, *infra*.

[201] *See 700 MHz First Report and Order*, 15 FCC Rcd at 500 (¶ 56 note 137).

[202] *See Notice and Order*, 14 FCC Rcd at 1303 (¶ 10).

[203] *See*, *e.g.*, Rural Carriers comments at 2-5 and reply comments at 2, 6; RTG comments at 7; NTCA comments at 2; RTG comments at ii, 6; OPASTCO comments at 1-2.

[204] *See*, *e.g.*, PetroCom comments at 2 and 5; Nortel comments at ii, 2, and 10; TDS comments at 2-4 and reply comments at 2; Innowave comments at 3; SR Telecom at 9-10.

[205] The Commission recently adopted a new band plan for the 18 GHz band that will, among other things, require the relocation of certain Part 101 point-to-point microwave facilities and obligate new satellite entrants to provide for the relocation of any existing fixed stations operating in spectrum being designated for exclusive satellite use (18.58-19.3 GHz). *See Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and 27.5-30.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 GHz and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite-Service Use*, IB Docket No. 98-172, RM-9005, RM-9118, Report and Order, FCC 00-212 (rel. June 22, 2000). The affected 18 GHz bands are used by point-to-point microwave facilities that operate with 5 MHz bandwidths. *See* 47 C.F.R. § 101.147(r)(2).

request comment on how various public objectives, such as the diversity of services offered to consumers, the adequacy of spectrum for flexible uses, the time necessary to implement the grants, and the ability of small businesses to provide niche services, may be achieved with a licensing scheme that uses a variety of blocks of different sizes. In addition, we request comment on whether the 3650-3700 MHz band should be licensed in paired spectrum blocks. Under this approach, we could pair 25 megahertz spectrum blocks into licenses of 50 megahertz.

5. License Term; Renewal Expectancy

72. Section 27.13 of the Commission's rules provides for authorizations for license terms not to exceed 10 years from the date of original issuance or renewal.[206] Section 27.14 of the Commission's rules establishes a right to a renewal expectancy.[207] We sought comment on whether to apply these license term and renewal expectancy provisions to the 4.9 GHz band and we seek comment on whether to apply them with respect to licensees in the 3650-3700 MHz band.[208] We seek comment on whether a 10-year license term, combined with a renewal expectancy, will help to provide a stable regulatory environment that will be attractive to investors and thereby encourage development of this spectrum. We also seek comment on whether a license term longer than 10 years is appropriate to achieve these goals and better serve the public interest.[209] Commenters who favor a license term in excess of 10 years should specify the appropriate license term and include a basis for the period proposed, and should address whether the same terms should apply to 4.9 GHz licensees.

73. Consistent with Part 27, we propose that in the event that a license is partitioned or disaggregated,[210] any partitionee or disaggregatee shall be authorized to hold its license for the remainder of the original licensee's 10-year term, and the partitionee or disaggregatee may obtain a renewal expectancy on the same basis as other licensees in the 3650-3700 MHz band.[211] We further propose that all licensees meeting the substantial service requirement will be deemed to have met this part of the renewal expectancy requirement regardless of which of the construction options the licensees have chosen. We tentatively conclude that this approach is appropriate because a licensee, through partitioning, should not be able to confer greater rights than it has been awarded under the terms of its license grant.[212] We tentatively concluded that we should impose these provisions on 4.9 GHz licensees and, likewise, we tentatively conclude that we should impose these provisions on 3650-3700 MHz licensees. We seek comment on this tentative conclusion.

74. In addition, in the *4.9 GHz Notice*,[213] we tentatively concluded that in order for a licensee

[206] *See* 47 C.F.R. § 27.13.

[207] *See* 47 C.F.R. § 27.14.

[208] *See 4.9 GHz Notice*, 15 FCC Rcd at 4789 (¶ 48).

[209] *See* 47 U.S.C. § 307(c) (limiting broadcasting station licenses to eight years).

[210] *See* ¶¶ 75-80, *infra*.

[211] *See* 47 C.F.R. §§ 27.15(d), 27.324(b)(4).

[212] *See Part 27 Report and Order*, 12 FCC Rcd at 10840 (¶ 106).

[213] *See 4.9 GHz Notice*, 15 FCC Rcd at 4799 (¶ 50).

involved in a comparative renewal proceeding[214] to claim a renewal expectancy that licensee must include, at a minimum, the following showing required by Section 27.14(c) of the Commission's rules:[215]

- A description of current service in terms of geographic coverage and population served or links installed.
- An explanation of the licensee's record of expansion, including a timetable for the construction of new base sites or links to meet changes in demand for service.
- A description of the licensee's investments in its system.
- Copies of any Commission orders finding the licensee to have violated the Communications Act or any Commission rule or policy, and a list of any pending proceedings that relate to any matter described by the requirements for the renewal expectancy.[216]

We likewise tentatively conclude that a licensee in the 3650-3700 MHz band involved in a comparative renewal proceeding must, at a minimum, make this same showing in order to claim a renewal expectancy. We seek comment on this tentative conclusion. We also seek comment on how the deployment of earth stations within a licensee's service area should be taken into account in connection with renewal expectancy.

6. Partitioning and Disaggregation of Licenses; Band Managers

75. As we did with respect to potential 4.9 GHz licensees, we hereby tentatively conclude that we should allow all 3650-3700 MHz licensees the flexibility to partition their service areas without any restriction, and to disaggregate their spectrum.[217] We tentatively conclude that geographic partitioning and spectrum disaggregation can result in efficient spectrum use and economic opportunity for a wide variety of applicants, including small business, rural telephone, minority-owned, and women-owned applicants, as required by Section 309(j)(4)(C) of the Communications Act.[218] We also tentatively conclude that our proposed approach will provide a means to overcome entry barriers through the creation of smaller licenses that require less capital, thereby facilitating greater participation by rural telephone companies and other smaller entities, many of which are owned by minorities and women.[219]

---

[214] A comparative renewal proceeding is one in which an existing licensee is challenged by another applicant. The existing licensee must demonstrate sufficient reason for the Commission to renew its license for an additional license term rather than issue the license to another applicant. *See* 47 C.F.R. § 27.14(b); *see also Part 27 Report and Order*, 12 FCC Rcd at 10840, 10843-44 (¶¶ 106, 113).

[215] *See* 47 C.F.R. § 27.14(c). *See also Part 27 Report and Order*, 12 FCC Rcd at 10840-41 (¶ 107).

[216] *Cf.* Sections 22.940(a)(2)(i)-(iv) of the Commission's rules, 47 C.F.R. §§ 22.940(a)(2)(i)-(iv). We note that, because of the anticipated difference in the nature of the respective services, we are not proposing that licensees in the 3650-3700 MHz band would be required to demonstrate an ability to serve roamers, as is required of cellular licensees under Part 22 of the Commission's rules.

[217] *See 4.9 GHz Notice*, 15 FCC Rcd at 4800 (¶ 52).

[218] *See* 47 U.S.C. § 309(j)(4)(C).

[219] *See Partitioning and Disaggregation Report and Order*, 11 FCC Rcd at 21843-44 (¶¶ 13-17) (1996).

76. Section 27.15 of the Commission's rules permits licensees seeking approval for partitioning and disaggregation arrangements to request authorization from the Commission for partial assignment of a license, and 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.[220] In adopting the rule, the Commission decided to permit geographic partitioning of any service area defined by the partitioner and partitionee, to permit spectrum disaggregation without restriction on the amount of spectrum to be disaggregated, and to permit combined partitioning and disaggregation.[221] The Commission concluded that allowing parties to decide without restriction the exact amount of spectrum to be disaggregated will encourage more efficient use of the spectrum and permit the deployment of a broader mix of service offerings, both of which will lead to a more competitive wireless marketplace.[222] We request comment on our proposal that licensees in the 3650-3700 MHz band be eligible to the same extent to partition service areas and disaggregate spectrum. We also request comment on what limits, if any should be placed on the ability of licensees to partition service areas and disaggregate spectrum.

77. Section 27.15(b)(1) of the Commission's rules provides that, in the case of partitioning, applicants and licensees must file FCC Form 603 and list the partitioned service area on a schedule to the application.[223] Section 27.15(c) contains provisions against unjust enrichment in order to address situations where a licensee under Part 27 who received a bidding credit partitions a section of its service area or disaggregates a portion of its spectrum to an entity that would not qualify for a similar bidding credit.[224] We propose to apply these provisions, as well as the remaining provisions governing partitioning and disaggregation in Section 27.15 of the Commission's rules, to 3650-3700 MHz licensees.

78. We also seek comment on our proposal to apply the methods that the Commission adopted in the *Part 27 Report and Order* for parties to partitioning, disaggregation, or combined partitioning and disaggregation agreements to meet construction requirements.[225] Specifically, we propose to allow parties to partitioning agreements to choose between two options for satisfying the construction requirements.[226] Under the first option, the partitioner and partitionee would each certify that it will independently satisfy the substantial service requirement for its respective partitioned area. If a licensee fails to meet its substantial service requirement during the relevant license term, the non-performing licensee's authorization would be subject to cancellation at the end of the license term. Under the second option, the partitioner certifies that the requirement has been or will be met for the entire market. If the partitioner fails to meet the substantial service standard during the relevant license term, only its license would be subject to

---

[220] *See Part 27 Report and Order*, 12 FCC Rcd at 10836-39 (¶¶ 96-103), adopting 47 C.F.R. § 27.15.

[221] *Id*. at 10836-37, 10839 (¶¶ 97-99, 102), citing *Partitioning and Disaggregation Report and Order*, 11 FCC Rcd at 21847-48 (¶¶ 23-24).

[222] *Id*. at 10836 (¶ 97).

[223] *See* 47 C.F.R. § 27.15(b)(1). *See also ULS Report and Order*, 13 FCC Rcd at 21078-83 (¶¶ 109-122).

[224] *See* 47 C.F.R. § 27.15(c). *See also Part 27 Report and Order*, 12 FCC Rcd at 10838-39 (¶ 101); 47 C.F.R. § 1.2111.

[225] *See Part 27 Report and Order*, 12 FCC Rcd at 10836 (¶ 96). *See also Partitioning and Disaggregation Report and Order*, 11 FCC Rcd at 21857, 21865 (¶¶ 42, 62-63); *LMDS Fourth Report and Order*, 13 FCC Rcd at 11655, 11664-66 (¶¶ 16-19).

[226] *See* 47 C.F.R. § 27.15(e)(1), as amended by *700 MHz First Report and Order*.

cancellation at the end of the license term. The partitionee's license would not be affected by such failure.

79. Our proposal to offer two options to partitioning parties is based on our tentative conclusion that licensees in the 3650-3700 MHz band may be motivated to enter into partitioning arrangements for different reasons and under various circumstances. For example, a 3650-3700 MHz licensee might partition its license in order to reduce its construction costs. In that case, the original licensee would have less population to cover in order to meet its substantial service requirement. Thus, it may find the first option more attractive for its purposes. Under another scenario, a 3650-3700 MHz licensee who has met or is close to meeting its substantial service requirement may be approached by another entity interested in serving a niche market in a portion of the service area. Under these circumstances, the second option may seem more attractive to the parties. In either instance, the public interest is advanced by permitting that flexibility, in terms of service areas and niche markets, conducive to optimizing the viability and value of the licenses partitioned while precluding circumvention of our construction requirements.[227]

80. Finally, we propose to allow parties to disaggregation agreements to choose between two options for satisfying the construction requirements.[228] Under the first option, the disaggregator and disaggregatee would certify that they will share responsibility for meeting the substantial service requirement for the geographic service area. If parties choose this option, both parties' performance will be evaluated at the end of the relevant license term and both licenses could be subject to cancellation. The second option would allow the parties to agree that either the disaggregator or the disaggregatee would be responsible for meeting the substantial service requirement for the geographic service area. If parties choose this option, and the party responsible for meeting the construction requirement fails to do so, only the license of the non-performing party would be subject to cancellation. As with partitioned licenses, providing these options preserves the public interest in developing the spectrum to the same degree as that required had the disaggregation (or partitioning) not occurred.[229]

81. We seek comment on whether the use of band manager licensing may also be an appropriate alternative method of accomplishing the objectives that we strive to achieve through our partitioning and disaggregation rules. Band managers would be a class of Commission licensee that would engage in the business of making spectrum available for use by others through private, written contracts. We seek comment generally on the possible use of band managers in the 3650-3700 MHz band, and in the 4.9 GHz band should we find that the public interest supports the pairing of these bands. Should we decide to license band managers for this spectrum, we seek comment on whether licensees should be permitted to choose to operate either as band managers (*i.e.*, spectrum brokers), or as traditional licensees, or both. In the alternative, some or all of the frequencies could be authorized exclusively for band manager licensing. We invite comment on the advantages and disadvantages of band manager licensing and the approaches identified above. We also seek comment on all the rules that should apply to band managers.[230]

---

[227] *See Partitioning and Disaggregation Report and Order*, 11 FCC Rcd at 21857 (¶ 43).

[228] *See* 47 C.F.R. § 27.15(e)(2), as amended by *700 MHz First Report and Order*.

[229] *See Partitioning and Disaggregation Report and Order*, 11 FCC Rcd at 21864-65 (¶ 61).

[230] *See Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules*, WT Docket No. 99-168, Second Report and Order, 15 FCC Rcd 5299, 5321-28, 5331-33 ¶¶ 48-67, 74-80 (2000) (establishing Guard Band Manager licenses for the 700 MHz guard bands and adopting Subpart G of Part 27 of the Commission's rules and other rules governing Guard Band Manager licenses).

7. Performance Requirements

82. Section 27.14(a) of the Commission's rules requires 2.3 GHz licensees to provide "substantial service" in their service areas within 10 years of being licensed, and also states that a failure to meet this requirement will result in forfeiture of the license and the licensee's ineligibility to regain it.[231] This section defines substantial service "as service which is sound, favorable, and substantially above a level of mediocre service which just might minimally warrant renewal."[232] The *Part 27 Report and Order* provided several examples of safe harbors that would demonstrate substantial service.[233] Later, for LMDS, the Commission adopted the same build-out requirement and safe harbor provisions.[234] Recently, the Commission adopted these same safe harbor provisions for the 747-762 MHz and 777-792 MHz bands.[235] As we did for the 4.9 GHz band, we propose that licensees in the 3650-3700 MHz band be governed by the same construction standards, including the same safe harbor provisions.[236] We also propose an FSS build-out requirement for those 3650-3700 MHz licensees who choose not to use their licenses for fixed and mobile services and instead use the spectrum to provide FSS under Part 25 of the Commission's rules.

83. Our construction proposal includes the requirement that licensees submit an acceptable showing to the Commission at the end of the license period demonstrating that they have provided substantial service during the license term or are providing substantial service at the end of the term.[237] We propose to amend Part 27 to adopt the following safe harbors that would be applicable to 3650-3700 MHz licensees.[238] In order to constitute substantial service, licensees would have to meet one of the following:

- For a licensee who chooses to offer fixed, point-to-point services, the construction of four permanent links per one million people in its licensed service area during its license term or at the license-renewal mark would constitute substantial service.

- For a licensee who chooses to offer fixed, point-to-multipoint services, a demonstration of coverage to 20 percent of the population of its licensed service area during its licensed term or at the license-renewal mark would constitute substantial service.

- For a licensee that chooses to offer a fixed-satellite service, construction of one earth station per licensed service area during its license term or at the license-renewal mark would constitute substantial service.

84. The second safe harbor proposal concerning fixed, point-to-multipoint services would include

---

[231] *See* 47 C.F.R. § 27.14(a).

[232] *Id*. *See also Part 27 Report and Order*, 12 FCC Rcd at 10843-45 (¶¶ 111-115).

[233] *See Part 27 Report and Order*, 12 FCC Rcd at 10844 (¶ 113).

[234] *See LMDS Second Report and Order*, 12 FCC Rcd at 12660 (¶ 270).

[235] *See 700 MHz First Report and Order*, 15 FCC Rcd at 505 (¶ 70).

[236] *See 4.9 GHz Notice*, 15 FCC Rcd at 4802 (¶ 58).

[237] *See Part 27 Report and Order*, 12 FCC Rcd at 10843-44 (¶ 113). *See also* 47 C.F.R. § 27.14(c).

[238] *See* Appendix B, Proposed Section 27.14(a)(1) of the Commission's rules, 47 C.F.R. § 27.14(a)(1).

3650-3700 MHz licensees that use the band to provide mobile services. This is because the band is limited to mobile base station use. Mobile services in the band would essentially be a fixed, point-to-multipoint service. We recognize that this safe harbor proposal for licensees who choose to offer fixed, point-to-multipoint services is different from the safe harbor standard adopted for the 24 GHz band.[239] Unlike at 24 GHz, however, there is presently no domestic terrestrial fixed or mobile commercial use of the 3650-3700 MHz band. For 3650-3700 MHz licensees, therefore, there might be equipment availability issues that do not exist for 24 GHz licensees.

85. The third safe harbor proposal concerns the situation where a 3650-3700 MHz licensee who aquires its license pursuant to the rules we adopt for fixed and mobile services uses this spectrum to provide FSS service on a secondary basis in the band. As stated earlier, this licensee would have to comply with the Part 25 application and licensing rules related to FSS and earth stations. However, without the third safe harbor proposal, this licensee would lose its Part 27 license at the end of its license renewal mark. The FSS safe harbor proposal, therefore, makes clear that a 3650-3700 MHz licensee that uses this spectrum to provide FSS will not lose its license at the end of its license term as long as the licensee constructs one earth station per licensed service area during its license term or at its license-renewal mark.

86. Our safe harbor proposals are intended to provide licensees an opportunity to achieve certainty as to compliance with the substantial service requirement during or by the end of the initial license term. If they comply with the safe harbors, they will have met the substantial service requirement. In addition, the substantial service requirement could be met in other ways, and we propose to review licensees' showings on a case-by-case basis.[240] In reviewing licensees' showings, we propose to consider such factors as whether the licensee is offering a specialized or technologically sophisticated service that does not require wide coverage to be of benefit to customers,[241] and whether the licensee's operations serve niche markets or focus on serving populations outside of areas served by other licensees.[242] Although licensees will have incentives to construct facilities to meet the service demands in their licensed service areas, we tentatively conclude that the minimum requirements we propose for the 3650-3700 MHz band will promote efficient use of the spectrum, encourage the provision of service to rural, remote, and insular areas, and prevent the warehousing of spectrum.

87. We tentatively conclude that these build-out provisions fulfill our obligations under Section 309(j)(4)(B) of the Communications Act.[243] This section requires the Commission in implementing auction

---

[239] *See 24 GHz Report and Order*, FCC 00-272 at ¶¶ 37-39.

[240] *See* Appendix B, Proposed Section 27.14(a)(2) of the Commission's rules, 47 C.F.R. § 27.14(a)(2).

[241] *See Part 27 Report and Order*, 12 FCC Rcd at 10844 (¶ 113), citing *Amendment of Parts 2 and 90 of the Commission's Rules to Provide for the Use of 200 Channels Outside the Designated Filing Areas in the 896-901 MHz and the 935-940 MHz Bands Allotted to the Specialized Mobile Radio Pool, Implementation of Section 309(j) of the Communications Act Competitive Bidding, and Implementation of Sections 3(n) and 322 of the Communications Act*, GN Docket No. 93-252, Second Report and Order and Second Further Notice of Proposed Rulemaking, 10 FCC Rcd 6884, 6887 (¶ 4) (1995).

[242] *See Amendment of Parts 2 and 90 of the Commission's Rules to Provide for the Use of 200 Channels Outside the Designated filing Areas in the 896-901 MHz and the 935-940 MHz Bands Allotted to the Specialized Mobile Radio Pool Implementation of Sections 3(n) and 322 of the Communications Act*, GN Docket No. 93-252, Third Order on Reconsideration, 11 FCC Rcd at 1170 (¶ 2) (1995).

[243] *Id*. at 10844-45 (¶¶ 114-115), citing 47 U.S.C. § 309(j)(4)(B). *See also Melcher v. FCC*, 134 F.3d 1143 (D.C.Cir. 1998).

procedures to include "safeguards to protect the public interest in the use of the spectrum" and performance requirements "to ensure prompt delivery of service to rural areas, to prevent stockpiling or warehousing of spectrum by licensees or permittees, and to promote investment in and rapid deployment on new technologies and services."[244] We tentatively conclude that the licensing, service and technical rules that we are proposing for the 3650-3700 MHz band, along with our overall competition and universal service policies, constitute effective safeguards to protect the public interest in the use of the spectrum. The performance requirements that we are proposing for this band should ensure that the spectrum is used and promote investment in and rapid deployment of new technologies and services. We also believe that, combined with the universal service policies of the Telecommunications Act of 1996 ("1996 Act"),[245] service to rural areas may be furthered by our proposal to allow partitioning of service areas and disaggregation of spectrum and by our proposal, as outlined above,[246] to permit parties to disaggregation and partitioning agreements to negotiate between themselves the responsibility for meeting the applicable construction requirements.

88. Finally, as we proposed with respect to the 4.9 GHz band, we intend to reserve the right to review our construction requirements in the future if we receive complaints related to Section 309(j)(4)(B), or if a reassessment is warranted because spectrum is being warehoused or is otherwise not being used despite demand.[247] We will also reserve the right to impose additional, more stringent construction requirements on licenses in the future in the event that actual anticompetitive or universal service problems develop. We solicit comment on these proposals and views regarding performance requirements. In addition, if commenters believe that pairing the 3650-3700 MHz band and the 4.9 GHz band is necessary or appropriate, we seek comment on whether our safe harbor proposals should be modified and what would be appropriate safe harbors.

8. Equal Employment Opportunity

89. Part 27 does not explicitly require licensees to afford equal opportunity in employment. Nor does Part 24 contain an Equal Employment Opportunity (EEO) provision.[248] We note that there are specific EEO provisions for fixed service providers in Parts 21 and 101, including both common carrier and non-common carrier LMDS licensees;[249] and for common carrier mobile service providers in Parts 22 and 90 of the Commission's rules, though these latter provisions do not apply to PMRS providers because they are not common carriers.[250] In addition, Part 25 contains EEO rules for entities that use an owned or leased fixed-satellite service facility to provide more than one channel of video programming directly to the public.[251]

---

[244] *See* 47 U.S.C. § 309(j)(4)(B).

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

[246] *See* ¶¶ 78-80, *supra*.

[247] *See 4.9 GHz Notice*, 15 FCC Rcd at 4804 (¶ 62).

[248] *See* 47 C.F.R. Part 24 (Personal Communications Services).

[249] *See, e.g.*, 47 C.F.R. § 101.311.

[250] *See* 47 C.F.R. §§ 22.321, 90.168.

[251] *See* 47 C.F.R. § 25.601.

90. Just as we did with respect to the 4.9 GHz band, we seek comment regarding whether to include an EEO provision in the Commission's rules applicable to services in the 3650-3700 MHz band and, if so, which of the Commission's EEO rules we should adopt.[252] Commenters should address the advisability of having different EEO requirements depending on the service a licensee provides. Commenters supporting the adoption of EEO requirements should address what statutory authority should be invoked to support these requirements and how these rules should be tailored to satisfy constitutional requirements.[253]

B. Technical Rules

91. In the *Notice and Order*, we sought comment on technical issues related to the proposed allocation of the 3650-3700 MHz band for FS operations.[254] While we have considered the comments received to date, we do not believe that a sufficient record has been established for us to adopt technical rules at this time.[255] Furthermore, in light of our final allocation plan for the 3650-3700 MHz band and the new regulatory scheme proposed in this *Second Notice*, we now make specific proposals regarding technical rules. We seek to establish a new record based on these proposals. Specifically, we seek comment on adopting the Commission's Part 27 technical standards for fixed and mobile operations in the 3650-3700 MHz band, with appropriate modifications to reflect the particular characteristics and circumstances of this band.

92. The application of general provisions of Part 27 would include technical standards relating to power limits, out-of-band emission limits, frequency stability, international coordination, antenna structures and air navigation safety, disturbance of AM broadcast station antenna patterns, radiofrequency (RF) safety standards, and equipment authorization.[256] In addition to the requirements in Part 27, we seek comment on proposals for additional technical requirements that may be necessary to allow terrestrial service operations to co-exist with the incumbent non-Federal Government FSS earth stations and the Federal Government radiolocation operations in the 3650-3700 MHz band, as well as the high-powered Federal Government mobile radar systems in the adjacent 3300-3650 MHz band.

1. In-Band Interference Control

a. Fixed and Mobile Services in the 3650-3700 MHz band

93. Part 27 of the Commission's rules provides limits on the field strength of signals at a licensee's

---

[252] *See 4.9 GHz Notice*, 15 FCC Rcd at 4808 (¶ 71).

[253] *See Lutheran Church-Missouri Synod v. FCC*, 141 F.3d 344 (D.C. Cir. 1998) (striking down the Commission's EEO program requirements for radio broadcast stations as unconstitutional and remanding to the Commission the issue of whether the non-discrimination rule was within its statutory authority), *reh'g denied*, 154 F.3d 487 (D.C. Cir. 1998), *opinion after remand*, 13 FCC Rcd, 23328, *appeal pending*.

[254] *See Notice and Order* at 1302-05 (¶¶ 9-12).

[255] *See, e.g.*, Rural Carriers comments at 8; COMSAT comments at 8-9, 12-14; Comsearch comments at 6; Innowave comments at 3 and 5-6; Lucent comments at 7-8; PanAmSat comments at 7-8; PetroCom comments at 4; RTG comments at ii and 11-12; SBC comments at 2; SBC comments at 2; Sprint comments at 5; SR Telecom at pages iii and 8-9; Nortel comments at iii, 10, 12-14; AT&T reply comments at 5; Lockheed comments at 4.

[256] *See* 47 C.F.R. §§ 27.51, 27.54, 27.56, 27.57, 27.59, 27.61, 27.63. *See also Part 27 Report and Order*, 12 FCC Rcd at 10848-65 (¶¶ 123-161).

border area unless the adjacent licensees agree to a higher field strength limit at their shared border.[257] The Commission has permitted similar flexibility in other frequency bands such as cellular service, Personal Communications Service, and Wireless Communications Service ("WCS"). In these cases, the Commission generally has addressed the control of co-channel interference between licensees in adjacent geographic regions by establishing field strength limits at the edge of the service areas and encouraging licensees to resolve interference problems on their own before coming to the Commission.[258]

94. Given that the mobile allocation in the 3650-3700 MHz band is limited to base stations which operate from a fixed location, we tentatively propose that technical requirements selected for the FS will also apply to the mobile service in this band. We seek comment on this conclusion.

95. In the absence of a consensus on an appropriate limit on field strength at a service area boundary, the Commission has relied on the use of coordination procedures to avoid harmful interference between the operations of licensees in adjacent service areas.[259] Specifically, licensees are required to coordinate pursuant to the appropriate provisions of Section 101.103 of the Commission's rules when they construct new facilities or modify existing facilities within a certain distance of the edge of their licensed service areas.[260] Through coordination, many steps can be taken to limit or prevent interference, such as use of robust technologies, partitioning the use of frequencies, taking advantage of terrain shielding and other propagation effects, and use of directional antennas.

96. We believe that either a coordination or field strength method, when properly applied, can provide a satisfactory means of controlling harmful interference between adjacent licensee's systems. There may be reasons to prefer one method over the other in the 3650-3700 MHz band. Specifically, a general coordination requirement may minimize the potential for interference to coordinated facilities, but may impose unnecessary coordination costs for facilities with a low potential for interference. Additionally, a coordination procedure may increase the potential for undesirable strategic or anti-competitive behavior. Alternatively, a field strength limit may reduce the need for coordination by giving licensees the ability to deploy unilaterally facilities in boundary areas as long as the field strength limit is satisfied, but by itself may provide insufficient assurance against interference to such facilities. A boundary field strength limit may require some degree of coordination and joint planning between bordering licensees to ensure efficient spectrum use on each side of the boundary.

97. We seek comment on the advantages and disadvantages of both approaches, or possibly, other approaches that combine elements of both a boundary field strength limit and a coordination requirement for controlling interference across geographic boundaries between 3650-3700 MHz operations. Parties should address the degree to which each method would provide adequate interference protection. We request comment on the kinds of incentives each method may present for undesirable strategic or anti-competitive behavior and the effect on licensee cost.

98. Regarding whether a general coordination approach should be used, comments are invited on specific aspects of procedures, such as those contained in Section 101.103 of the Commission's rules that

[257] *See* 47 C.F.R. § 27.57.

[258] *See, e.g.*, 47 C.F.R. §§ 24.236, 24.237 (Broadband PCS), 47 C.F.R. § 21.902(b)(5) (Multipoint Distribution Service), and 47 C.F.R. § 27.55 (WCS).

[259] *See LMDS Second Report and Order*; *39 GHz Report and Order*.

[260] *See* 47 C.F.R. § 101.103.

should apply. [261] While we suggest that Section 101.103 can serve as a useful framework for coordination in the 3650-3700 MHz band, our objective is to ensure that licensees receive protection from harmful interference with the minimum regulation necessary. If we ultimately adopt a general coordination approach, we tentatively conclude that such coordination would be required with co-channel fixed or mobile service licensees in adjacent geographic service areas and with adjacent channel licensees in adjacent geographic service areas, as well as the same or overlapping area. We propose to have each licensee coordinate with licensees in other relevant areas and develop agreements to that effect.

99. In other proceedings, the Commission has based coordination on fixed distances between the station and the licensee's service area boundary.[262] For the 3650-3700 MHz band, we propose to require that licensees coordinate their facilities whenever their facilities have line of sight into co-channel licensee facilities.[263] Under this proposal, coordination would have to be successfully completed before operation is permitted. In the event that there is no 3650-3700 MHz licensee immediately present in adjacent or overlapping areas, the fixed or mobile licensee must be prepared to coordinate its stations in the future in order to accommodate other adjacent area licensees to ensure cooperative and effective use of the 3650-3700 MHz band in each service area.

100. If commenters believe that we should apply a field strength limit at service area boundaries for the 3650-3700 MHz band as a means to control interference to neighboring systems, then an analysis should be presented to justify any proposed value. In the *Notice and Order*, we indicated that a field strength value of 54 dBµV/m may be an appropriate field strength for FS operations in the 3650-3700 MHz band.[264] We note that other maximum field strengths have been adopted by the Commission for other services, such as, 47 dBµV/m for PCS, and 40 dBµV/m for 700 MHz WCS licensees.[265]

101. In the *Notice and Order*, we sought comment on the alternative possibility of subjecting fixed stations to operating limits similar to those now employed for Broadband PCS, *i.e.*, a base station height/power limit of 1640 watts peak effective isotropically radiated power ("EIRP") with an antenna height up to 300 meters.[266] There was a lack of consensus in comments filed in response to the *Notice and Order*. We seek comment on what, if any, power limits (in terms of EIRP or effective radiated power (ERP)) and antenna height restrictions are necessary or appropriate under either a coordination or field strength limit approach.

b. Coordination with Fixed Satellite Service Operations in the 3650-3700 MHz Band[267]

102. In the *Notice and Order*, we recognized the need to protect FSS earth station reception of

[261] *Id.*

[262] *See LMDS Second Report and Order*; *39 GHz Report and Order*.

[263] At a minimum, stations whose radio horizon overlaps adjacent areas should contact relevant licensees regarding coordination of facilities.

[264] *See Notice and Order*, 14 FCC Rcd at 1303 (¶ 10).

[265] *See* 47 C.F.R. §§ 24.236 (PCS); 27.55(b) (700 MHz WCS).

[266] *See Notice and Order*, 14 FCC Rcd at 1304-05 (¶ 12).

[267] These coordination procedures apply to both the fixed and mobile base station services permitted in the 3650-3700 MHz band.

very weak signals transmitted by geostationary orbit satellites in the 3650-3700 MHz band.[268] However, we were not inclined to adopt the sharing criteria used in the adjacent 3700-4200 MHz band and instead proposed to restrict FS power.[269] We based this conclusion on the assumption that the coordination procedures used for the 3700-4200 MHz band would require large coordination distances that could unnecessarily constrain the deployment of fixed service in 3650-3700 MHz.[270] Comsearch objects to our proposal and instead suggests use of the coordination procedures contained in Part 25 of the Commission's rules, which are based on Appendix S7 of the International Telecommunication Union ("ITU") Radio Regulations.[271] Comsearch notes that these procedures have resulted in sharing at distances much less then the coordination contour radius, and that given certain technical parameters, earth stations have actually been located near the base of FS sites operating in the same band.[272]

103. We find that Comsearch's arguments have merit and believe that coordination procedures may allow greater flexibility than regulated power limits as proposed in the *Notice and Order*.[273] Given the need to protect grandfathered FSS sites from harmful interference caused by terrestrial service operations in this band, we tentatively conclude that coordination zones (based on ITU Appendix S7) will be required for terrestrial service operations located within 200 kilometers (approximately 125 miles) of grandfathered FSS sites. Given the proposed ERP limit for fixed and mobile service operations in the 3650-3700 MHz band, we tentatively find that the distance cutoff for coordination of 200 kilometers is appropriate. This proposed coordination procedure will provide for line of sight coordination protection to grandfathered FSS earth stations and take into account elevation angle, terrain shielding and over the horizon distances from grandfathered FSS earth station sites to proposed fixed and mobile service operations. We seek comment on this coordination proposal and whether alternative coordination procedures should be considered for the terrestrial service operations to provide interference protection to grandfathered FSS sites in the 3650-3700 MHz band. Further, given that we permit flexibility for FSS earth station use, the coordination procedures should take into account any possible future changes to the FSS earth station facilities, including possible future polarization and receive antenna orientation changes. With respect to changes in antenna orientation, one possible coordination method would be to protect the earth station's orientation, plus a fixed arc adjacent to that orientation. This would provide certainty for terrestrial licensees, by quantifying the exclusion zone around the earth station. Another option would be to permit changes in the antenna orientation of grandfathered earth stations, subject to acceptance of interference from any existing terrestrial facilities, such that the exclusion zone of the modified earth station would only reflect the earth station's actual facilities. We seek comment on these and any other options. In addition, commenters seeking to propose alternative distances for coordination zones should submit detailed technical information on how the zone size should be determined.

104. We propose that terrestrial service operations located within these 200 kilometer coordination zones utilize the technical information contained in Appendix S7 of the ITU Radio Regulations to determine if any interference would be caused to grandfathered FSS earth station facilities

[268] *See Notice and Order*, 14 FCC Rcd at 1304-05 (¶ 12).

[269] *Id.*

[270] *Id.*

[271] ITU Appendix S7 contains coordination procedures for ensuring that interference does not occur between terrestrial and satellite operations.

[272] *See* Comsearch comments at 3.

[273] *See Notice and Order*, 14 FCC Rcd at 1304-05 (¶ 12).

from the proposed terrestrial service operations.[274] If the terrestrial service licensee believes that no interference will be caused by the proposed operations, then the study and additional information relating to the technical aspects of the fixed or mobile service operations required by Appendix S7 of the ITU Radio Regulations will be sent to the affected grandfathered FSS earth station licensee. We propose to allow the grandfathered FSS earth station licensee 30 days to respond to the fixed or mobile service licensee's proposed operation. The FSS licensee's response should be submitted as quickly as possible and contain specific technical details concerning potential interference. Both licensees would be expected to make every reasonable effort to eliminate all problems or conflicts. In addition, we tentatively conclude that if no response is received within 30 days, the proposed FS operations will be deemed to have made reasonable efforts to coordinate its proposed operations. We seek comment on these proposed coordination procedures.

105. Under our proposal, operations at new FSS sites in the 3650-3700 MHz band will be secondary, and thus would not be afforded any protection from interference from primary fixed or mobile service operations. Accordingly, we find that the same coordination procedures as those proposed above are not necessary for secondary FSS operations.

106. While an FSS operator who does not hold a license in the band may effectively seek to obtain protection for its earth station facility through a private arrangement reached with the fixed or mobile service licensee in the relevant service area or service areas, such an arrangement would not in any way change coordination requirements. We want to make it clear that secondary FSS operations in the 3650-3700 MHz band cannot achieve primary status by negotiating with a terrestrial service licensee to allow placement of an FSS earth station within the terrestrial service licensee's service area. Simply stated, any agreement with a primary terrestrial service licensee does not carry any interference protections from the Commission for the secondary FSS earth station. Furthermore, we wish to stress that the primary fixed or mobile service licensee remains ultimately responsible for any interference caused to primary services in adjacent areas. We seek comment on these findings.

c. Coordination with Federal Government Operations in the 3650-3700 MHz Band

107. As noted above in the *Report and Order*, NTIA requires a coordination distance of 80 kilometers around the three grandfathered Federal Government radiolocation sites to provide adequate identification of spectrum conflicts that may arise between the Federal Government radiolocation service and the non-Federal Government fixed, mobile and FSS operations in the 3650-3700 MHz band.[275] We note that this requires any non-Federal Government fixed, mobile or FSS station located within 80 kilometers of the three-grandfathered Federal Government radiolocation sites to be coordinated with NTIA's Frequency Assignment Committee ("FAS"). Currently, we are not aware of any grandfathered FSS operations that are located within 80 kilometers of the three-grandfathered Federal Government radiolocation sites. However, the grandfathered Federal Government radiolocation site at St. Inigoes, Maryland is encompassed, either partially or fully within several 200-kilometer coordination contours for grandfathered FSS earth stations from three sites. As a result, potential fixed or mobile service licensees for these areas will need to be aware that any operation will need to be coordinated for the presence of the

[274] WRC-95 changed the ITU RR numbering scheme. Therefore, the ITU RR procedures for determining the coordination distance around an earth station for bands shared between space and terrestrial radiocommunications services, which were previously in Appendix 28 are now in Appendix S7. We will modify Section 25.251 of our rules to reflect this change. *See* 1998 ITU RR, Appendix S7, *Method for the determination of the coordination area around an earth station in frequency bands between 1 GHz and 40 GHz shared between space and terrestrial radiocommunications services.*

[275] *See* ¶ 35, *supra*.

grandfathered Federal Government radiolocation site and the grandfathered FSS earth stations.

108. The Commission handles the coordination between Government and non-Government entities in shared use bands. When an application for a station license is filed in a geographic area where such coordination is required, the Commission's licensing system automatically identifies the application as requiring coordination with the Government. The relevant technical and other data are then sent to the NTIA FAS for comment. If no objections are received within a specified time period, the Commission grants the application if it is otherwise acceptable. This approach works well when a service is licensed on a site-by-site basis. However, because we are considering licensing the 3650-3700 MHz band on wide-area basis, licensees would not normally be required to submit technical data for each individual site. Therefore, we could not go through the usual coordination process in those cases where it is necessary. Accordingly, we are proposing that licensees planning to construct facilities in the 3650-3700 MHz band within 80 km of the three grandfathered Government radiolocation sites be required to submit data to the Commission to allow coordination of their facilities. For each site requiring prior coordination, the licensee would be required to notify via the ULS any facility within the coordination zone by providing technical data including latitude, longitude, station type, frequency range, antenna height, power, and types of emissions.[276] Licensees would not be permitted to operate such facilities within the coordination zone until they obtain a response from the Commission indicating that there are no objections from the Government. We request comment on this proposal.

109. As requested by NTIA, we have maintained an allocation for Federal Government radiolocation for stations operating at least 44 nautical miles out at sea on a non-interference basis. Because this allocation is on a non-interference basis, we tentatively conclude that coordination procedures are not necessary for these Federal Government radiolocation operations. Rather, we believe it is incumbent upon NTIA to ensure that Federal Government radiolocation operations at sea do not cause any harmful interference to non-Federal Government services in the 3650-3700 MHz band, regardless of the distance the Federal Government radiolocation station is away from the shore. We seek comment on these conclusions.

2. Adjacent Band Interference Control

a. Upper Adjacent Band: 3700-4200 MHz

110. The 3700-4200 MHz band is allocated to the FS and FSS on a co-primary basis. Given the need to protect adjacent FSS earth stations reception we sought comment on whether the proposed out of band emission limit of 43 + 10log(p) dB that applies to broadband PCS should be applied to FS operations in the 3650-3700 MHz band.[277] Commenters were divided on the proposed out of band emissions limit. Specifically, FSS operators requested that a stricter limit of 60 + 10log(p) dB be placed on FS operations in the 3650-3700 MHz band.[278] In addition, Nortel recommends that we require that at the edge of the 50 megahertz block in any 30 kHz bandwidth, unwanted emission spectral power density be attenuated by at least (i) 10 dB at the band edge; (ii) 25 dB at 200-400 kHz from the band edge; (iii) 25 dB at 400 kHz to 50 dB at 3.0 MHz offset, linearly interpolated; (iv) 50 dB beyond 3 MHz from the band edge or in any one MHz band which is removed more than 250% of the necessary bandwidth at least 43 + 10 log (Pmean) dB or 80 dB whichever is less stringent, where Pmean is the mean output power of the transmitter in watts.

[276] *See* ¶ 47, *supra*.

[277] *See Notice and Order*, 14 FCC Rcd at 1303-04 (¶ 11).

[278] *See* COMSAT comments at 14.

111. Part 101 of the Commission's rules contains a section relating to emission limits for FS equipment that operate, with higher ERP limits, in the adjacent 3700-4200 MHz band.[279] We note that the emission limit set forth in Section 101.111 is more flexible than the emission limit proposed by Nortel. As a result, we propose to require that terrestrial service equipment operating in the 3650-3700 MHz band comply with the emission limits already in place for FS operation in the adjacent 3700-4200 MHz band. We request comment on this proposal and the proposed alternative emission limits advanced by Nortel and FSS operators and any additional methods that we could utilize to minimize the possibility of fixed or mobile service operations in the 3650-3700 MHz band causing interference to adjacent band FSS operations in the 3700-4200 MHz band.

112. The FS operations in the adjacent 3700-4200 MHz band can be authorized with EIRP values of up to 55 dBW and should, in general, not be as susceptible to interference from the lower powered terrestrial services in the adjacent 3650-3700 MHz band. However, we request comment on any mitigating factors, such as the potential need for coordination of terrestrial service operations in the 3650-3700 MHz band with FS operations in the 3700-4200 MHz band, or rules that should be applied to terrestrial service operation in the 3650-3700 MHz band to ensure that their operations do not cause interference to adjacent FS operations in the 3700-4200 MHz band.

113. In the *Notice and Order*, we sought comment on whether Very Small Aperture Terminals ("VSATs") should be precluded from operating in spectrum immediately adjacent to the new FS allocation by requiring a 3.5 meter diameter minimum antenna size for earth stations licensed to receive the 3700-3720 MHz segment.[280] In comments, FSS operators opposed such a restriction as premature and unnecessary.[281] Comsearch stated that the FSS earth station receiver IF filtering would be primarily responsible for rejecting adjacent band interference.[282] In addition, PanAmSat stated that as a technical matter it is not the case that larger FSS earth stations can avoid out-of-band emissions any better than small earth stations when the out-of-band emissions are emanating from ubiquitous terminals in an adjacent band.[283] PanAmSat indicated that out-of-band emissions could only be reduced through RF filtering at the output of 3650-3700 MHz transmitters, at the input of 3700-4200 MHz receivers, or both.[284] Given these comments we tentatively conclude that the size of the VSAT antenna will not be the determining factor in an earth station's ability to reject interference from adjacent band signals. Instead, we believe, as Comsearch and PanAmSat indicated, that the signal rejection capability of FSS earth stations would be based upon the receivers filtering capabilities. Therefore, we find that there is no need to restrict the usage of VSATs or the size of the antennas used with VSATs in the 3700-3720 MHz band. We request comment on these tentative conclusions.

b. Lower Adjacent Band: 3300-3650 MHz

114. Any new service in the 3650-3700 MHz band will have to co-exist with high-powered Federal Government mobile radar systems operating in the lower adjacent 3300-3650 MHz band. One

[279] *See* 47 C.F.R. § 101.111.

[280] *See Notice and Order*, 14 FCC Rcd at 1303-04 (¶ 11).

[281] *See* COMSAT comments at 15. *See also* PanAmSat comments at 8.

[282] *See* Comsearch comments at 6.

[283] *See* PanAmSat comments at 8.

[284] *Id.*

option for mitigating adjacent band interference issues is the establishment of a guard band. However, given the limited amount of spectrum available in the 3650-3700 MHz band, we tentatively conclude that this approach is not feasible. We seek comment on this conclusion.

115. In December 1999, NTIA released a report on the technical characteristics of Government systems operating in the lower adjacent band.[285] In that report, NTIA suggested engineering techniques to mitigate potential interference with systems in 3650-3700 MHz band. Specifically, NTIA recommends that, in order to achieve satisfactory commercial service in the 3650-3700 MHz band, the Commission "adopt effective transmitter emission and receiver selectivity standards to minimize interference to and from Federal Government systems operating in the adjacent band."[286] In the *Notice and Order*, we declined to propose receiver standards[287] based on the position that this matter is best left to market forces. Sprint supported this position and asserted that market forces will guide the development of innovative technology and the design of equipment.[288] We continue to believe that making appropriate technical information about the use of the 3300-3650 MHz band available to equipment manufacturers is the best method to ensure that they will be able to take into account the electromagnetic environment when designing and building equipment for use in the 3650-3700 MHz band. We believe that this will encourage the development and deployment of innovative equipment that will be able to coexist with the high-powered in-band and adjacent band Federal Government radar operations. We seek further comment on this conclusion.

116. NTIA also asserts that the most effective technique for precluding electromagnetic interference ("EMI") from adjacent band radar systems to FSS earth stations is the careful selection of the earth station receive site.[289] NTIA indicates that sites should be selected that provide adequate distance separation or site shielding between, for example, an FSS earth station antenna and any high power radar transmitter in the environment. NTIA also indicates that based upon the EMI cases investigated to date, EMI from receiver front-end overload can be precluded by improving the receiver's RF selectivity with additional filtering. As noted above, we have declined to propose receiver standards for FS equipment that will operate in the 3650-3700 MHz band. However, we wish to draw the attention of terrestrial service equipment manufacturers and prospective bidders to the technical specifications, for Federal Government radiolocation systems that operate in the 3100-3700 MHz band, that are contained in the NTIA Radiolocation Report.[290]

---

[285] *See* NTIA Report TR-99-361 entitled *Technical Characteristics of Radiolocation Systems Operating In The 3.1-3.7 GHz Band And Procedures For Assessing EMC With Fixed Earth Station Receivers*, December 1999 ("*NTIA Radiolocation Report*").

[286] *See Final Report* at 4-20.

[287] *See Notice and Order*, 14 FCC Rcd at 1298-99, 1303-04, 1308-09 (¶¶ 4, 11, 18).

[288] *See* Sprint comments at 5.

[289] See *NTIA Radiolocation Report* at Section 7.2.1.

[290] *See NTIA Radiolocation Report.*

3. RF Safety[291]

117. Section 27.52 of the Commission's rules[292] subjects licensees and manufacturers to the RF radiation exposure requirements specified in Sections 1.1307(b), 2.1091, and 2.1093 of the Commission's rules, which list the services and devices for which an environmental evaluation must be performed.[293] In adopting the rule, the Commission concluded that routine environmental evaluations for RF exposure are required by applicants desiring to use the following types of transmitters: (1) fixed operations, including base stations and radiolocation transmitters, when the effective radiated power (ERP) is greater than 1,000 watts; (2) all portable devices; and (3) mobile devices, if the ERP of the station, in its normal configuration, will be 1.5 watts or greater.[294]

118. With regard to RF safety requirements, we propose to treat services and devices in the 3650-3700 MHz band in a comparable manner to other services and devices that have similar operating characteristics. We tentatively conclude that the requirements in Section 27.52 that the Commission adopted for licensees in the 2.3 GHz band will apply to the same extent to licensees in the 3650-3700 MHz band. As the Commission has previously stated, the Commission is providing guidance on acceptable methods of evaluating compliance with the Commission's exposure limits in OET Bulletin No. 65, which has replaced OST Bulletin No. 65.[295]

119. 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.[296] 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 propose to adopt the 1,000 watts ERP threshold

---

[291] We are planning to initiate a proceeding in the near future to consider measurement methods for determining compliance with our RF safety requirements. Any changes that we may make as a result of this proceeding will be applied to products developed for the 3650-3700 MHz band.

[292] *See* 47 C.F.R. § 27.52.

[293] *See* 47 C.F.R. §§ 1.1307(b), 2.1091, 2.1093. The RF radiation exposure limits are set forth in 47 C.F.R. §§ 1.1310, 2.1091, and 2.1093, as modified in Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation, ET Docket No. 93-62, Report and Order, 11 FCC Rcd 15123 (1996); *First Memorandum Opinion and Order*, 11 FCC Rcd 17512 (1997); Second Memorandum Opinion and Order, 12 FCC Rcd at 13494 (1997) ("*RF Guidelines Second Reconsideration Order*").

[294] *See Part 27 Report and Order*, 12 FCC Rcd at 10861 (¶ 154 n.344), noting that 1,000 watts ERP equates to 1,640 watts EIRP. In the *RF Guidelines Second Reconsideration Order*, the Commission increased the exclusion threshold for mobile devices operating above 1.5 GHz from 1.5 watts to 3 watts ERP. *See also RF Guidelines Second Reconsideration Order*, 12 FCC Rcd at 13514 (¶ 51).

[295] *See Part 27 Report and Order*, 12 FCC Rcd at 10862 (¶ 154 n.346). OET Bulletin No. 65 (Edition 97-01) was issued on August 25, 1997. It is available for downloading at the FCC Web Site: 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.

[296] *See 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 the *RF Guidelines Second Reconsideration Order*.

for operations in the 3650-3700 MHz bands. We invite comment on this proposals and any alternatives.

C. Competitive Bidding Procedures

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

120. We propose to conduct the auction of initial licenses in the 3650-3700 MHz band 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.[297] Specifically, we propose to employ the Part 1 rules governing competitive bidding design, designated entities, application and payment procedures, reporting requirements, collusion issues, and unjust enrichment.[298] Under this proposal, such rules would be subject to any modifications that the Commission may adopt in the Part 1 proceeding.[299] In addition, consistent with current practice, matters such as the appropriate competitive bidding design for the auction of 3650-3700 MHz band licenses, as well as minimum opening bids and reserve prices, would be determined by the Wireless Telecommunications Bureau ("Bureau") pursuant to its delegated authority.[300] We seek comment on whether any of our Part 1 rules or other auction procedures would be inappropriate in an auction of licenses in the 3650-3700 MHz band. We also seek comment on whether, if the 4.9 GHz band were to be paired with the 3650-3700 MHz band, any of our Part 1 rules or other auction procedures would be inappropriate in an auction for licenses in these two bands.

2. Provisions for Designated Entities

121. In authorizing the Commission to use competitive bidding, Congress mandated that the Commission "ensure that small businesses, rural telephone companies, and businesses owned by members of minority groups and women are given the opportunity to participate in the provision of spectrum-based services."[301] In addition, 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 businesses, rural telephone companies, and businesses owned by members of

---

[297] *See* 47 C.F.R. Section 1.2101 *et. seq.* (Part 1, Subpart Q). The Commission has recently clarified and amended its general competitive bidding procedures for all auctionable services. *See Amendment of Part 1 of the Commission's Rules -- Competitive Bidding Procedures*, WT Docket No. 97-82, Order on Reconsideration of the Third Report and Order, Fifth Report and Order, and Fourth Further Notice of Proposed Rule Making, FCC 00-274 (rel. Aug. 14, 2000).

[298] *Id.*

[299] *Id.* at ¶¶ 79-88. The Commission is also considering certain modifications to its rule prohibiting collusion among auction participants. *See Amendment of Part 1 of the Commission's Rules -- Competitive Bidding Procedures*, WT Docket No. 97-82, Third Further Notice of Proposed Rule Making, 14 FCC Rcd 21558 (1999).

[300] *See Amendment of Part 1 of the Commission's Rules - Competitive Bidding Procedures*, Third Report and Order and Second Further Notice of Proposed Rule Making, 13 FCC Rcd 374, 448-49, 454-55 (¶¶ 125, 139) (directing the Bureau to seek comment on specific mechanisms relating to auction conduct pursuant to the Balanced Budget Act) ("*Part 1 Third Report and Order*").

[301] *See* 47 U.S.C. § 309(j)(4)(D).

minority groups and women."[302]

122. 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.[303] The *Part 1 Third Report and Order*, while it standardizes many auction rules, provides that the Commission will continue a service-by-service approach to defining small businesses.[304] The *Notice and Order* in this proceeding stated our belief that the 3650-3700 MHz band may support wireless local loop services and other broadband wireless applications.[305] Consistent with that belief, we are proposing in this *Second Notice* to permit licensees to use the 3650-3700 MHz band for a broad range of fixed wireless broadband uses, as well as mobile uses.[306] We note that several commenters agree that these frequencies would be well suited for fixed wireless broadband services.[307] These factors suggest that the capital requirements for these bands may be comparable to those for WCS in the nearby 2.3 GHz band.[308] WCS licensees in the 2.3 GHz band are afforded substantial flexibility to offer a broad range of fixed and mobile services and technologies spanning a wide range of uses, including interactive, high-speed broadband data services, fixed terrestrial use, new and innovative services, radiolocation, and wireless local loop.[309] Further, both the proposed 3650-3700 MHz and existing 2.3 GHz WCS services are subject to limitations on mobile use.[310] For these reasons, we propose to adopt the two small business standards the Commission applied to 2.3 GHz WCS.[311]

123. Further, we propose to adopt an additional category of entities with average annual gross revenues for the three preceding years of not more than $3 million. Although we did not utilize this third category for 2.3 GHz WCS, it may be appropriate here because fixed wireless equipment is already being deployed in nearby spectrum bands, which suggests that entry costs may be lower than was the case for WCS when it was licensed in 1997 and that very small businesses may now be better able to take advantage of bidding credits to acquire licenses and participate in the provision of services. Should we

---

[302] *See* 47 U.S.C. § 309(j)(3)(B).

[303] *See 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*").

[304] *See Part 1 Third Report and Order*, 13 FCC Rcd at 388 (¶ 18).

[305] *See Notice and Order*, 14 FCC Rcd at 1295-96, 1299-1305 (¶¶ 1, 6-12).

[306] *See* ¶ 40, *supra*.

[307] *See* Rural Carriers comments at 3-5; Western Wireless reply comments at 3.

[308] *See* 47 C.F.R. Part 27, Subparts A-E.

[309] *See Part 27 Report and Order*, 12 FCC Rcd at 10798 (¶ 27).

[310] In the 3650-3700 MHz band, mobile service will be limited to base station operations. *See* 47 C.F.R. § 2.106 note NG 170. While the Part 27 rules applicable to WCS permit mobile uses in the 2.3 GHz bands, the Commission has previously acknowledged that the out-of-band emissions limitations render mobile WCS operations "technologically infeasible," at least for the forseeable future. *See Part 27 Report and Order*, 12 FCC Rcd at 10800 (¶ 3).

[311] *See Part 27 Report and Order*, 12 FCC Rcd at 10879 (¶ 194).

choose to adopt this additional category, we would adjust the nomenclature for designated entities as follows: we would define an "entrepreneur" as any entity with average annual gross revenues for the three preceding years not exceeding $40 million, a "small business" as any entity with average annual gross revenues for the three preceding years not exceeding $15 million, and a "very small business" as any entity with average annual gross revenues for the three preceding years not exceeding $3 million. We seek comment on the use of these standards.

124. In developing this proposal, we acknowledge the difficulty in accurately predicting the market forces that will exist at the time these frequencies are licensed. Thus, our forecasts of types of services that will be offered over the 3650-3700 MHz band may require adjustment depending upon ongoing technological developments and changes in market conditions. For these reasons, we invite interested parties to submit detailed information on the types of system architectures that are likely to be deployed in these bands, the availability of equipment, market conditions, and other factors that may affect the capital requirements of this proposed service.

125. In the *Part 1 Third Report and Order*, we adopted a standard schedule of bidding credits for certain small business definitions, the levels of which were developed based on our auction experience.[312] We see no reason to depart from those levels here. Our standard schedule may be found at Section 1.2110(f)(2) of the Commission's rules and provides the following levels of bidding credits:

Average Annual Gross Revenues	Bidding Credit
Not to exceed $3 million	35%
Not to exceed $15 million	25%
Not to exceed $40 million	15%

These credits are not cumulative. We believe that these bidding credits will provide adequate opportunities for small businesses to participate in the 3650-3700 MHz band auction.[313] We therefore propose to adopt these bidding credits here.

126. We note that in the *4.9 GHz Notice*, we proposed to use a similar schedule of bidding credits, except that we did not propose a 35 percent bidding credit for entities having average annual gross revenues of $3 million or less. We request comment on whether our proposed small business definitions and bidding credits, including this additional credit, are appropriate for the 4.9 GHz band should that band be consolidated with these frequencies.

127. We also seek comment on whether the small business provisions we propose today are sufficient to promote participation by businesses owned by minorities and women, as well as rural telephone companies. To the extent that commenters propose provisions to ensure participation by minority- or women-owned businesses, they should address how such provisions should be crafted to meet the relevant constitutional standards.[314]

---

[312] *See Part 1 Third Report and* Order, 13 FCC Rcd at 403-04 (¶ 47).

[313] *Id.*

[314] *See Adarand Constructors, Inc. v. Peña*, 515 U.S. 200 (1995); *United States v. Virginia*, 518 U.S. 515 (1996).

D. Additional Satellite Issues

1. International Intercontinental Restriction on Fixed Satellite Service

128. In General Docket 80-739, the Commission added an allocation in the 3600-3700 MHz band for the FSS (space-to-Earth), but adopted footnote US 245 to restrict use of this FSS allocation "to international inter-continental systems subject to a case-by-case electromagnetic compatibility analysis.[315] The Commission indicated that this restricted allocation was aimed narrowly at meeting future INTELSAT projected requirements.[316] We did not specifically propose to remove this footnote restriction from the 3650-3700 MHz band in the *Notice and Order*. We believe that deletion of this footnote restriction should be considered for the 3650-3700 MHz band in order to provide for flexible and efficient use of FSS earth station sites. As INTELSAT privatizes, and as commercial providers offer similar services, we do not consider it appropriate to continue what amounts to a spectrum reservation for only one of several competitors. We seek comment on whether deletion or modification of this footnote is desirable.

2. Telemetry, Tracking & Control (TT&C)

129. As noted earlier, we are requesting comment on whether Part 25 of the Commission's rules should be modified to permit TT&C operations in the extended C-bands (3650-3700 MHz and 5850-5925 MHz) for FSS systems that operate outside of the C-band frequencies. Section 25.202(g) of the Commission's rules provides: "Telemetry, tracking and telecommand functions for U.S. domestic satellites shall be conducted at either or both edges of the allocated band(s)."[317] This rule, particularly the portion requiring that TT&C functions be conducted in the "allocated band(s)," has been followed in the standard C- and Ku- bands, and effectively limits FSS operators to operating TT&C links in the same frequency bands as their FSS operations. Thus a GSO/FSS operator will generally coordinate its TT&C operations with the same set of satellites, at adjacent orbital locations, with which it coordinates its FSS operations. In this respect, the rule serves the purpose of simplifying the coordination process for FSS systems, by limiting the number of potentially affected operators. It also provides an incentive for an operator to maximize the efficiency of a system's TT&C operations, and minimize the constraints placed on other satellite operations, since the greatest effect of any inefficiency in TT&C operations is likely to impact services offered by the operator’s own satellite.

130. We continue to believe that the basic purpose of Section 25.202(g) is valid. There may be instances, however, in which geographic or bandwidth limitations on an allocation render TT&C operations impracticable in the allocation in which the space station is operating, e.g., transfer orbit operations for a system operating in an ITU Region 2 only allocation. We therefore propose to amend Section 25.202(g) to permit authorization of TT&C operations in the 3650-3700 MHz band for FSS systems that operate outside of the 3650-3700 MHz band, upon a particularized showing of need. TT&C would be primary if conducted at grandfathered FSS sites and secondary at new sites. We note that this may provide greater flexibility for FSS licensees that may have operational requirements that cannot otherwise be met. We specifically seek comment on the circumstances when such TT&C operations should be authorized.

---

[315] *See Notice and Order*, 14 FCC Rcd at1297-98 (¶ 3). *See* also Amendment of Part 2 of the Commission's Rules Regarding Implementation of the Final Acts of the World Administrative Radio Conference, Geneva 1979, in General Docket No. 80-739, Second Report and Order, 49 Federal Register 2357 (Jan. 19, 1984).

[316] *See Notice and Order*, 14 FCC Rcd at 1297-98 (¶ 3).

[317] *See* 47 C.F.R. § 25.202(g).

131. We specifically seek comment on the types of showings that would warrant such an authorization. A number of commenters on the TT&C petition identified satellite systems operating at Ka-band frequencies and above as particularly in need of C-band TT&C frequencies, because of the more favorable signal propagation characteristics of C-band, and consequent higher reliability. We seek comment on this issue. Can higher reliability be assured at Ka-band and above through the use of earth station diversity, or other technical methods? Are there particular TT&C operations, such as recovery using an omni-directional spacecraft antenna of a spacecraft of which control has been lost, for which a C-band antenna provides the only sufficiently reliable option? Are there costs associated with providing TT&C through "allocated band(s)" that would potentially offset the increased complexity of coordination, potential interference with adjacent satellite operators, and potential incentives to specify less efficient TT&C operations? Are TT&C costs likely to decrease as more Ka-band and above systems become operational, more Ka-band and above equipment is deployed, and more operational experience is gained with Ka-band and above antennas?

132. We are not proposing any changes to the Table of Allocations to permit TT&C use of the 3650-3700 MHz band by satellite systems having an FSS component. Such uses are permitted under Part 2 of the rules.[318] We propose to modify the Table of Allocations in Section 2.106 of the Commission's rules to include an allocation for space operations in the 3650-3700 MHz band, and the companion 6425-6525 MHz bands, to be used for TT&C by satellite systems that do not have an FSS component, and thus might otherwise be precluded by our rules from use of this band.

3. Space Station Power Flux Density

133. There are currently no limits in the Commission's rules on the power flux density that a space station operating in the 3650-3700 MHz band may produce, unlike in the adjacent 3700-4200 MHz band. The limit for the 3700-4200 MHz band contained in the Commission's rules, [319] however, is identical to the limit in the ITU Radio Regulations.[320] The ITU limit applies throughout the 3400-4200 MHz band. We seek comment on whether this limit should be adopted for the 3650-3700 MHz band.

V. PROCEDURAL MATTERS

A. Challenge to Earth Station Application Freeze

134. Some of the commenters allege that our decision to suspend the acceptance of license applications, major amendments, and major modifications is procedurally defective.[321] PanAmSat and Wold claim that the suspension of the acceptance of such applications deprives FSS operators of the three basic elements that fundamental fairness requires in administrative proceedings: notice, and opportunity to comment, and reasonable consideration of the viewpoints expressed.[322] We note that in several proceedings

[318] TT&C is a space operations service. *See* 47 C.F.R. § 2.1 (definition of space operations service). Space operations functions "will normally be provided within the service in which the space station is operating." *Id., note*. Thus, a space station that otherwise operates in an FSS allocation may also provide TT&C in an FSS allocation.

[319] *See* 47 C.F.R. § 25.208(a).

[320] *See* ITU Radio Regulation S21.16.

[321] *See e.g.*, PanAmSat comments at 4; Globecast comments at 2; Wold reply comments at 4-5.

[322] *See* PanAmSat comments at 4; Wold reply comments at 4-5.

the Commission has suspended the acceptance of license applications while it transitions from one set of regulations to new regulations.[323] The purpose of these suspensions has been to ensure that the goals of the rulemaking proceeding were not compromised and to deter speculative applications.[324] As stated before in other Commission items and as mentioned in the *Notice and Order*, the suspension of acceptance of applications is procedural and not substantive.[325] Therefore, it does not require notice and comment under the Administrative Procedure Act ("APA").[326] Wold's contention that earth station operators are to be foreclosed from competing for licenses is incorrect. Indeed, today's *Report and Order* allows current users to continue to use the spectrum they currently have plus it provides them with a limited opportunity to expand their operations. Globecast asserts that the freeze is a significant policy change and requires "sunshine." The reference to "sunshine" is not clear. Section 1.1203 of our rules prohibit "presentations to decision-makers concerning matters listed on a Sunshine Agenda, whether *ex parte* or not."[327] We followed section 1.1203 when we adopted the *Notice and Order* and followed those procedures for adopting this *Report and Order*. Therefore, Globecast's concerns are unwarranted.

B. Final Regulatory Flexibility Analysis

135. As required by the Regulatory Flexibility Act of 1980 ("RFA"),[328] the Final Regulatory Flexibility Analysis for this First Report and Order is contained in Appendix B.

C. Initial Regulatory Flexibility Analysis

136. The Commission has prepared an Initial Regulatory Flexibility Analysis ("IRFA") of the possible significant economic impact on small entities of the policies and rules proposed in the Second Notice of Proposed Rule Making and is contained in Appendix C. We request written public comment on the analysis. In order to fulfill the mandate of the Contract with America Advancement Act of 1996 regarding the Final Regulatory Flexibility Analysis, we ask a number of questions in our IRFA regarding the prevalence of small businesses in the affected industries.

137. Comments must be filed in accordance with the same filing deadlines as comments filed in response to the Second Notice of Proposed Rule Making, but they must have a separate and distinct heading designating them as responses to the IRFA. The Commission's Consumer Information Bureau,

---

[323] *See, e.g., Amendment of the Commission's Rules Concerning Maritime Communications*, PR Docket No. 92-257, Second Report and Order and Second Further Notice of Proposed Rulemaking, 12 FCC Rcd 16949, 17015 (¶ 132) (1997); *Revision of Part 22 and Part 90 of the Commission's Rules to Facilitate Future Development of Paging Systems*, Notice of Proposed Rule Making, WT Docket No. 96-18, 11 FCC Rcd 3108, 3136 (¶ 139) (1996); Licensing of General Category Frequencies in the 806-809.750/851-854.750 MHz Bands, *Order*, 10 FCC Rcd at 13190 (¶ 3) (1995).

[324] *See, e.g., Implementation of Section 309(j) and 337 of the Communications Act of 1934 as Amended*, WT Docket 99-87, Notice of Proposed Rule Making, 14 FCC Rcd 5206, 5249 (¶ 96) (1999)("Implementation of 309(j) Order"); *Revision of Part 22 and Part 90 of the Commission's Rules to Facilitate Future Development of Paging Systems*, WT Docket 96-18, First Report and Order, 11 FCC Rcd 16570, 16581 (¶ 19) (1996) ("*Paging Order*").

[325] *See Notice and Order*, 14 FCC Rcd at 1305-06 (¶ 13).

[326] *See Paging Order*, 11 FCC Rcd at 16580-81 (¶ 18).

[327] *See* 47 C.F.R. § 1.1203(a).

[328] *See* 5 U.S.C. § 603 *et seq.*

Reference Information Center, will send a copy of this Report and Order and Second Notice of Proposed Rule Making, including the IRFA, to the Chief Counsel for Advocacy of the Small Business Administration.

D. Paperwork Reduction Analysis

138. This First Report and Order and Second Notice of Proposed Rule Making contains either a proposed or modified information collection. 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 this Report and Order and Second Notice of Proposed Rule Making, as required by the Paperwork Reduction Act of 1995.[329] Public and agency comments are due 60 days from the date of publication of this Second Notice in the Federal Register; OMB comments are due 120 days from the date of publication of this Second Notice in the Federal Register. Comments should address:

- 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.
- The accuracy of the Commission's burden estimates.
- Ways to enhance the quality, utility, and clarity of the information collected.
- Ways to minimize the burden of the collection of information on the respondents, including the use of automated collection techniques or other forms of information technology.

139. Written comments by the public on the proposed and/or modified information collections are due 60 days after the date of publication in the Federal Register. Written comments must be submitted by the OMB on the proposed and/or modified information collections 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 Judy Boley, Federal Communications Commission, Room 1-C804, 445 Twelfth Street, S.W., Washington, D.C. 20554, or via the Internet to jboley@fcc.gov, and to Ed Springer, OMB Desk Officer, Room 10236 New Executive Office Building, 725 Seventeenth Street, N. W., Washington, D.C. 20503, or via the Internet to Edward.Springer@omb.eop.gov.

E. *Ex Parte* Presentations

140. For purposes of this permit-but-disclose notice and comment rulemaking proceeding, members of the public are advised that *ex parte* presentations are permitted, except during the Sunshine Agenda period, provided they are disclosed under the Commission's rules.[330]

F. Pleading Dates

141. Pursuant to applicable procedures set forth in Sections 1.415 and 1.419 of the Commission's rules,[331] interested parties may file comments on or before **[30 days from publication in the**

[329] *See* Pub. L. No. 104-13.

[330] *See generally* 47 C.F.R. §§ 1.1202, 1.1203, 1.1206(a).

[331] *See* 47 C.F.R. §§ 1.415, 1.419.

Federal Register] and reply comments on or before **[60 days from publication in the Federal Register]** Comments and reply comments should be filed in ET Docket No. 98-237. All relevant and timely comments will be considered by the Commission before final action is taken in this proceeding. To file formally in this proceeding, interested parties must file an original and four copies of all comments, reply comments, and supporting comments. If interested parties want each Commissioner to receive a personal copy of their comments, they must file an original plus nine copies. Interested parties should send comments and reply comments to the Office of the Secretary, Federal Communications Commission, Room TW-A325, 445 Twelfth Street, S.W., Washington, D.C. 20554, with a copy to Eli Johnson, Policy Division, Wireless Telecommunications Bureau, 445 Twelfth Street, S.W., Washington, D.C. 20554.

142. Comments may also be filed using the Commission's Electronic Comment Filing System (ECFS).[332] Comments filed through the ECFS can be sent as an electronic file via the Internet to <http://www.fcc.gov/e-file/ecfs.html>. Generally, only one copy of an electronic submission must be filed. In completing the transmittal screen, commenters should include their full name, Postal Service mailing address, and the applicable docket or rulemaking number. Parties may also submit an electronic comment by Internet e-mail. To obtain filing instructions for e-mail comments, commenters should send an e-mail to ecfs@fcc.gov, and should include the following words in the body of the message, "get form <your e-mail address>." A sample form and directions will be sent in reply.

143. Comments and reply comments will be available for public inspection during regular business hours at the FCC Reference Information Center, Room CY-A257, at the Federal Communications Commission, 445 Twelfth Street, S.W., Washington, D.C. 20554. Copies of comments and reply comments are available through the Commission's duplicating contractor: International Transcription Service, Inc. (ITS, Inc.), 1231 20th Street, N.W., Washington, D.C. 20037, (202) 857-3800.

G. Further Information

144. For further information concerning the First Report and Order, contact Rodney Conway via phone at (202) 418-2904, via e-mail at rconway@fcc.gov, via TTY (202) 418-2989, Office of Engineering and Technology, Federal Communications Commission, Washington D.C. 20554. For further information concerning the Second Notice of Proposed Rule Making, contact Eli Johnson via phone at (202) 418-1310, via e-mail at ejohnson@fcc.gov, via TTY at (202) 418-7233, Wireless Telecommunications Bureau, Federal Communications Commission, Washington, D.C. 20554.

VI. ORDERING CLAUSES

145. IT IS ORDERED, that Parts 2 and 90 of the Commission's rules and regulations are amended as specified in Appendix D [effective ninety days after publication in the Federal Register]. This action is taken pursuant to Sections 4, 4(i), 157, 303, 303(g), 303(r), 307, and 332(c)(7) of the Communications Act of 1934, as amended, 47 U.S.C. 154, 154(i), 157, 303, 303(g), 303(r), 307, and 332(c)(7).

146. IT IS FURTHER ORDERED that the Commission's Consumer Information Bureau, Reference Information Center, SHALL SEND a copy of this FIRST REPORT AND ORDER including the Final Regulatory Flexibility Analysis and SECOND NOTICE OF PROPOSED RULE MAKING, including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration, in accordance with paragraph 603(a) of the Regulatory Flexibility Act, Pub Law No. 96-354, 94 Stat. 1164, 5 U.S.C. § 601, *et seq.* (1981).

[332] *See* Electronic Filing of Documents in Rulemaking Proceedings, 63 Fed. Reg. 24,121 (1998).

147. IT IS FURTHER ORDERED that the petition for rule making filed by Comm, Inc., EchoStar Satellite Corporation, GE American Communications, Inc., Hughes Communications Galaxy, Inc., KaStar Satellite Communications Corp., Lockheed Martin Corporation, Orion Network Systems, Inc., PanAmSat Licensee Corp., and VisionStar, Inc., entitled "Amendment of Parts 2 and 25 of the Commission's rules to Designate Extended C-Band Spectrum for TT&C Functions of GSO FSS Systems Operating in Bands Above Ku-band" in RM-9411 IS HEREBY DENIED, in part, with respect to the request for the designation of 10 MHz of spectrum in the 3650-3700 MHz band to be used exclusively for TT&C operations and IS DISMISSED WITHOUT PREJUDICE, in part, concerning the request to allow FSS licensees with systems that operate outside the 3650-3700 MHz band to use the band for TT&C operations.

148. IT IS FURTHER ORDERED that the petition for rule making by Mountain Telecommunications Inc., and Saddleback Communications Company entitled "Petition for Allocation of Radio Spectrum in the 3.4-3.7 GHz Band to Allow Carriers to Improve Deployment and Reduce Costs Through the Provision of Fixed Wireless Access" IS HEREBY DENIED.

149. IT IS FURTHER ORDERED that NOTICE IS HEREBY GIVEN to any FSS earth station licensee with operations in the 3650-3700 MHz band that may have been omitted from Appendix A of the *Memorandum Opinion and Order* in this proceeding must contact Sylvia Lam, via phone at (202) 418-0742, or via e-mail slam@fcc.gov, International Bureau, in order to ensure that the licensed earth station receives grandfathering protections.

150. IT IS FURTHER ORDERED that, pursuant to Sections 4, 4(i), 157, 303, 303(g), 303(r), 307 and 332(c)(7) of the Communications Act of 1934, as amended, 47 U.S.C. 154, 154(i), 157, 303, 303(g), 303(r), 307, and 332(c)(7) the SECOND NOTICE OF PROPOSED RULE MAKING, is hereby ADOPTED.

FEDERAL COMMUNICATIONS COMMISSION

Magalie Roman Salas
Secretary

APPENDIX A: RESPONDENTS

LIST OF COMMENTERS

1. Airspan Communications Corporation ("Airspan")
2. Blooston, Mordkofsky, Jackson & Dickens on behalf of: CommNet Cellular, Inc., Kerville Telephone Company, Lincoln County Telephone System, Inc., Minnesota Southern Cellular Telephone Company, Penasco Valley Telephone Cooperative Inc., Ringgold Telephone Company, Sully Buttes Telephone Cooperative Inc., 3 Rivers Telephone Cooperative Inc. ("Rural Carriers")
3. Cheyenne River Sioux Telephone Authority ("CRST")
4. COMSAT Corporation ("COMSAT")
5. Comsearch
6. EchoStar Communications Corporation ("EchoStar")
7. GE American Communications, Inc. (GE Americom")
8. GlobeCast North America Incorporated ("GlobeCast")
9. Hughes Communications, Inc. ("HCI")
10. InnoWave Tadiran Telecommunications Wireless Systems Ltd. ("InnoWave")
11. Loral Space & Communications Ltd. ("Loral")
12. Lucent Technologies ("Lucent")
13. Motorola
14. National Telephone Cooperative Association ("NTCA")
15. PanAmSat Corporation ("PanAmSat")
16. Petroleum Communications, Inc. ("PetroCom")
17. The Rural Telecommunications Group ("RTG")
18. Satellite Industry Association ("SIA")
19. SBC Communications Inc. ("SBC")
20. Sprint Corporation ("Sprint")
21. Telephone and Data Systems, Inc. ("TDS") on behalf of its subsidiaries: Aerial Communications, Inc., TDS Telecommunications Corporation, and United States Cellular Corporation
22. SR Telecom Inc. ("SR Telecom")
23. TRANSCOMM, Inc. ("TRANSCOMM")
24. TRW, Inc ("TRW")
25. Lockheed Martin Corporation ("Lockheed Martin")
26. Northern Telecom Inc. (Nortel Networks")
27. New Skies Satellites N.V. ("New Skies")

LIST OF REPLY COMMENTERS

1. AT&T Corp. ("AT&T")
2. COMSAT Corporation ("COMSAT")
3. Comsearch
4. GTE Service Corporation ("GTE") on behalf of its affiliates: GTE Alaska, Incorporated, GTE Arkansas Incorporated, GTE California Incorporated, GTE Florida Incorporates, GTE Hawaiian Telephone Company Incorporated, The Micronesian Telecommunications Corporation, GTE Midwest Incorporated, GTE North Incorporated, GTE Northwest Incorporated, GTE South Incorporated, GTE Southwest Incorporated, Contel of Minnesota, Inc., GTE West Coast Incorporated, Contel of the South, Inc., GTE Communications Corporation and GTE Wireless Incorporated.
5. Hughes Communications, Inc. ("HCI")
6. ICG Satellite Services, Inc. ("ICG")
7. Lockheed Martin Corporation ("Lockheed Martin")
8. PanAmSat Corporation ("PanAmSat")

9. Blooston, Mordkofsky, Jackson & Dickens on behalf of: CommNet Cellular, Inc., Kerville Telephone Company, Lincoln County Telephone System, Inc., Minnesota Southern Cellular Telephone Company, Penasco Valley Telephone Cooperative Inc., Ringgold Telephone Company, Sully Buttes Telephone Cooperative Inc., 3 Rivers Telephone Cooperative Inc. ("Rural Carriers")
10. Sprint Corporation ("Sprint")
11. Telephone and Data Systems, Inc. ("TDS") on behalf of its subsidiaries: Aerial Communications, Inc., TDS Telecommunications Corporation, and United States Cellular Corporation
12. Western Wireless Corporation ("Western Wireless")
13. Wold International, Inc. ("Wold")
14. New Skies Satellites N.V. ("New Skies")
15. MCI WorldCom, Inc. ("MCI WorldCom")
16. Organization For The Promotion And Advancement Of Small Telecommunications Companies ("OPASTCO")
17. GE American Communications, Inc. (GE Americom")
18. ImpSat USA

APPENDIX B: FINAL REGULATORY FLEXIBILITY ANALYSIS FOR REPORT AND ORDER

As required by the Regulatory Flexibility Act (RFA),[333] an Initial Regulatory Flexibility Analysis (IRFA) was incorporated into the *Notice of Proposed Rule Making and Order* ("Notice and Order") in ET Docket 98-237.[334] The Commission sought written public comments on the proposals in the *Notice and Order*, including the IRFA. The Final Regulatory Flexibility Analysis ("FRFA") in this *First Report and Order and Second Notice of Proposed Rule Making* conforms to the RFA.[335]

A. Need for and Objective of this Report and Order.

These rules allocate the 3650-3700 MHz band to the fixed, mobile (base stations only), and grandfathered fixed satellite services on a co-primary basis and for non-grandfathered fixed satellite service earth station operations on a secondary basis. These actions are taken in order to make this transfer spectrum available for commercial services, including those of any small businesses. The adoption of this First Report and Order and Second Notice of Proposed Rule Making will provide additional spectrum to be used in meeting the growing demand for fixed, mobile (base station only) and fixed satellite services among all sizes of providers.

B. Legal Basis for Adopted Rules.

The adopted rule changes are authorized pursuant to Sections 4, 4(i), 157, 303, 303(g), 303(r), 307, and 332(c)(7) of the Communications Act of 1934, as amended, 47 U.S.C. 154, 154(i), 157, 303, 303(g), 303(r), 307, and 332(c)(7).

C. Summary of Significant Issues raised by Public Comments in Response to the IRFA.

No comments were filed in response to the IRFA that was contained in the *Notice and Order* in this proceeding.

D. Description and Estimate of the Number of Small Entities to Which the Rules Will Apply.

For purposes of this First Report and Order, the RFA defines a "small business" to be the same as a "small business concern" under the Small Business Act, 15 U.S.C. § 632, unless the Commission has developed one or more definitions that are appropriate to its activities.[336] Under the Small Business Act, a "small business concern" is one that: 1) is independently owned and operated; 2) is not dominant in its field of operation; and 3) meets any additional criteria established by the Small Business Administration ("SBA").[337]

---

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

[334] *See* 14 FCC Rcd 1295 (1999).

[335] *See* 5 U.S.C. § 604.

[336] *See* 5 U.S.C. § 601(3) (incorporating by reference the definition of "small business concern" in 5 U.S.C. § 632).

[337] *See* 15 U.S.C. § 632.

A small organization is generally "any not-for-profit enterprise which is independently owned and operated and is not dominant in its field."[338] Nationwide, as of 1992, there were approximately 275,801 small organizations.[339] The definition of "small governmental jurisdiction" is one with populations of fewer than 50,000.[340] There are 85,006 governmental jurisdictions in the nation.[341] This number includes such entities as states, counties, cities, utility districts and school districts. There are no figures available on what portion of this number has populations of fewer than 50,000. However, this number includes 38,978 counties, cities and towns, and of those, 37,556, or 96 percent, have populations of fewer than 50,000.[342] The Census Bureau estimates that this ratio is approximately accurate for all government entities. Thus, of the 85,006 governmental entities, we estimate that 96 percent, or about 81,600, are small entities that may be affected by our rules. Nationwide, there are 4.44 million small business firms, according to SBA reporting data.[343]

The Commission has not developed a definition of small entities applicable to fixed satellite service licensees. Therefore, the applicable definition of small entity is the definition under the SBA rules applicable to Communications Services, Not Elsewhere Classified. This definition provides that a small entity is one with no more than 11.0 million in annual receipts.[344] According to Census Bureau data, there are 848 firms that fall under the category of Communications Services, Not Elsewhere Classified. Of those, approximately 775 reported annual receipts of 11 million or less and qualify as small entities.[345]

As described, the designations we hereby adopt will permit wireless services, as broadly defined to include fixed and mobile base station operations. Neither the Commission nor the SBA has developed a definition of small entities applicable to wireless services licensees. Therefore, the applicable definition of small entity is the definition under the SBA rules applicable to radiotelephone (wireless) companies.

The rules adopted by the First Report and Order will affect applicants who wish to provide fixed, mobile (base stations only) and/or fixed satellite services in the 3650-3700 MHz band. Pursuant to 47 C.F.R. § 24.702(b) the Commission has defined "small entity" for Blocks C and F broadband licensees as firms that had average gross revenues of less than $40 million dollars in the three previous calendar years. This Commission regulation defining "small entity" in the context of broadband PCS auctions has been approved

[338] *Id*. § 601(4).

[339] Department of Commerce, U.S. Bureau of the Census, 1992 Economic Census, Table 6 (special tabulation of data under contract to Office of Advocacy of the U.S. Small Business Administration).

[340] 5 U.S.C. § 601(5).

[341] 1992 Census of Governments, U.S. Bureau of the Census, U.S. Department of Commerce.

[342] *Id*.

[343] *See* 1992 Economic Census, U.S. Bureau of the Census, Table 6 (special tabulation of data under contract to the Office of Advocacy of the U.S. Small Business Administration).

[344] *See* 13 C.F.R. § 121.201, Standard Industrial Classification (SIC) Code 4899.

[345] *See* U.S. Bureau of the Census, U.S. Department of Commerce, 1992 Census of Transportation, Communications, and Utilities, UC92-S-1, Subject Series, Establishment and Firm Size, Table 2D, Employment Size of Firms, 1992, SIC Code 4899 (issued May 1995).

by the SBA.[346] With respect to the 3650-3700 MHz license applicants, we propose to use the small entity definition adopted in the Broadband PCS proceeding.

The Commission has not yet determined or proposed how many licenses will be awarded, nor will it know how many licensees will be small businesses until the auction is held. Even after that, the Commission will not know how many licensees will partition their license areas or disaggregate their spectrum blocks, if partitioning and disaggregation are allowed which may result in additional small entities. In view of our lack of knowledge of the entities which will seek licenses in the 3650-3700 MHz band, we will assume that, for the purposes of our evaluations and conclusions in the FRFA, all of the prospective licensees are small entities, as that term is defined by the SBA or our proposed definitions for the 3650-3700 MHz band. We invite comment on this analysis.

E. Description of Projected Reporting, Recordkeeping and Other Compliance Requirements.

The rules adopted in the First Report and Order allocate the 3650-3700 MHz band to the fixed, mobile (base station operation, and grandfathered fixed satellite services on a co-primary basis and for non-grandfathered fixed satellite service earth station operations on a secondary basis. These adopted rules do not require any additional reporting, recordkeeping or other compliance requirements. Rules that may apply to the auctioning and licensing of these operations or other operating requirements will be addressed in the Second Notice of Proposed Rule Making in this proceeding and any reporting, recordkeeping and other compliance requirements will be addressed then.

F. Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered.

No petition for rule making was filed to initiate this proceeding and there are no comments in this proceeding that suggest alternatives to the adopted allocation. We requested comment on alternatives that might minimize the amount of economic impact on small entities and no alternatives were offered. The allocation adopted in this First Report and Order represents the most efficient and least restrictive method to accomplish the Commission's policies and objectives.

G. Federal Rules that May Duplicate, Overlap, or Conflict with the Proposed Rules.

None.

H. Report to Congress.

The Commission will send a copy of the First Report and Order, including this FRFA, in a report to be sent to Congress pursuant to the Small Business Regulatory Enforcement Fairness Act of 1996, see 5 U.S.C. § 801(a)(1)(A). In addition, the Commission will send a copy of the First Report and Order, including FRFA, to the Chief Counsel for Advocacy of the Small Business Administration. A copy of the First Report and Order and FRFA (or summaries thereof) will also be published in the Federal Register. See 5 U.S.C. § 604(b).

[346] *See Implementation of Section 309(j) of the Communications Act, Competitive Bidding*, PP Docket 93-253, Fifth Report and Order, 9 FCC Rcd 5532, 5581-82 (¶ 115)(1994).

APPENDIX C: INITIAL REGULATORY FLEXIBILITY ANALYSIS FOR SECOND NOTICE OF PROPOSED RULE MAKING

As required by the Regulatory Flexibility Act ("RFA"),[347] the Commission has prepared this present Initial Regulatory Flexibility Analysis ("IRFA") of the possible significant economic impact on small entities by the policies and rules proposed in the Second Notice of Proposed Rulemaking ("*Second Notice*"), ET Docket No. 98-237, and WT Docket No. 00-32. Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments on the *Second Notice* as provided above in paragraph 141. The Commission will send a copy of the *Second Notice*, including the IRFA, to the Chief Counsel for Advocacy of the Small Business Administration.[348] In addition, the *Second Notice* and IRFA (or summaries thereof) will be published in the Federal Register.[349]

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

In this *Second Notice*, we propose licensing, service, operating, and competitive bidding rules for fixed and mobile services licenses in the 3650-3700 MHz band. The *Second Notice* also seeks comment on applying similar rules to the 4.9 GHz band, if the Commission determines that the public interest would be served by licensing these two bands at the same time. These actions are intended to facilitate the provision of a broad range of services, including traditional voice telephony and new broadband, high-speed, data and video services. The Commission believes this spectrum may be used to foster the introduction of such services to rural areas of the United States and develop new and more effective competition to existing wireline local exchange carriers by providing for an economical means to offer competitive “local loop” or ‘last-mile” facilities.

B. Legal Basis for Proposed Rules

The proposed action is authorized under Sections 4, 4(i), 157, 303, 303(g), 303(r), 307, and 332(c)(7) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154, 154(i), 157, 303, 303(g), 303(r), 307, and 332(c)(7).

C. Description and Estimate of the Number of Small Entities To Which the Proposed Rules Will Apply

The RFA directs agencies to provide a description of and, where feasible, an estimate of the number of small entities that may be affected by the proposed rules, if adopted.[350] The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.” In addition, the term “small business” has the same meaning as the term “small business concern” under Section 3 of the Small Business Act, unless the Commission has developed one or

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

[348] 5 U.S.C. § 603(a).

[349] *See id.*

[350] 5 U.S.C. § 603(b)(3).

more definitions that are appropriate for its activities.[351] Under the Small Business Act, a "small business concern" is one that: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).[352]

A small organization is generally "any not-for-profit enterprise which is independently owned and operated and is not dominant in its field."[353] Nationwide, as of 1992, there were approximately 275,801 small organizations.[354] The definition of "small governmental jurisdiction" is one with populations of fewer than 50,000.[355] There are 85,006 governmental jurisdictions in the nation.[356] This number includes such entities as states, counties, cities, utility districts and school districts. There are no figures available on what portion of this number has populations of fewer than 50,000. However, this number includes 38,978 counties, cities and towns, and of those, 37,556, or 96 percent, have populations of fewer than 50,000.[357] The Census Bureau estimates that this ratio is approximately accurate for all government entities. Thus, of the 85,006 governmental entities, we estimate that 96 percent, or about 81,600, are small entities that may be affected by our rules. Nationwide, there are 4.44 million small business firms, according to SBA reporting data.[358]

The Commission has not developed a definition of small entities applicable to fixed satellite service licensees. Therefore, the applicable definition of small entity is the definition under the SBA rules applicable to Communications Services, Not Elsewhere Classified. This definition provides that a small entity is one with no more than $11.0 million in annual receipts.[359] According to Census Bureau data, there are 848 firms that fall under the category of Communications Services, Not Elsewhere Classified. Of those, approximately 775 reported annual receipts of $11 million or less and qualify as small entities.[360]

Because we are substituting the 3650-3700 MHz band for 15 megahertz of spectrum in the 1990-2110 MHz band, we must assign licenses for this spectrum by competitive bidding to satisfy the requirements of the Balanced Budget Act of 1997.[361] The Commission has not yet determined how many licenses will be

[351] *Id*. § 601(3).

[352] *Id*. § 632.

[353] *Id*. § 601(4).

[354] Department of Commerce, U.S. Bureau of the Census, 1992 Economic Census, Table 6 (special tabulation of data under contract to Office of Advocacy of the U.S. Small Business Administration).

[355] 5 U.S.C. § 601(5).

[356] 1992 Census of Governments, U.S. Bureau of the Census, U.S. Department of Commerce.

[357] *Id*.

[358] *See* 1992 Economic Census, U.S. Bureau of the Census, Table 6 (special tabulation of data under contract to the Office of Advocacy of the U.S. Small Business Administration).

[359] *See* 13 C.F.R. § 121.201, Standard Industrial Classification (SIC) Code 4899.

[360] *See* U.S. Bureau of the Census, U.S. Department of Commerce, 1992 Census of Transportation, Communications, and Utilities, UC92-S-1, Subject Series, Establishment and Firm Size, Table 2D, Employment Size of Firms, 1992, SIC Code 4899 (issued May 1995).

[361] *See The Balanced Budget Act of 1997*, Section 3002(c)(4), Pub. L. 105-33, 111 Stat. 251-258 (1997) ("BBA"). *See also* NTIA Special Publication 98-39.

awarded. Moreover, the Commission does not know how many licensees will partition their license areas or disaggregate their spectrum blocks, if partitioning and disaggregation are allowed. We therefore assume that, for purposes of our evaluations and conclusions in the IRFA, all prospective licensees are small entities, as that term is defined by the SBA or our proposed small business definitions for terrestrial fixed and mobile services in the 3650-3700 MHz band, which are discussed below in Section E.

We invite comment on this analysis.

D. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements

Applicants for licenses to provide terrestrial fixed and mobile services in the 3650-3700 MHz band will be required to submit short-form applications using FCC Form 175. In addition, winning bidders must submit long-form license applications through the Universal Licensing System using FCC Form 601, and other appropriate forms. We invite comment on how these filing requirements can be modified to reduce the burden on small entities.

As discussed in paragraph 45 of the *Second Notice*, all services, other than fixed satellite service earth stations, in the 3650-3700 MHz band would be governed by Part 27 of the Commission's Rules, and, in certain instances, as discussed in paragraph 46, Part 20 if the proposals are adopted. The proposals under consideration in this item include requiring commercial licensees to make showings that they are in compliance with construction requirements,[362] file applications for license renewals[363] and make certain other filings as required by the Communications Act.[364] We request comment on how these requirements can be modified to reduce the burden on small entities and still meet the objectives of the proceeding.

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

The RFA requires an agency to describe any significant alternatives that is has considered in reaching its proposed approach, which may include the following four alternatives: (1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for small entities; (3) the use of performance, rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof; for small entities.[365]

The *Second Notice* proposes the following small business definitions for bidders in auctions of licenses in the 3650-3700 MHz band: an "entrepreneur" would be defined as an entity with average annual gross revenues for the three preceding years not exceeding $40 million, a "small business" would be defined as an entity with average annual gross revenues for the three preceding years not exceeding $15 million, and a "very small business" would be defined as an entity with average annual gross revenues for the three preceding years not exceeding $3 million. These definitions are consistent with the definitions the Commission applied to the 2.3 GHz WCS, but include an additional third category of entities with average annual gross revenues for the three preceding years not exceeding $3 million. In developing these

[362] *See* ¶¶ 82-88 , *supra*.

[363] *See* ¶¶ 72-74, *supra*.

[364] *See* ¶¶ 87-88, *supra*.

[365] *See* 5 U.S.C. § 603(c).

definitions, we considered the alternative of using only two small business definitions, as we have done in the 2.3 GHz WCS, 39 GHz, and broadband PCS contexts, among others. Here, however, we believe that an additional third category of small businesses may be appropriate because the deployment of fixed wireless equipment in nearby spectrum bands suggests that entry costs may be lower than was the case for the 2.3 GHz WCS when it was licensed in 1997. Thus, very small businesses may now be better able to take advantage of bidding credits to acquire licenses and provide communications services.

As indicated in paragraphs 50-53, the Commission, while proposing a requirement that fixed and mobile services applicants identify whether or not they seek to provide common carrier services, also proposes to allow these applicants to request common carrier status as well as non-common carrier status for authorization in a single license, rather than require these applicants to choose between common carrier and non-common carrier services. The Commission also proposes that fixed and mobile applicants and licensees in the 3650-3700 MHz band not be required to describe their proposed services, but be required to indicate a regulatory status based on any services they choose to provide. As detailed in paragraphs 54-56, the Commission favors this type of flexible approach for regulating the 3650-3700 MHz for a variety of reasons. The Commission, however, particularly seeks comment on the effect of this flexible approach on possible investment in communications services and systems and more generally on technology development.

As discussed in paragraphs 57-63, the Commission proposes that there be no restrictions on eligibility for fixed and mobile services licensees in the 3650-3700 MHz and 4.9 GHz bands other than the alien ownership restrictions set forth in Section 310 of the Communications Act. In order to supervise effectively the compliance of these licensees with regard to our alien ownership restrictions, we propose that both common carrier and non-common carrier licensees in the 3650-3700 MHz band provide the alien ownership information requested in FCC Form 601, as well as amendments to FCC Form 602 to reflect any changes in foreign ownership information. This proposed enforcement is a mutual benefit to all licensees and a minimal reporting burden.

We have reduced burdens wherever possible. To minimize any negative impact, however, we propose certain incentives for small entities which will redound to their benefit. These special provisions include partitioning and spectrum disaggregation.[366] These provisions will allow smaller entities to overcome entry barriers. In addition, we seek comment on whether it would be appropriate to license the 3650-3700 MHz band for fixed and mobile services using smaller geographical licensing areas. The use of smaller licensing areas could benefit small entities by reducing costs and build-out expenses. We have also sought comment on different approaches to minimizing the burdens of interference management.[367]

The regulatory burdens we have retained, such as filing applications on appropriate forms, are necessary in order to ensure that the public receives the benefits of innovative new services in a prompt and efficient manner. We will continue to examine alternatives in the future with the objectives of eliminating unnecessary regulations and minimizing any significant economic impact on small entities. We seek comment on significant alternatives commenters believe we should adopt.

F. Federal Rules that May Duplicate, Overlap, or Conflict With the Proposed Rules

None.

[366] *See* ¶¶ 75-80, *supra*.

[367] *See* ¶¶ 93-116, *supra*.

APPENDIX D: FINAL RULES

Parts 2 and 90 of title 47 of the Code of Federal Regulations are amended as follows:

PART 2 – FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

1. The authority citation for Part 2 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 302a, 303, and 336, unless otherwise noted.

2. Section 2.106, the Table of Frequency Allocations, is amended as follows:
a. Page 54 is revised.
b. Footnote US110 is revised and footnotes US348 and US349 are added.
c. Footnotes NG169 and NG170 are added.
d. Footnotes G59 and G110 are revised.

The revisions and additions read as follows:

§ 2.106 Table of Frequency Allocations.

***** ***** ***** ***** *****

2900-3100 RADIONAVIGATION S5.426 Radiolocation S5.425 S5.427			2900-3100 MARITIME RADIONAVIGATION Radiolocation G56 S5.427 US44 US316	2900-3100 MARITIME RADIONAVIGATION Radiolocation US44 S5.5427 US316	Maritime (80) Private Land Mobile (90)
3100-3300 RADIOLOCATION Earth exploration-satellite (active) Space research (active) S5.149 S5.428			3100-3300 RADIOLOCATION S5.333 US110 G59 S5.149	3100-3300 Radiolocation S5.333 US110 S5.149	Private Land Mobile (90)
3300-3400 RADIOLOCATION S5.149 S5.429 S5.430	3300-3400 RADIOLOCATION Amateur Fixed Mobile S5.149 S5.430	3300-3400 RADIOLOCATION Amateur S5.149 S5.429	3300-3500 RADIOLOCATION US108 G31 S5.149	3300-3500 Amateur Radiolocation US108 S5.149 S5.282	Private Land Mobile (90) Amateur (97)
3400-3600 FIXED FIXED-SATELLITE (space-to-Earth) Mobile Radiolocation	3400-3500 FIXED FIXED-SATELLITE (space-to-Earth) Amateur Mobile Radiolocation S5.433 S5.282 S5.432				
S5.431	3500-3700 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation S5.433		3500-3650 RADIOLOCATION US110 G59 AERONAUTICAL RADIONAVIGATION (ground-based) G110 US245	3500-3600 Radiolocation US110 3600-3650 FIXED-SATELLITE (space-to-Earth) US245 Radiolocation US110	Private Land Mobile (90)
3600-4200 FIXED FIXED-SATELLITE (space-to-Earth) Mobile			3650-3700 US245 US348 US349	3650-3700 FIXED FIXED-SATELLITE (space-to-Earth) NG169 MOBILE except aeronautical mobile NG170 US245 US348 US349	
	S5.435 See next page for 3700-4200 MHz		See next page for 3700-4200 MHz	See next page for 3700-4200 MHz	See next page for 3700-4200 MHz

* * * * *

UNITED STATES (US) FOOTNOTES

* * * * *

US110 In the bands 3100-3300 MHz, 3500-3650 MHz, 5250-5350 MHz, 8500-9000 MHz, 9200-9300 MHz, 9500-10000 MHz, 13.4-14.0 GHz, 15.7-17.3 GHz, 24.05-24.25 GHz and 33.4-36.0 GHz, the non-Government radiolocation service shall be secondary to the Government radiolocation service and to airborne doppler radars at 8800 MHz, and shall provide protection to airport surface detection equipment (ASDE) operating between 15.7-16.2 GHz.

* * * * *

US348 The band 3650-3700 MHz is also allocated to the Government radiolocation service on a primary basis at the following sites: St. Inigoes, MD (38° 10' N, 76° 23' W); Pascagoula, MS (30° 22' N, 88° 29' W); and Pensacola, FL (30° 21' 28" N, 87° 16' 26" W). All fixed and fixed satellite operations within 80 kilometers of these sites shall be coordinated through the Frequency Assignment Subcommittee of the Interdepartmental Radio Advisory Committee on a case-by-case basis.

US349 The band 3650-3700 MHz is also allocated to the Government radiolocation service on a non-interference basis for use by ship stations located at least 44 nautical miles in off-shore ocean areas on the condition that harmful interference is not caused to non-Government operations.

* * * * *

NON-FEDERAL GOVERNMENT (NG) FOOTNOTES

* * * * *

NG169 After December 1, 2000, operations on a primary basis by the fixed-satellite service (space-to-Earth) in the band 3650-3700 MHz shall be limited to grandfathered earth stations. All other fixed-satellite service earth station operations in the band 3650-3700 MHz shall be on a secondary basis. Grandfathered earth stations are those authorized prior to December 1, 2000, or granted as a result of an application filed prior to December 1, 2000, and constructed within 12 months of initial authorization. license applications for primary operations for new earth stations, major amendments to pending earth station applications, or applications for major modifications to earth station facilities filed on or after December 18, 1998, and prior to December 1, 2000, shall not be accepted unless the proposed facilities are in the vicinity (*i.e.* within 10 miles) of an authorized primary earth station operating in the band 3650-3700 MHz. License applications for primary operations by new earth stations, major amendments to pending earth station applications, and applications for major modifications to earth station facilities, filed after December 1, 2000, shall not be accepted, except for changes in polarization, antenna orientation or ownership of a grandfathered earth station.

NG170 In the band 3650-3700 MHz, the mobile except aeronautical mobile service is limited to base station operations. These base stations are subject to the same coordination procedures as fixed service operations in the band 3650-3700 MHz.

* * * * *

FEDERAL GOVERNMENT (G) FOOTNOTES

* * * * *

G59 In the bands 902-928 MHz, 3100-3300 MHz, 3500-3650 MHz, 5250-5350 MHz, 8500-9000 MHz, 9200-9300 MHz, 13.4-14.0 GHz, 15.7-17.7 GHz and 24.05-24.25 GHz, all Government non-military radiolocation shall be secondary to military radiolocation, except in the sub-band 15.7-16.2 GHz airport surface detection equipment (ASDE) is permitted on a co-equal basis subject to coordination with the military departments.

* * * * *

G110 Government ground-based stations in the aeronautical radionavigation service may be authorized between 3500-3650 MHz when accommodation in the band 2700-2900 MHz is not technically and/or economically feasible.

* * * * *

PART 90 -- PRIVATE LAND MOBILE RADIO SERVICES

3. The authority citation for Part 90 continues to read as follows:

AUTHORITY: Secs. 4(i), 11, 303(g), 303(r) and 332(c)(7) of the Communications Act of 1934 as amended, 47 U.S.C. 154(i), 161, 303(g), 303(r), and 332(c)(7), unless otherwise noted.

4. Section 90.103(b) is amended by replacing the table entry 3500-3700 under the heading "megahertz" with the following entry:

§ **90.103 Radiolocation Service**

* * * * *

3500-3650 ……..| ……. do …….| 12

* * * * *

APPENDIX E: PROPOSED RULES

For those reasons discussed in the accompanying Second Notice of Proposed Rulemaking, parts 2, 25 and 27 of Title 47 of the Code of Federal Regulations are proposed to be amended as follows:

PART 2 – FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

1. The authority citation for Part 2 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 302, 303, 307, 336, and 337, unless otherwise noted.

2. Section 2.106, the Table of Frequency Allocations, is amended by adding the following non-Government footnote:

NGXXX Fixed-satellite service systems that operate primarily outside the 3650-3700 MHz band may be authorized to perform space operations, such as, telemetry, tracking and telecommand operations in the band 3650-3700 MHz, provided the requirement in §25.202(g)(1) of this chapter is satisfied.

PART 25 – SATELLITE COMMUNICATIONS

3. The authority citation for Part 25 continues to read as follows:

AUTHORITY: 47 U.S.C. 701-744. Interprets or applies sec. 303, 47 U.S.C. 303. 47 U.S.C. sections 154, 301, 302, 303, 307, 309 and 322, unless otherwise noted.

4. Section 25.202 is modified in paragraph (g) by adding a new paragraph (g)(1) to read as follows:

§ 25.202 <u>Frequencies, frequency tolerance and emission limitations</u>.

* * * * *

(g) * * * * *

(1) Telemetry, tracking and telecommand functions for satellite service systems operating outside of the band 3650-3700 MHz may be authorized on a secondary basis in the 3650-3700 MHz band upon a particularized showing of need.

PART 27 – MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

5. The authority citation for Part 27 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 301, 302, 303, 307, 309, 332, 336, and 337, unless otherwise noted.

6. Section 27.1 is modified by adding a new paragraph (b)(3) to read as follows:

§ 27.1 <u>Basis and purpose</u>.

* * * * *
(b) * * * * *
(3) 3650-3700 MHz band.

* * * * *

7. Section 27.4 is modified by adding the following definition

Grandfathered fixed satellite service earth station. An earth station in the 3650-3700 MHz band is an earth station that is authorized prior to December 1, 2000, or granted as a result of an application filed prior to December 1, 2000.

8. Section 27.5 is modified by adding a new paragraph (c) to read as follows:

§ 27.5 Frequencies.

* * * * *
(c) 3650-3700 MHz band. The 3650-3700 MHz band is available for licensing pursuant to this part.

9. Section 27.14 is modified by redesignating paragraph (d) as paragraph (e) and adding a new paragraph (d) to read as follows:

§ 27.14 Construction requirements; criteria for comparative renewal proceedings.

* * * * *
(d) 3650-3700 MHz band.
(1) For a WCS licensee that offers fixed, point-to-point service, the construction of four permanent links per one million people in its licensed service area within the prescribed license term set forth in § 27.13 of this part would constitute substantial service.
(2) For a WCS licensee that offers fixed, point-to-multipoint service, a demonstration of coverage of 20 percent of the population of its licensed service area within the prescribed license term set forth in § 27.13 of this part would constitute substantial service.
(3) For a licensee that offers fixed satellite service, the construction of one earth station per licensed service area within the prescribed license term set forth in § 27.13 of this part would constitute substantial service.

* * * * *

10. Section 27.50 is modified by redesignating paragraph (c) as paragraph (d) and adding a new paragraph (c) to read as follows:

§ 27.50 Power limits.

* * * * *

(c) The following power and antenna height limits apply to base and fixed stations operating in the 3650-3700 MHz band: Base and fixed stations must not exceed an effective radiated power of 1640 watts and an antenna height of 300 m height above average terrain, or its equivalent.

11. Section 27.53 is modified by redesignating paragraph (f) as paragraph (g) and adding a new paragraph (f) to read as follows:

§ 27.53 Emission limits.

* * * * *

(f) Base and fixed service operations in the 3650-3700 MHz band are subject to the emission limits set forth in § 101.111 of this chapter.

* * * * *

12. Section 27.55 is modified by adding a new paragraph (c) to read as follows:

§ 27.55 Field strength limits.

* * * * *

(c) 3650-3700 MHz band: 54 dBμV/m

13. Section 27.57 is revised to read as follows:

§ 27.57 International coordination.

WCS licensees shall comply with the appropriate coordination agreements between the United States and Canada and the United States and Mexico concerning cross-border sharing and use of WCS bands. Operations in the border areas shall be subject to coordination with bordering countries and provide protection to non-U.S. operations in the appropriate frequency bands. In addition, satellite operations in WCS spectrum shall be subject to international satellite coordination procedures.

14. Section 27.58 is revised by inserting introductory text before paragraph (a) to read as follows:

§ 27.58 Interference to MDS/ITFS receivers.

The following rules concerning interference to Multipoint Distribution Service ("MDS") and Instructional Television Fixed Service ("ITFS") receivers apply only to WCS licensees in the 2305-2320 and 2345-2360 MHz bands.

* * * * *

15. Section 27.61 is added to read as follows.

§ 27.61 FS/FSS Coordination Procedure.

Base and fixed service transmitters in the 3650-3700 MHz band that are located within 200 kilometers of a grandfathered fixed satellite service earth station must be coordinated prior to construction to reduce the

potential for interference. The fixed station licensee must use the coordination procedures specified in **§** 101.21 of this chapter.

16. A new Subpart H is added to read as follows.

Subpart H – Competitive Bidding Procedures for the 3650-3700 MHz Band

§ 27.701 3650-3700 MHz band subject to competitive bidding.

Mutually exclusive initial applications for terrestrial service licenses in the 3650-3700 MHz band are subject to competitive bidding procedures. The procedures set forth in part 1, subpart Q, of this chapter will apply unless otherwise provided in this part.

§ 27.702 Designated entities.

(a) Eligibility for small business provisions.
(1) A very small business is an entity that, together with its controlling interests and affiliates, has average gross revenues not exceeding $3 million for the preceding three years.
(2) A small business is an entity that, together with its controlling interests and affiliates, has average gross revenues not exceeding $15 million for the preceding three years.
(3) An entrepreneur is an entity that, together with its controlling interests and affiliates, has average gross revenues not exceeding $40 million for the preceding three years.
(4) For purposes of determining whether an entity meets any of the definitions set forth in paragraphs (a)(1), (a)(2), or (a)(3) of this section, the gross revenues of the entity, its controlling interests and affiliates shall be considered in the manner set forth in § 1.2110(b) and (c) of this chapter.
(5) A consortium of very small businesses is a conglomerate organization formed as a joint venture between or among mutually independent business firms, each of which individually satisfies the definition in paragraph (a)(1) of this section. A consortium of small businesses is a conglomerate organization formed as a joint venture between or among mutually independent business firms, each of which individually satisfies the definition in paragraph (a)(2) of this section. A consortium of entrepreneurs is a conglomerate organization formed as a joint venture between or among mutually independent business firms, each of which individually satisfies the definition in paragraph (a)(3) of this section. Where an applicant or licensee is a consortium of small businesses (or very small businesses or entrepreneurs), the gross revenues of each small business (or very small business or entrepreneur) shall not be aggregated.

(b) Bidding credits. A winning bidder that qualifies as a very small business or a consortium of very small businesses as defined in this section may use the bidding credit specified in § 1.2110(f)(2)(i) of this chapter. A winning bidder that qualifies as a small business or a consortium of small businesses as defined in this section may use the bidding credit specified in § 1.2110(f)(2)(ii) of this chapter. A winning bidder that qualifies as an entrepreneur or a consortium of entrepreneurs as defined in this section may use the bidding credit specified in § 1.2110(f)(2)(iii) of this chapter.

APPENDIX F

PRELIMINARY LISTS OF GRANDFATHERED FSS EARTH STATIONS[368]
NOTE: A FINAL LIST WILL BE ISSUED IN A FUTURE PUBLIC NOTICE

Table 1: Authorized Extended C-Band Earth Stations
(Receive at 3625-3700 MHz and Transmit at 5850-5925 MHz)[369]

State	City	North Latitude	West Longitude	License
California	Carmel Valley	36° 24' 10"	121° 38' 48"	KA23
	Culver City	34° 01' 06"	118° 24' 13"	KA298
	Livermore	37° 45' 40"	121° 47' 53"	KA232
	Los Angeles	34° 01' 53"	118° 27' 18"	KA382
		34° 01' 54"	118° 27' 15"	KA383
	Malibu	34° 04' 49.7"	118° 53' 44"	KA91
		34° 04' 50.3"	118° 53' 46"	KA273
		34° 4' 51"	118° 53' 44"	KB32
	Mountain House	37° 45' 01"	121° 35' 34"	KA206
		37° 45' 02"	121° 35' 35"	KA86
	Niles Canyon	37° 35' 56"	121° 56' 32"	KA93
		37° 36' 00"	121° 56' 35"	KA82
	Salt Creek	38° 56' 20.2"	122° 08' 48"	KA371
		38° 56' 21"	122° 08' 49"	KA372
		38° 56' 22.3"	122° 08' 50"	KA373
	Somis	34° 19' 31"	118° 59' 41"	KA318
	Sylmar	34° 19' 04"	118° 29' 00"	KA274

[368] *See* n.5, *supra*.

[369] Most of these earth stations are authorized to make use of both C-band (3700-4200 MHz for downlinks and 5925-6425 MHz band for uplinks) and extended C-band frequencies (3625-3700 MHz for downlinks and 5850-5925 MHz for uplinks).

Table 1 continued: Authorized Extended C-Band Earth Stations				
State	City	North Latitude	West Longitude	License
Florida	Medley	25° 50' 26"	80° 19' 03"	E960406
		25° 51' 19"	80° 19' 52"	E960068
	Melbourne	28° 02' 25"	80° 35' 48"	KA354
		28° 05' 10"	80° 38' 10"	E950276
	Miami	25° 48' 34"	80° 21' 11"	E940470
		25° 48' 35"	80° 21' 10"	KA407
		25° 48' 35"	80° 21' 11"	KA412
	Miramar	25° 58' 32"	80° 17' 00"	E960105
	Orlando	28° 25' 29"	81° 07' 21"	KA280
	Palm Bay	28° 02' 28"	80° 35' 42"	KA400
Guam	Pulantat	13° 25' 00"	144° 44' 57"[370]	KA28 KA326
Hawaii	Paumalu	21° 40' 26"	158° 2' 13"	KA25
		21° 40' 27"	158° 2' 16"	KA265
		21° 40' 27"	158° 2' 16"	KA266
		21° 40' 25.5"	158° 2' 16"	KA267
		21° 40' 25"	158° 2' 16"	KA268
		21° 40' 24"	158° 2' 16"	KA269
		21° 40' 24"	158° 2' 16"	KA270
Maine	Andover	44° 37' 57"	70° 42' 01"	KA276
		44° 37' 58"	70° 41' 54"	KA349
West Virginia	Etam	39° 16' 48"	79° 44' 14"	WA21
		39° 16' 50"	79° 44' 13"	KA378
Maryland	Clarksburg	39° 13' 5.6"	77° 16' 12"	KA259
		39° 13' 07"	77° 16' 12"	KA275
		39° 13' 5"	77° 16' 12"	KA260
		39° 13' 2.2"	77° 16' 12"	KA261
		39° 13' 1.4"	77° 16' 13"	KA262
		39° 13' 4.8"	77° 16' 15"	KA263
		39° 13' 4.8"	77° 16' 15"	KA264

[370] Guam's longitude coordinate is East, not West.

Table 1 continued: Authorized Extended C-Band Earth Stations				
State	City	North Latitude	West Longitude	License
Massachusetts	Whitinsville	42° 07' 01"	71° 38' 11"	E980517
Midway Atoll	Midway Atoll	28° 13' 11"	177° 22' 5"	E960325
New Jersey	Franklin	41° 07' 04"	74° 34' 33"	E6777 KA231
New York	Hauppauge	40° 49' 15"	73° 15' 50"	E950436
	Staten Island	40° 36' 13"	74° 10' 39"	KA308
North Carolina	West Jefferson	36° 25' 50"	81° 23' 45"	E970334
Oregon	Moores Valley	45° 20' 33"	123° 17' 15"	CSG-90-101-P/L
Pennsylvania	Roaring Creek	40° 53' 35.9"	76° 26' 23"	KA444
		40° 53' 37.5"	76° 26' 22"	WA33
Puerto Rico	Carolina	18° 26' 00"	65° 59' 35"	KA377
	Cayey	18° 08' 00"	66° 07' 57"	KA320
	Humacao	18° 09' 05"	65° 47' 20"	E872647
	Rio Piedras	18° 14' 30"	66° 01' 50"	KA403
Tennessee	Nashville	36° 14' 6.2"	86° 45' 20"	E970010
		36° 14' 5.7"	86° 45' 19"	E960073
		36° 14' 5.7"	86° 45' 21"	E960050
Texas	Desoto	32° 37' 48"	96° 50' 32"	KA306
Virginia	Alexandria	38° 47' 36"	77° 09' 59"	KA81
	Reston	38° 57' 00"	77° 22' 40"	E950406
	Shenandoah	38° 43' 45"	78° 39' 26"	KA255
Washington	Brewster	48° 08' 51"	119° 41' 29"	KA294
		48° 08' 51"	119° 41' 29"	E960222
West Virginia	Albright	39° 34' 07"	79° 34' 45"	KA413
	Rowlesburg	39° 16' 52.1"	79° 44' 11"	KA351

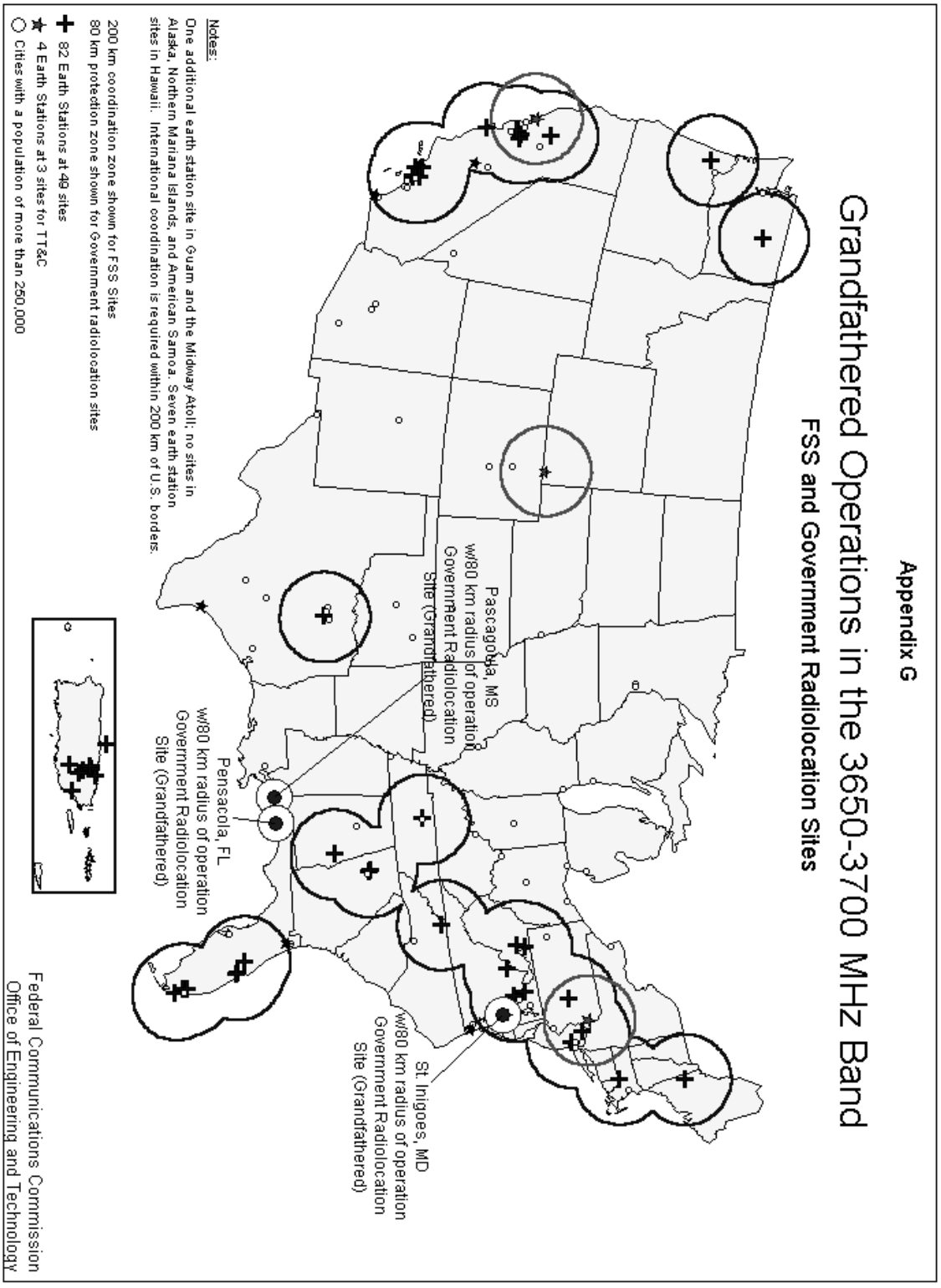
Table 2: Sites Authorized for Less than the Entire 3650-3700 MHz C-Band				
Band	City, State	Latitude	Longitude	License
3685-3700 MHz	Miami, Florida	25° 28' 48"	80° 10' 48"	E970362
	Atlanta, Georgia	33° 52' 38.2"	84° 27' 58"	E970197
	Marietta, Georgia	33° 55' 41"	84° 29' 45"	E970364
	Guaynabo, Puerto Rico	18° 34' 10"	66° 23' 00"	E970195
	San Juan, Puerto Rico	18° 22' 00"	66° 07' 00"	E970196
3698.7-3698.7 MHz	Rio Piedras, Puerto Rico	18° 22' 59"	66° 04' 09"	KA426
	Caguas, Puerto Rico	18° 17' 53"	66° 03' 14"	E950405

Table 3: Authorized TT&C Sites (Receive at 3698.5-3699.5 MHz and Transmit at 5923.5-5924.5 MHz)			
City, State	Latitude	Longitude	License
Three Peaks, California	38° 8' 51.9"	122° 47' 38"	E950208
Hawley, Pennsylvania	41° 27' 51"	75° 7' 48"	E950209

Table 4: Authorized TT&C Sites (Receive at 3698.3-3699.7 MHz and Transmit at 5923-5924 MHz)			
City, State	Latitude	Longitude	License
CHEYENNE, WY	41° 7' 56"	104° 44' 11"	E950253
CHEYENNE, WY	41° 7' 55.7"	104° 44' 12"	E980118

APPENDIX G:

MAP OF COORDINATION ZONES AROUND GRANDFATHERED FSS EARTH STATIONS AND GRANDFATHERED GOVERNMENT RADIOLOCATION STATIONS


Appendix G
Grandfathered Operations in the 3650-3700 MHz Band
FSS and Government Radiolocation Sites
Pascagoula, MS
w/80 km radius of operation
Government Radiolocation
Site (Grandfathered)
Pensacola, FL
w/80 km radius of operation
Government Radiolocation
Site (Grandfathered)
St. Inigoes, MD
w/80 km radius of operation
Government Radiolocation
Site (Grandfathered)
Notes:
One additional earth station site in Guam and the Midway Atoll; no sites in Alaska, Northern Mariana Islands, and American Samoa. Seven earth station sites in Hawaii. International coordination is required within 200 km of U.S. borders.
200 km coordination zone shown for FSS Sites
80 km protection zone shown for Government radiolocation sites
82 Earth Stations at 49 sites
4 Earth Stations at 3 sites for TT&C
Cities with a population of more than 250,000
Federal Communications Commission
Office of Engineering and Technology
10/12/00