

operate commercially viable GSO/FSS systems.¹¹³ Although we designate 250 MHz on a shared basis with NGSO/MSS feeder links, we find that broadband GSO/FSS applications proposed for this band can be supported within our total designation of 1000 MHz.

3. Primary NGSO FSS Spectrum

59. Consistent with the band plan proposed in the *Third NPRM*, the U.S. position at the WRC-95, and our intention to continue to propose 500 MHz for NGSO/FSS at WRC-97, we designate 500 MHz at 28.6-29.1 GHz for NGSO/FSS systems. Until such time as studies are completed in the ITU-R,¹¹⁴ we cannot conclude that co-frequency sharing is possible between GSO/FSS systems and NGSO/FSS systems and therefore a separate band designation is warranted.¹¹⁵ We believe designating 500 MHz is necessary to accommodate the increasing worldwide demand for 28 GHz spectrum for NGSO/FSS systems.¹¹⁶ Significantly, this 500 MHz designation preserves the possibility that competitive NGSO/FSS systems may be implemented in this band.

60. Accordingly, we reject TRW's request that we defer consideration of an NGSO/FSS designation until we determine whether to grant an authorization to the sole currently pending domestic applicant for an NGSO/FSS system.¹¹⁷ In view of the fact that we are adopting designations for a number of different types of services, we decline to forego adopting a designation when that action is both contrary to the international allocation in this band and could be perceived as foreclosing competitive systems proposed by other countries.

61. In its comments, Teledesic also recommends that the Commission designate use of the 28.6-29.1 GHz and 18.8-19.3 GHz bands for both FSS and MSS.¹¹⁸ Hughes

¹¹³ See Comments of GE Americom at 5-6; Reply Comments of GE Americom at 2-3; Comments of Hughes at 3; Comments of Orion Network Systems at 2-3; Reply Comments of Orion Network Systems at 3. In the comments, some satellite proponents contend that the non-contiguous nature of the GSO/FSS spectrum, as proposed in the *Third NPRM*, also adds complexity and cost to system design. Comments of Loral at 3, Reply Comments of GE Americom at 6-7 and Reply Comments of Orion at 3-4. See also ex parte letter from Stephen L. Goodman, Counsel to AT&T, to Scott Blake Harris and Michele C. Farquhar (March 7, 1996) and Letter from Edward J. Fitzpatrick to Scott Blake Harris and Michele C. Farquhar (March 1, 1996).

¹¹⁴ *Supra* ¶ 23.

¹¹⁵ We will address the issue of international service in this band with respect to U.S. GSO/FSS systems in the individual licenses of GSO/FSS systems.

¹¹⁶ In this regard, we note that France recently submitted information to the ITU of its intention to construct two such NGSO/FSS systems, and Russia also submitted such information for one system.

¹¹⁷ TRW Comments at 36-37.

¹¹⁸ Comments of Teledesic at 22.

opposes this request. In the absence of an international allocation for MSS in the 28.6-29.1 or 18.8-19.3 GHz frequency band, we decline to adopt an inconsistent domestic allocation. We will, however, consider authorizing such uses on a non-interference basis to other services already allocated in this band.

62. GE Americom proposes that the Commission give GSO/FSS operators co-primary status in the 28.6-29.1/18.8-20.3 GHz bands in order to create incentives for NGSO/FSS satellite system operators to resolve interference problems between NGSO and GSO systems.¹¹⁹ Teledesic opposes GE's proposal.¹²⁰ We reject GE Americom's proposal. While GE Americom's proposal would be appropriate if NGSO and GSO services operated under an international regulatory regime that put both types of systems on equal footing in all FSS bands, in fact NGSO/FSS systems operate under a handicap in the majority of FSS frequency bands outside of the 28.7-29.1 GHz band segment, in which RR 2613 applies and which requires any NGSO/FSS system to cease operations if it causes unacceptable interference into a GSO/FSS system.¹²¹ Under these circumstances, access by GSO/FSS systems to the 28.6-29.1 GHz bands without reciprocal access by NGSO/FSS systems to bands designated for GSO/FSS does not provide appropriate incentives for resolution of interference issues. Therefore, NGSO/FSS systems will be the primary satellite system licensees, in the United States, in the 28.6-29.1 GHz band.

E. Inter- and Intra-Service Sharing in the 29.1 - 29.5 GHz Band

1. Sharing in the 29.1-29.25 GHz Band between NGSO/MSS Feeder Link Earth Stations (150 MHz)

63. The sharing principles in the 29.1-29.25 GHz band segment are designed to accommodate the only two licensed NGSO/MSS systems seeking access to this band, the Motorola Iridium system and the TRW Odyssey system, and potential additional NGSO/MSS systems. Although Motorola initially opposed the addition of a second NGSO/MSS system's feeder links in the 29.1-29.3 GHz band,¹²² after extensive technical discussions an agreement was reached whereby TRW's and Motorola's NGSO/MSS systems can operate their respective feeder links in the same assigned spectrum with minimal constraints. In the *Third NPRM* we also proposed that NGSO/MSS feeder links be authorized on a "reverse band working" basis in the 19.4-19.7 GHz band.¹²³ Although we had indicated that we may need to authorize an

¹¹⁹ Comments of GE Americom at 17.

¹²⁰ Reply Comments of Teledesic at 7.

¹²¹ See *supra* note 28.

¹²² Joint Comments of Motorola Satellite Communications, Inc. & Iridium, Inc. at 9.

¹²³ See note 31.

applicant to operate in this manner if sharing was not possible, no party specifically requested operating in a reverse band working mode.¹²⁴ Therefore, we are not adopting any specific criteria at this time for reverse band working and will examine any requests for such operations on a case-by-case basis in the future. Further, Motorola will be limited to operating its feeder links within this 150 MHz band, since Motorola indicates it will be unable to share with GSO/FSS systems in the adjoining band. The following text summarizes the sharing principles to which TRW and Motorola have agreed and which, we conclude, facilitate an equitable sharing environment in the band. The specific sharing rules we adopt are set forth in Appendix B of this *Report and Order*.

64. The parties agreed that in order to facilitate an appropriate sharing atmosphere, Motorola would operate using right-hand circular polarization and TRW would operate using left-hand circular polarization. Both systems will use power control. The parties also concluded that geographical separation of feeder link earth stations and coordination, when the stations are separated by 800 km or less, is also required. Both operators agreed to cooperate fully in identifying mutually acceptable locations for their feeder link earth stations and coordinating these stations.

65. Motorola and TRW agreed that in the shared band segment, TRW will have a maximum of two operational feeder link earth stations in the United States and Motorola will have a maximum of six operational feeder link earth stations in the United States. Further, in the western United States, Motorola will implement a feeder link earth station in the immediate vicinity of Phoenix, AZ and TRW will have a feeder link earth station in the immediate vicinity of San Luis Obispo, CA. In the eastern United States, Motorola will have a feeder link earth station in the immediate vicinity of Montpelier, VT. The location of an additional Iridium feeder link earth station in the eastern United States, will not be specified until an Odyssey feeder link earth station site in the eastern United States, separated from the Iridium Montpelier site by a mutually acceptable distance, is chosen. Accordingly, any additional Iridium feeder link earth stations shall be separated from the Odyssey sites by a mutually acceptable distance. The parties will determine this mutually acceptable distance during the coordination process.

66. Although both parties indicate that use of this band should be exclusive for these two NGSO/MSS systems, at this time we do not believe feeder links from a third NGSO/MSS system should be precluded from operating in the band. However, any NGSO/MSS system requesting use of this band for NGSO/MSS feeder link earth stations will be required to coordinate its proposed site and frequency usage with existing licensees as well as with previously filed applicants in the band prior to filing an earth station application.

¹²⁴ In fact TRW notes that substantial costs and system delays would be involved in order for TRW to operate reverse band. Comments of TRW at 4. Moreover, TRW asserts Hughes's suggestion of requiring one of the two MSS systems to operate uplinks in the 19 GHz band on a reverse band basis, is unacceptable. Reply Comments of TRW at 22.

2. Sharing in the 29.1-29.25 GHz band between NGSO/MSS feeder link earth stations and LMDS (150 MHz)

67. In the *Third NPRM* we proposed sharing rules between LMDS hub-to-subscriber transmissions and NGSO/MSS feeder links in the 29.1-29.25 GHz band. These rules were based on rules agreed to at the NRMC. We proposed to limit NGSO/MSS feeder uplinks in this 150 MHz to eight "feeder link earth station complexes," and identified a number of geographical and procedural restrictions. These rules also anticipated that only one NGSO/MSS system, Motorola, would operate feeder links in this band segment.

68. TRW and Motorola both commented on these rules. TRW believes that the accommodation of a second NGSO/MSS system provides a need for slight revisions to our proposed rules.¹²⁵ In its comments, Motorola claims that these rules originally intended that only one NGSO/MSS operator would use feeder links in this 150 MHz. It states that if sharing were feasible, it still needs the flexibility of choosing eight locations as earth station complexes before the licensing of LMDS service providers and suggests the Commission allow two additional sites.¹²⁶

69. We adopt the rules proposed in the *Third NPRM* with some modifications as a result of the comments. Specifically, we add two additional sites for feeder link earth station complexes because it appears that at least two NGSO/MSS systems will operate in this band segment and will require the flexibility of additional sites. We believe that this addition should not entail any excessive burden on LMDS parties. The following text summarizes these sharing rules. The specific rules are set forth in Appendix B of this *Report and Order*.

70. Under the sharing rules adopted today, NGSO/MSS licensees can operate feeder link earth stations in up to ten designated metropolitan statistical areas (MSAs) without further coordination. We require the feeder link earth station complexes to be identified no more than 15 days after the release of a public notice announcing the commencement of LMDS auctions. LMDS receive stations must accept any interference caused to them by these MSS feeder link earth stations, within the specified MSA, and up to 75 nautical miles from the earth station geographical coordinates. If these sites are not identified within this 15 days, then they will have to coordinate. These sites must be chosen in accordance with the following requirements: no feeder link earth station complex may be located in the top eight (8) MSAs, ranked by population, as defined by the Office of Management and Budget as of June 1993, using estimated populations as of December 1992; two (2) complexes may be located in MSAs 9 - 25, one of which must be Phoenix; two (2) complexes may be located in MSAs 26-50; three (3) complexes may be located in MSAs 51-100, one of which must be Honolulu, Hawaii; and the three (3) remaining complexes must be located at least 75 nautical

¹²⁵ See Comments of TRW at 20. TRW also suggests modifications to our proposed rules. See Attachment 2 of TRW Comments.

¹²⁶ Joint Reply Comments of Motorola and Iridium at 13.

miles from the borders of the 100 largest MSAs or in any MSA not included in the 100 largest MSAs. Any location allotted for one range of MSAs may be taken from an MSA below that range.

71. We adopt a prohibition on transmission of LMDS subscriber transceivers in this shared 150 MHz band segment. As previously discussed, the LMDS and NGSO/MSS interested parties were unable to reach a consensus on sharing criteria for MSS feeder links and LMDS subscriber-to-hub transmissions, *supra* ¶ 37. At this time we find it necessary to restrict LMDS use of this band segment to hub-to-subscriber transmissions. However, as indicated earlier, should the LMDS proponents in the future be able to demonstrate definitively that they can technically operate subscriber-to-hub links on a non-interference basis to the NGSO/MSS feeder links, particularly the satellite constellation, we would revisit the restriction we adopt today.

3. Sharing between NGSO/MSS feeder link earth stations and GSO/FSS systems in the 29.25 - 29.5 GHz Band (250 MHz)

72. The proposal in the *Third NPRM* designated co-primary usage of 250 MHz for NGSO/MSS feeder links and GSO/FSS systems.¹²⁷ We stated that any coordination between the GSO/FSS systems and the NGSO/MSS feeder link earth stations would be "on a first-come-first served" basis.¹²⁸ Since the adoption of the *Third NPRM*, TRW and Hughes have negotiated mutually acceptable sharing principles. Although these sharing principles were worked out between TRW and Hughes, other GSO/FSS applicants, GE Americom, AT&T and Lockheed Martin, support the principles. Therefore, we conclude that the "first-come-first served" coordination proposal is no longer necessary. Instead, we endorse the spectrum sharing principles developed by TRW and Hughes and supported by other GSO/FSS applicants, for their systems in the 29.25-29.5 GHz band.¹²⁹ In the following text, we describe these principles. The specific technical sharing rules we adopt are provided in Appendix B of this *Report and Order*.

73. Specifically, TRW and Hughes agreed that the system causing unacceptable interference has primary responsibility to mitigate the interference, but that neither system

¹²⁷ See *Third NPRM* at ¶ 64.

¹²⁸ *Id.* Many GSO/FSS proponents commented on this issue and urged the Commission to eliminate the proposed first-come-first-served rule because MSS systems will likely be deployed before GSO/FSS systems and would have the advantage in coordinating. See Comments of GE Americom at 4; Comments of Hughes at 17 and Reply Comments of Orion at 6-7. *But see* Joint Comments of Motorola and Iridium Inc. at 14.

¹²⁹ See *ex parte* submission filed by the International Bureau to William F. Caton, (Feb. 6, 1996): *Co-Directional Frequency Sharing Between Odyssey Feeder Links and GSO/FSS Service Links in 29.25-29.5 GHz and 19.45-19.7 GHz Bands* p. 7 (dated Feb. 5, 1996).

would be required to disrupt or alter its transmissions.¹³⁰ Moreover, TRW will provide the locations of its two feeder link earth stations in the United States.¹³¹ All GSO/FSS proponents will implement frequency and polarization selection techniques in the area of TRW's earth station complexes in order to minimize instances of unacceptable interference.

74. Furthermore, use of the band 29.25 - 29.5 GHz by another NGSO/MSS system for feeder link earth station uplinks will be subject to coordination agreements with existing GSO/FSS parties.

F. Downlink 17.7-20.2 GHz Frequency Band Segmentation

75. In the *Third NPRM*, we asked commenters to address issues concerning satellite system use of the 17.7-20.2 GHz band. Specifically, we sought comment on possible methods of accommodating NGSO/MSS feeder links operating on a reverse band working basis in the 19.4-19.7 GHz band. We also sought comment on the related issue of whether, in order to facilitate reverse band working, GSO/FSS downlinks should be designated on a non-conventional paired basis at 18.3-18.55 GHz or on a conventional basis at 19.3-19.425 GHz and 19.575-19.7 GHz for pairing with the 29.25-29.5 GHz uplink band.¹³² We also sought comment on any other issues concerning downlinks that might affect the band segmentation plan.

76. Several parties commented on this issue. TRW urges the Commission to designate the 18.3-18.55 GHz band as the paired downlink for the 29.25-29.5 GHz GSO/FSS uplink band, regardless of whether reverse band working is used at 19.4-19.7 GHz.¹³³ It argues that doing so would facilitate deployment of NGSO/MSS feeder links. Motorola also supports providing GSO/FSS applicants flexibility regarding selection of downlink frequencies below 19.2 GHz to be paired with uplinks at frequencies below 29.5 GHz.¹³⁴ Hughes suggests that GSO/FSS systems should be allowed to use frequencies not only in the 18.3-18.55 GHz band for downlinks, but also in the 17.7-18.3 GHz band. It notes that, particularly in the 19.45-19.7 GHz band, NGSO/MSS feeder links are likely to impose significant constraints, such as exclusion and coordination zones, on GSO/FSS operations. It suggests

¹³⁰ *Id.* at 7.

¹³¹ TRW has identified one location in the San Luis Obispo area. The other location will be on the east coast in a low population density area.

¹³² Under "conventional" uplink and downlink pairing, part of the 28 GHz band would be separated by 9.8 GHz from the uplink band. Under "non-conventional" pairing, this frequency separation may vary according to the designation of spectrum for GSO/FSS systems in different parts of the band.

¹³³ Comments of TRW at 29.

¹³⁴ Joint Comments of Motorola and Iridium at 16-17.

that, in order to solve this problem, applicants should be provided the additional flexibility that operations in these other frequency bands will allow. Teledesic, on the other hand, opposes designating any frequencies below 18.55 GHz for GSO/FSS uses.¹³⁵ It argues that doing so would reduce the frequencies available for pairing with its gateways and high data rate (gigalink) terminal uplinks in the 27.5-28.35 GHz bands. In response, TRW argues that Teledesic's request for sole use of frequencies in the 17.7-18.55 GHz range is unjustified.¹³⁶ Hughes notes that the uses for which Teledesic seeks protection are secondary uses. Several commenters also observed that, in the 18.6-18.8 GHz band, power limitations imposed by the ITU Radio Regulations and U.S. domestic allocations to support Space Research and Earth Exploration Satellite Service may render the band difficult to use for GSO/FSS systems, and thus flexibility is required in the pairing of uplink and downlink frequencies.

77. The 17.7-20.2 GHz band segmentation plan can be depicted as follows:

Downlink Band 17.7 - 20.2 GHz

GSO/FSS FIXED ngso/fss	NGSO/FSS FIXED gso/fss	MSS F.L. FIXED gso/fss	GSO/FSS ngso/fss
1100 MHz	500 MHz	400 MHz	500 MHz
17.7	18.80	19.30	19.70 20.20 GHz

This plan specifically designates downlinks in the 17.7-18.8 GHz band for GSO/FSS uses, the 18.8-19.3 GHz band for NGSO/FSS uses, the 19.3-19.7 GHz band for NGSO/MSS feeder links, and the 19.7-20.2 GHz band for GSO/FSS uses. These designations do not preclude the authorized use of these bands by other satellite applications on a secondary basis to the primary satellite application designated in the band.

78. With respect to GSO/FSS uses, we have designated the 19.7-20.20 GHz GSO/FSS band segment for a "conventional" downlink pairing with GSO/FSS uplinks at 29.5-30.0 GHz. In order to provide flexibility for GSO/FSS applicants, we are also designating the 17.7-18.8 GHz band for GSO/FSS uses. Although there are several restrictions on the use of this band, including the need to protect feeder links for the Broadcast Satellite Service in the 17.7-17.8 GHz band segment, power flux density limits to protect the Earth Exploration

¹³⁵ Comments of Teledesic at 7.

¹³⁶ TRW Reply Comments 22-24.

Satellite Service in the 18.6-18.8 GHz band, and the need to coordinate with Fixed Services in the 17.7-19.7 GHz band, we conclude that the flexibility afforded by 1.1 GHz of spectrum should provide sufficient downlink capacity to correspond with the 1000 MHz of uplink spectrum designated for GSO/FSS in the 27.5-30.0 GHz range.¹³⁷ We decline to limit GSO/FSS use of the bands below 18.55 GHz as requested by Teledesic. The use of these bands by GSO/FSS should not preclude their use by Teledesic on the secondary basis vis-a-vis GSO/FSS which Teledesic has proposed.

79. With respect to the NGSO/FSS uses, we designate the 18.8-19.3 GHz band segment for paired downlinks with the 500 MHz of NGSO/FSS uplinks at 28.6-29.1 GHz. As discussed *supra*, we conclude that an unconditional designation of 500 MHz for domestic NGSO/FSS use is warranted. Furthermore, while there will be constraints imposed on NGSO/FSS subscriber terminals by fixed services in the 18.8-19.3 GHz band, there is no indication on the record that the single NGSO/FSS system proposed lacks sufficient flexibility to provide downlink capacity to correspond with the designated 500 MHz of uplink spectrum.¹³⁸ Therefore, we are not designating any additional downlink spectrum for primary NGSO/FSS uses.

80. We designate the 19.3-19.7 GHz band segment for downlink NGSO/MSS feeder links. This band should be able to accommodate the systems proposed by two current licensees and could potentially accommodate additional systems, either for downlinks, or, if the system operates on a reverse band working basis, for uplinks.¹³⁹ The record establishes that sharing between all currently proposed GSO/FSS systems and NGSO/MSS feeder links is generally not feasible without imposing unacceptable constraints on the deployment of several of the proposed systems.

1. Coordination Procedures

81. GSO/FSS, NGSO/MSS feeder links and NGSO/FSS systems are all fixed satellite services. Under current rules, such services share the 17.7-19.7 GHz band with fixed services on a coequal basis.¹⁴⁰ Current rules require coordination of these services pursuant to

¹³⁷ Our downlink proposal is also supported by several of the satellite applicants. See *ex parte* letter from Edward J. Fitzpatrick, (Vice President of Hughes Communications Galaxy, Inc.), Waring Partridge, (Vice President, AT&T), Philip V. Otero, (Vice President and General Counsel, GE American Communications, Inc.), and Michael D. Kennedy, (Vice President and Director Regulatory Relations), Motorola, Inc. to William F. Caton (June 5, 1996).

¹³⁸ For example the Digital Electronic Messaging Service ("DEMS") is licensed in the 18.82-18.92 GHz band.

¹³⁹ The ability to accommodate additional systems may depend on a number of factors, including bandwidth required, system orbit geometry, operation in reverse band mode, and the outcome of the WRC-97's deliberations concerning the 29.4-29.5 GHz and 19.6-19.7 GHz bands. See RES-120 (WRC-95).

¹⁴⁰ See 47 C.F.R. 25.202 (a)(1).

the requirements in Section 25.130(b) of the rules, and under the procedures outlined in Section 101.103 of the Rules. These coordination rules will continue to be applied in these bands; however, should the affected parties wish to propose slightly modified procedures to facilitate the deployment of these services, we would consider such a proposal in the future. The record does not indicate that other requirements for coordination between non-government satellite systems are necessary at this time.¹⁴¹

G. Allocation at 29.5-30.0 GHz

82. As we mentioned in the *Third NPRM*, the 29.5-30.0 GHz frequency band is allocated on a co-primary basis to both the MSS and FSS. Currently there are no MSS systems in the band.¹⁴² Because we tentatively concluded that MSS and FSS systems cannot share the same frequencies, and our proposed band plan designated GSO/FSS systems in this 500 MHz of the band, we requested comment on whether to eliminate the allocation for MSS at 29.5-30.0 GHz or possibly modify the MSS allocation as a secondary allocation to FSS systems at 29.5-30.0 GHz.¹⁴³

83. Teledesic opposes any decision to eliminate, or relegate to secondary status, the MSS allocation at 29.5-30.0 GHz, asserting that such a reallocation would conflict with the 1992 WARC decision allocating the 29.9-30.0 GHz band for GSO MSS/FSS uses.¹⁴⁴ Teledesic also expressed concern that this is the only portion of the Ka-band presently available for MSS use and any change in the existing MSS allocation would adversely affect NGSO satellite system applicants proposing MSS use in the 28 GHz band.¹⁴⁵

84. Initially, Hughes supported either deletion in the U.S. allocation table of MSS at 29.5-30.0 GHz or a modification of this allocation to define it as secondary.¹⁴⁶ Hughes argued that absent interference mitigation techniques, "it is unlikely that MSS service links and FSS systems can share that 500 MHz due to the ubiquitous nature of both MSS and FSS

¹⁴¹ With respect to government systems, parties should take note of footnote US 334 of the Table of Frequency Allocations. See 47 C.F.R. § 2.106.

¹⁴² Norris Satellite Communications, which was licensed to provide FSS services in this band in 1992, initiated the proceeding for the MSS allocation in the 29.5-30.0 GHz band.

¹⁴³ See *Third NPRM* at ¶ 67.

¹⁴⁴ See Comments of Teledesic at 10.

¹⁴⁵ *Id.* Teledesic's argument that any action taken by the Commission to remove or modify the MSS allocation at 29.5-30.0 GHz may have an adverse effect on the U.S. at WRC-95 is now moot.

¹⁴⁶ Hughes Comments at 28.

receive and transmit equipment."¹⁴⁷ However, in its reply comments, Hughes "refined" its initial recommendations and now asserts that it may be possible for MSS and FSS to coexist in the future if appropriate sharing criteria are adopted.¹⁴⁸ Thus, rather than change the current MSS allocation in the 29.5-30.0 GHz band, Hughes believes the Commission should decline to license any MSS use of the band unless and until MSS use is made compatible with FSS use through the development of appropriate sharing criteria.¹⁴⁹ Motorola in contrast, supports the elimination of the MSS allocation in the 29.5-30.0 GHz band. It asserts that there are significant difficulties for FSS and MSS sharing in this segment of the band.¹⁵⁰ Motorola believes the removal of the MSS allocation would provide assurance to GSO/FSS proponents that service can be developed without the need for ever coordinating with an MSS system.¹⁵¹

85. We believe that the development of technology may enable these two different types of systems to co-exist in the same frequencies in the future. Therefore, we believe that maintaining the co-primary MSS/FSS allocation is in the public interest. This will facilitate the development and introduction of such technology. We explicitly decline to license any MSS system at 29.5-30.0 GHz, and the downlink 19.7-20.2 GHz band, however, until the applicant proposing an MSS service establishes that it can co-exist and share the frequency band with GSO/FSS systems. MSS applicants must demonstrate in their applications that their service is compatible with and will not cause harmful interference to GSO/FSS systems. MSS service rules will be appropriately addressed at the time that such an MSS application is received.

H. Point-to-Point Microwave

86. We noted in the *Third NPRM* that Harris Corporation-Farion Division (Harris) and Digital Microwave Corporation (Digital) filed a Petition for Rulemaking,¹⁵² requesting that the Commission channelize the 28 GHz band for point-to-point microwave radio station

¹⁴⁷ *Id.* Hughes argued that under the current plan, introduction of one incompatible MSS system at 29.5-30.0 GHz could reduce by 50% the amount of 28 GHz spectrum available for GSO/FSS service.

¹⁴⁸ Hughes has not proposed any sharing criteria at this time.

¹⁴⁹ Reply Comments of Hughes at 18.

¹⁵⁰ Recommendation 719 urged that the sharing between FSS and MSS in these bands be examined as a matter of urgency. This examination was conducted by ITU Working party 4A in the ITU-R Study Group 4 in accordance with Question ITU-R 81-4, and resulted in a Preliminary Draft New Recommendation, which illustrates the significant difficulties posed by FSS and MSS sharing in the 29.5-30.0 GHz band. See Joint Comments of Motorola Inc., and Iridium, Inc. at 18-19.

¹⁵¹ Joint Reply Comments of Motorola Satellite Communications, Inc. and Iridium, Inc. at 19.

¹⁵² Amendment of Parts 2, 21, and 94 of the Commission's Rules Concerning Channel Assignments in the 27.5 - 29.5 Ghz Band. Petition for Rulemaking, RM-7722.

use, and make the band available under Part 94 of our rules for private operational fixed services. In the disposition of a similar petition filed by the companies in the initial *NPRM* in this Rulemaking Proceeding¹⁵³ we declined to dedicate any part of the 28 GHz band solely to fixed point-to-point microwave (FS) services. We expressed the view that the public interest would be better served by providing terrestrial licensees in the 28 GHz band with the flexibility to offer a variety of services and to develop innovative new point-to-multipoint services. In the *Third NPRM*, we also said that parties interested in providing point-to-point services may apply for LMDS spectrum, seek geographic partitioning or spectrum disaggregation opportunities, or lease spectrum from LMDS operators.¹⁵⁴

87. TIA takes exception to the Commission's characterization of the record in the *Third NPRM*, citing the history of support in this docket for FS services.¹⁵⁵ TIA notes that Harris' channelization request was not for exclusive allocation of the 28 GHz band to FS services, or a restriction on the co-primary rights of satellite users in the band. TIA also alleges that the Commission has based its decision to remove point-to-point FS service from the 28 GHz band allocation substantially on the ground that this band has not been used and no point-to-point demand has been shown. But, according to TIA, Harris and Digital have each made showings that demand exists. Moreover, it notes that "the spectrum available for short-haul microwave services has steadily diminished over the past four years just as the critical need for such services has climbed."¹⁵⁶

88. According to TIA, our proposal for FS service in the 28 GHz band will not work. First, it contends, the proposal will not work because there are no service rules for FS services and because applications for intermediate microwave links are not subject to auction.¹⁵⁷ Second, it claims that for LMDS and point-to-point microwave to coexist, the Commission must redefine the spectrum allocation to specify part of the spectrum for LMDS backbone links (spectrum used to interconnect cells), which TIA believes could be shared with traditional point-to-point uses.¹⁵⁸

89. TIA also argues that our suggestion that geographic partitioning or spectrum

¹⁵³ In the Matter of Rulemaking to Amend Part 1 and Part 21 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band and to Establish Rules and Policies for Local Multipoint Distribution Service, Notice of Proposed Rulemaking, Order, Tentative Decision and Order on Reconsideration, 8 FCC Rcd. 557 (1993).

¹⁵⁴ *Third NPRM*, ¶¶ 51-53.

¹⁵⁵ TIA Comments at 4-11.

¹⁵⁶ *Id.* at i.

¹⁵⁷ *Id.* at 12-13.

¹⁵⁸ *Id.* at 12-14.

disaggregation would work for point-to-point uses is flawed because LMDS providers are free to hoard unused frequencies, or to charge exorbitant rates for the use of such frequencies. Besides, TIA claims, there is no evidence that LMDS's point-to-multipoint feature and point-to-point services are compatible.¹⁵⁹

90. To resolve this dilemma, TIA recommends that the Commission dedicate 500 MHz of the 28 GHz band (28.35 -28.6 GHz and 29.25 - 29.5 GHz) to FS services on a shared, co-primary basis with FSS and MSS services and 300 MHz (28.2 - 28.35 GHz and 29.1 - 29.25 GHz) on a shared, co-primary basis with LMDS backbone links.¹⁶⁰ The second part of this proposal would require us to designate a portion of the proposed LMDS assignment to backbone usages.

91. Hughes and CTA urge the Commission to dismiss the claim of FS service proponents that the Commission has failed to address their spectrum needs. Hughes notes that the Commission has preliminarily determined that the spectrum needs of FS licensees can be satisfied in other bands.¹⁶¹

92. Hughes strongly opposes allowing FS services to operate on a co-primary basis in that portion of the band now designated for FSS. Hughes contends that the proposed band plan requires it to share spectrum with MSS feeder links, and to lose access to 1.5 GHz of previously available spectrum to assist in resolving terrestrial coordination problems.¹⁶² If FSS operators are required to also coordinate with terrestrial services, use of the FSS 1 GHz of remaining spectrum would be further constrained.¹⁶³ CTA also notes FS operations are incompatible with those proposed for LMDS, FSS, and MSS feeder links in the 28 GHz band.¹⁶⁴ The introduction of another incompatible assignment at this time would only serve to further delay the resolution of the band plan and delay or preclude the implementation of many of the proposed advanced services.¹⁶⁵ Similarly, CellularVision argues that the TIA proposal is inconsistent with the needs of LMDS operators. In its view, LMDS licensees should have the discretion to use any portion of their spectrum for backbone links, because such decisions will depend on the technology deployed, the number of LMDS operators per service area, the location of MSS feeder link stations, and a number of other factors. CTA

¹⁵⁹ *Id.* at 13-14.

¹⁶⁰ *Id.* at 14-18.

¹⁶¹ *Id.* at 21; *see also* CellularVision Reply Comments at 12-13.

¹⁶² *Id.* at 23; *see also* Loral Reply Comments at 2-3.

¹⁶³ Hughes Reply Comments at 23.

¹⁶⁴ *See also* Motorola Satellite Communications, Inc. and Iridium, Inc. Joint Reply Comments at 19-21.

¹⁶⁵ CTA Reply Comments at 6.

contends that there is sufficient alternate spectrum available for FS operations, particularly in the 39 GHz band.

93. We decline to designate any portion of the 28 GHz band as primary for point-to-point microwave use. As we have noted, the proponents for fixed microwave services (FS) have not provided persuasive information to support such action. The claim that there is insufficient point-to-point microwave spectrum allocated for FS lacks merit. We acknowledge that the potential number of users for the 4, 6, and 11 GHz bands has increased as a result of other Commission actions and that numerous requests are filed in the 6 and 11 GHz bands. However, the fact that all new FS applications filed in these bands have been granted, suggests that there is ample spectrum available to meet FS service demands.¹⁶⁶ Moreover, for short haul routes, there are assignments available in the 18, 23, and 39 GHz bands. These bands represent almost 8 GHz of spectrum for FS. In addition, in ET Docket No. 92-9,¹⁶⁷ the Commission redesignated the 10 GHz band for point-to-point microwave use, and in ET Docket No. 95-183,¹⁶⁸ the Commission proposed to provide another 1.6 GHz of FS spectrum in the 37.0-38.6 GHz band. We also note that there is a trend among major long haul carriers to rely less on point-to-point microwave facilities to render their services, suggesting that more spectrum will become available in the 4, 6, and 11 GHz bands, particularly in metropolitan areas. Given the capability of FS networks to make effective and efficient reuse of spectrum, we conclude, based on the current record, that sufficient spectrum is available to meet FS requirements for the foreseeable future.

94. We have noted in this proceeding that the 28 GHz band had been fallow for a significant period of time. TIA argues that the FS industry failed to use the spectrum because of the lack of a frequency channelization plan. This argument is not persuasive given the history of developments in other FS bands, which the point-to-point microwave industry performed extremely well for years without codified channel plans.¹⁶⁹ We further note that, although no formal 28 GHz channel plan exists, FS operators were not precluded from applying for channel assignments, and manufacturers were not precluded from developing and marketing such equipment. For these reasons, we believe TIA's argument lacks merit.

¹⁶⁶ For example, over the past four years in the Common Carrier FS Service, we have received an average of 5,740 applications per year. Of these, more than 38 percent include requests for new frequencies, all of which we have granted.

¹⁶⁷ *Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies, Second Report and Order* in ET Docket No. 92-9, 8 FCC Rcd 6495, 6499-6511 (1993).

¹⁶⁸ *In the Matter of Amendment of the Commission's Rules Regarding the 37.0-38.6 GHz and 38.6-40.0 GHz Bands and Implementation of Section 309(j) of the Communications Act -- Competitive Bidding, 37.0-38.6 GHz and 38.6-40.0 GHz, Notice of Proposed Rulemaking and Order*, ET Docket No. 95-183 and PP Docket No. 93-253, FCC 95-500, Released December 15, 1995.

¹⁶⁹ The Commission did not codify channelization plans for the 4, 6, and 11 GHz bands until August 13, 1993. See *Second Report and Order* in ET Docket No. 92-9 at 6535-6555.

IV. FOURTH NOTICE OF PROPOSED RULEMAKING

A. Proposal to designate the 31.0-31.3 GHz band for LMDS

1. Introduction

95. By this action, we propose to designate, on a primary protected basis, the 31.0-31.3 GHz (31 GHz) band to LMDS.¹⁷⁰ We propose to designate this band for both hub-to-subscriber and subscriber-to-hub transmissions. This action stems from efforts to accommodate a variety of LMDS system designs, services and transmission media in the adjacent 28 GHz band,¹⁷¹ and is being taken on our own motion.¹⁷² This proposed designation of spectrum for LMDS would provide consumers access to more choices in service providers, new services, and innovative technologies, while accommodating those LMDS system designs requiring a wide separation between the transmit and receive frequencies when operated in a two-way mode.

2. Background

96. Currently, the 31 GHz band is allocated on a primary basis to non-Government fixed and mobile services and on a secondary basis to both the Government and non-Government standard frequency and time signal satellite downlink operations. Our current rules pertaining to this band do not provide interference protection to any operations in this band.

97. In the attached *Report and Order*, we adopt a frequency band segmentation plan which designates 1000 MHz of spectrum in the 28 GHz frequency band for LMDS. One segment of that, 150 MHz, is to be shared by LMDS on a co-primary basis with NGSO/MSS feeder links in the 29.1-29.25 GHz segment of the band and is limited to LMDS hub-to-

¹⁷⁰ See Sections 21.701(k), 74.602(h), 78.18(a)(5), 94.65(n), and 95.1(b) of our Rules, 47 C.F.R. §§ 21.701(k), 74.602(h), 78.18(a)(5), 94.65(n), & 95.1(b). Our proposal to designate LMDS as a primary "protected" use at 31 GHz means that LMDS service providers will be entitled to interference protection from any other current authorized primary user of this band.

¹⁷¹ In the matters of Rulemaking to Amend Part 1 and Part 21 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band and to Establish Rules and Policies for Local Multipoint Distribution Service, 8 F.C.C. Rcd. 557; *Id.*, 9 F.C.C. Rcd. 1391 (1994); 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 and Suite 12 Group Petition for Pioneer's Preference, CC Docket No. 92-297 and PP-22, 11 F.C.C. Rcd. 53 (1995).

¹⁷² Section 1.1 of the Commission's Rules, 47 C.F.R. § 1.1.

subscriber transmissions.¹⁷³ The other 850 MHz is located in the 27.5-28.35 GHz band, where LMDS is the primary designation with FSS designated secondary licensing priority. The record developed in this proceeding indicates potential LMDS operators contemplate offering two-way services between hubs and subscribers. Our 28 GHz band plan does not permit, at this time, two-way LMDS communications in the 29.1-29.25 GHz band.¹⁷⁴ Thus, without additional unencumbered spectrum, some proposed LMDS systems would not be able to provide the full panoply of two-way services anticipated. In this proceeding, we have recognized the potential value of LMDS in enabling real competition in the local telephony and MVPD markets, and we seek to enable a variety of LMDS technologies to be offered.

98. In the *Third NPRM*, we proposed to designate the 29.1-29.25 GHz band segment for assignment to NGSO/MSS feeder links and LMDS systems on a co-primary basis. In this 150 MHz, we based our proposed sharing criteria on an agreement on frequency sharing reached by Motorola, CellularVision, and Texas Instruments during the LMDS/FSS 28 GHz band Negotiated Rulemaking.¹⁷⁵ As a result, we proposed specific sharing rules for hub-to-subscriber transmission.¹⁷⁶ Although this agreement provided that subscriber transceivers would not be permitted to transmit in this shared band, we did suggest in the *Third NPRM* that it may be possible to permit LMDS subscriber-to-hub transmissions in the 150 MHz of the shared spectrum under certain sharing criteria.¹⁷⁷ After numerous comments, and meetings and discussions with LMDS and NGSO/MSS feeder link proponents, it appears that undesirable sharing constraints would need to be placed on either Motorola's Iridium uplink receivers or LMDS transmitters in order to enable sharing in the subscriber-to-hub direction. Other attempts to accommodate LMDS subscriber-to-hub transmissions have been unsuccessful as well.¹⁷⁸ Nevertheless, we consider it important to accommodate those LMDS proponents who note that a non-contiguous segment of the band would actually be desirable for isolating at least some of the inbound subscriber channels from the outbound channels.¹⁷⁹ Thus, in the attached *Report and Order* we do not permit LMDS subscriber-to-hub transmissions in the 29.1-29.25 GHz band, but indicate we would revisit this limitation should LMDS providers or LMDS equipment manufacturers be able to demonstrate that LMDS can

¹⁷³ See *infra* ¶¶ 67-71.

¹⁷⁴ *Id.*

¹⁷⁵ See Report of the LMDS/FSS 28 GHz band Negotiated Rulemaking Committee, Addenda. See also *Report and Order* at ¶¶ 34.

¹⁷⁶ See *Third NPRM* at Appendix B.

¹⁷⁷ See *Third NPRM* at ¶ 63.

¹⁷⁸ See *Report and Order* at ¶¶ 38-40.

¹⁷⁹ See, e.g., Comments of Endgate Corporation at 1; Comments of Pacific Telesis Wireless Broadband Services at 2.

share, through mutually agreed upon criteria, on a non-interference basis with MSS feeder links in this band segment.¹⁸⁰

99. In a rulemaking proceeding, Gen. Docket No. 82-334,¹⁸¹ we adopted a plan designed to satisfy various types of short range, fixed and mobile communications requirements in the 31 GHz band. For example, a common carrier could utilize this band to establish a temporary radio link to bypass an existing cable facility which had been disrupted. A broadcaster or cablecaster needing to establish a radio link between a television camera and a mobile relay station could find this band equally valuable. According to our databases and *ex parte* comments,¹⁸² existing use of the 31 GHz band is relatively light and is concentrated in only a few areas of the country. The majority of licensees in this band are local governments using the band to monitor and control traffic light facilities. In addition, it appears that a few licensees are using this spectrum for local area networks (LANs).

3. Discussion

100. In order to ensure that there is adequate two-way interactive capacity for the various proposed LMDS systems, we recognize the need to designate additional spectrum for LMDS. There is significant consumer demand for alternate providers of local exchange services, internet access, LANs and video teleconferencing. The LMDS proponents note that this demand can be more immediately satisfied, in an economically and technically efficient manner, by LMDS than by many of the alternate transmission media, thus making these services more accessible rapidly to a wider segment of the population. The proposed designation of 300 MHz of spectrum would ensure consumers access to new and competitive services and technologies. Further, through written *ex parte* comments, several LMDS proponents highlighted some technical difficulties with using the 31 GHz band, *e.g.*, need for two antennas to deliver the desired service, effects on performance level, and increased system costs.¹⁸³ We request that parties address our proposal to make the LMDS service a primary protected use in the 31.0-31.3 GHz band, the technical issues LMDS operators might encounter in using this band, and possible measures that may be used in overcoming such technical issues.

101. While we do not address generally those issues relating to LMDS service rules,

¹⁸⁰ See *Report and Order* at ¶ 71. As indicated in the *Report and Order* at ¶ 39 we also pursued sharing with NASA at 28 GHz.

¹⁸¹ *Establishment of a Spectrum Utilization Policy for the Fixed and Mobile Services' Use of Certain Bands between 947 MHz and 40 GHz, Second Report and Order (Second Report and Order)*, 50 Fed. Reg. 7338 (1985).

¹⁸² See, *e.g.*, Hewlett Packard Letter dated June 18, 1996; Texas Instruments Letter dated June 19, 1996.

¹⁸³ See *e.g.*, CellularVision Letter of March 29, 1996; Hewlett Packard Letter of March 29, 1996; Wiley, Rein & Fielding Letter of April 23, 1996, on behalf of Texas Instruments.

licensing policies, or technical requirements raised in the *Third NPRM*, we seek comment on how to assign this additional spectrum to LMDS entities. Should it be treated as a separate block and assigned independently of other LMDS spectrum? Or should it be combined with spectrum assigned in the attached *Report and Order* for LMDS operations and assigned as a single block? We propose that the 31 GHz spectrum and the 1000 MHz designated in the attached *Report and Order*, be assigned as a single block. We believe it is vital to the LMDS industry to commence the licensing process as soon as possible, and thus intend to resolve all remaining issues on an expedited timeframe.

102. As noted in paragraph 101, there are existing licensees operating in this band, some of which are engaged in traffic signal communications, *i.e.*, traffic light monitoring and control. As stated earlier, existing usage appears to be relatively light and geographically concentrated. Overlaying LMDS operations in those areas where there are such uses raises the potential for interference problems which could degrade the utility of such systems and perhaps adversely affect LMDS operations. We point out, however, that our current rules explicitly provide that authorized operations at 31 GHz are not afforded any rights or obligations with respect to interference with other licensed operations.¹⁸⁴ This means that a licensee choosing to place its operations in this band is not entitled to protection from interference by any other licensee regardless of whether the interfering licensee was authorized prior or subsequent to the licensee receiving interference. Thus, we believe that any operations that an entity believes are critical in nature and should otherwise warrant interference protection should be operated in a frequency band where such necessary protection is provided for in our rules.¹⁸⁵ One band where these types of operations are permitted is the 23 GHz band. However, because systems in the 23 GHz band receive interference protection, new systems are subject to the prior coordination requirements of Section 101.103(d). We ask what effect these requirements will have on 31 GHz systems moving to the 23 GHz band. We also note that mobile operations are permitted in the 31 GHz band but are not permitted in the 23 GHz band. We are not aware of any existing mobile operations in the 31 GHz band but ask what effect, if any, this will have in moving current fixed operations to the 23 GHz band. Given that incumbents are only authorized to operate on a non-interference basis, should they be entitled to any recovery for reasonable relocation costs? If so, should any of the 28 GHz band applicants be required to contribute to the recovery of such reasonable costs?

103. Our proposal to make LMDS a protected service in this band presupposes that incumbent licensees continue to operate on a unprotected basis, in this instance, "secondary" to LMDS. In the event one of the unprotected operations interferes with, or receives interference from, an LMDS system, the unprotected licensees must take steps to remedy the problem, or accept the resulting interference if it is operating the affected receiver or transmitter. Although the incumbent licensees have assumed all the risks of receiving

¹⁸⁴ See n. 170.

¹⁸⁵ *Second Report and Order* at ¶ 10.

interference, given the nature of some of these operations, we seek comment on whether there are any methods by which their operations could be accommodated without delaying, causing interference to, or limiting the usefulness of LMDS services in this band. In light of the proposed "secondary" nature of the non-LMDS fixed services in this band, we believe it is also appropriate to seek comment on whether we should accept any new applications, modifications, or renewal applications in the 31 GHz band.

104. Consistent with our intent to allow the rapid deployment of LMDS, we encourage cooperation among the LMDS providers and existing licensees in exploring any methods which would allow the services to coexist, but that would not impose any economic or technical burdens on the LMDS providers. For example, would the LMDS licensees have sufficient capacity to accommodate the existing licensees as customers of their services? Or are there existing mechanisms that will permit all of these services to share the entire band without imposing any economic burdens on LMDS? Or are there other options we should consider? In commenting on this request, we ask that any recommendation advocating sharing include the supporting technical analysis.

B. LMDS Eligibility

1. Introduction; Executive Summary

105. We also seek comment on eligibility of LECs and cable operators to obtain LMDS licenses in the geographic areas they serve. Throughout this proceeding we have examined the relationship between ownership and control of LMDS licenses and competition in the local exchange and multichannel video programming markets. Commenters have had opportunities to address whether open eligibility for LMDS licenses would be likely to impede or hasten competition.¹⁸⁶ The current record of this proceeding, however, was developed prior to enactment of the Telecommunications Act of 1996 (1996 Act). One of the key objectives of the 1996 Act is to expedite the introduction of competition to incumbent LECs and cable companies. In carrying out this statutory mandate, we consider it important to obtain specific comment on how our policies towards LMDS eligibility would best promote the competitive objectives of the 1996 Act. In addition, the number of *ex parte* comments received on this issue after the close of the comment period convince us that further comment is warranted.

106. We continue to view LMDS as an important potential source of competition in both the local exchange and multichannel video programming markets. Unlike the Direct Broadcast Satellite Service, where our rules seek to ensure that there will be independent providers at each of the three orbital locations that serve the continental United States, our proposed rules contemplate only a single LMDS licensee in each service area. Accordingly, in the same market, there will be no competition among multiple LMDS licensees, although some competition may develop among providers of similar services via alternative

¹⁸⁶ See, e.g., *Third Notice*, 11 FCC Rcd 53 (1995).

transmission technologies. It therefore is appropriate to consider measures to ensure that the unprecedented amount of spectrum assigned to each LMDS license will be used to enhance the competitive provision of services in these highly concentrated markets. In this regard we seek comment on whether we should temporarily restrict eligibility for incumbent LECs and cable companies that seek to obtain LMDS licenses in their geographic service areas.

2. Background

a. Notice

107. In the Notice of Proposed Rulemaking that initiated this proceeding, we proposed to license two equal competitors in every LMDS service area and not to restrict the ability of specific types of telecommunications providers to obtain LMDS licenses.¹⁸⁷ In the *Third NPRM*, we proposed only a single LMDS license for each service area and sought additional comment on the eligibility issue.¹⁸⁸ We requested comment on whether Commercial Mobile Radio Service (CMRS) providers and MMDS licensees should be eligible to acquire LMDS licenses. We also sought comment on LEC and cable participation in LMDS.¹⁸⁹

108. With respect to the eligibility of LECs to obtain the single LMDS license in their service area, we tentatively concluded that the Communications Act did not prohibit a LEC from acquiring an LMDS license.¹⁹⁰ We sought comment, however, on whether allowing a LEC to acquire the LMDS license in its service area would eliminate an important source of new competition in the local exchange market. We also asked whether the LECs would be likely to acquire LMDS spectrum as a means of forestalling competitive entry into the local exchange market by warehousing spectrum or diverting it to less competitive uses. We also sought comment on competitive issues raised by LEC plans to offer video services to the telephone subscribers of their wired plant. As an alternative approach to eligibility restrictions, we asked whether our proposed build-out requirements would mitigate these competitive concerns, and what other actions we might take to address them.

109. In analyzing the possible competitive impact of cable television ownership of LMDS within its cable franchise area, we tentatively concluded that there are no statutory or regulatory restrictions that prohibit a cable operator from holding an interest in an LMDS licensee.¹⁹¹ We asked for comment on whether cable operators acquiring LMDS within their

¹⁸⁷ *First Notice*, 8 FCC Rcd 557 (1993).

¹⁸⁸ *Third NPRM* at ¶¶ 97-108.

¹⁸⁹ *Third NPRM* at ¶¶ 103-106.

¹⁹⁰ *Third NPRM* at ¶ 104.

¹⁹¹ *Id.*

cable franchise area would have the incentive and ability to inhibit the full deployment of LMDS facilities that compete with their wired cable facilities, for example, by warehousing spectrum or diverting it to less optimal uses. Conversely, we also asked for comment on whether LMDS spectrum might enable cable companies to provide a new competitive source of local exchange service.

b. Comments

110. Comments regarding eligibility center on the competitive implications of telephone companies or cable television companies obtaining the LMDS license in their current service areas. Most parties addressing this issue support unrestricted eligibility for LECs and cable operators. Two parties, however, argue for eligibility restrictions barring LEC and cable participation in areas of current operations, and some parties take intermediate positions. No party argues that there are existing legal restrictions on a LEC or cable operator acquiring a LMDS license in their service area.

111. Most commenting parties, particularly the incumbent LECs, argue that there is no policy-based reason to restrict LECs from holding the LMDS licenses in their service area and that LEC participation is in the public interest.¹⁹² All but one commenter agree with our tentative finding that no existing statutory or regulatory restrictions prohibit a cable company from acquiring an interest in an LMDS license in its existing service area.¹⁹³ Both the Joint Parties and NCTA, for example, note that Congress could have, but did not, create a cable-LMDS ban when it passed the 1992 cable-MMDS cross-ownership ban. GTE, however, believes that Section 613(a) of the Communications Act does apply to LMDS licenses.¹⁹⁴

112. BellSouth argues, for example, that given the combinations of services that may be provided using LMDS, and the Commission's stated intent to foster diversity of services and technology in the provision of LMDS, no class of potential providers should be excluded from eligibility. NYNEX argues that the ability to use this spectrum to provide video, telephony, and other services favors competition from all prospective providers. The parties supporting unrestricted eligibility also argue generally that restrictions would stifle competition, prevent competitors from using an efficient mix of technologies and discourage investment by the very entities best equipped to become viable competitors through the use of

¹⁹² Ameritech Comments at 3; Bell Atlantic Comments at 6; BellSouth Comments at 9-10; GTE Comments at 8-9; NYNEX Comments at 2; PTWBS Comments at 2; TI Comments at 18. Note, however, that GTE's opposition to restricting the eligibility of telephone companies in their current markets is based on its recommendation that there be two LMDS licenses in each region. Given the presumption of two licenses, GTE argues that it will not be anticompetitive for the LEC to hold one of them. Competitive pressure would be provided by the other LMDS licensee.

¹⁹³ Ameritech Comments at 2-3; Cox Enterprises, Inc., Comcast Corporation, and Jones Intercable, Inc. (collectively the "Joint Parties") Comments at 3-4; NCTA Comments at 3-4; TI Comments at 17-18.

¹⁹⁴ GTE Comments at 9.

LMDS spectrum. In addition, they claim that opposition to eligibility restrictions is supported by Congress' decision in the Cable Act not to impose a cable-DBS cross-ownership restriction; that because the LMDS licenses will be auctioned, there will be no incentive for license winners to warehouse the spectrum; and, that most LEC service areas are smaller than the license areas being considered here, so that LECs could legitimately use LMDS to extend their current service.

113. As is the case for LEC eligibility, most commenting parties also argue that there is no policy reason to restrict cable operator participation in LMDS auctions, and that such participation is in the public interest.¹⁹⁵ Many parties make the same arguments for cable eligibility that they made for LEC eligibility. In addition, the Joint Parties and NCTA argue that the considerations which led Congress to the cable-MMDS ban are not present today because the increase in competition faced by cable operators since the 1992 ban was enacted has entirely changed the market faced by cable operators. These parties conclude that cable firms have no market power, and thus no incentive to attempt to quash LMDS as a market alternative. These parties further assert that upon a comparison of the average BTA and the average cable franchise, cable operators will have *de minimis* overlap, and *de minimis* market power for any one service throughout a BTA. They argue that the prospect of a cable-LMDS combination does not raise the concerns present with cellular-PCS cross ownership. They contend that the Commission decided not to preclude LECs from owning and operating PCS facilities in their service area, despite the fact that PCS offerings constitute potential competition to LECs, because LEC participation in PCS would produce significant economies between wireline and PCS networks and promote rapid development of PCS services. BellSouth and Summit argue that if the Commission does impose a cable television eligibility ban, it should apply only to the dominant cable company in each service area.

114. Two parties oppose allowing LECs and cable operators to bid on LMDS licenses in the areas where they currently provide service.¹⁹⁶ M3ITC states that telephone companies currently provide all forms of telephony, including video teleconferencing, and that they have been granted authority to provide video programming as well. If such companies are permitted to be LMDS licensees, M3ITC argues, there is less likelihood that these services will be competitive, and development of the fiber optic telecommunications highway envisioned by the Commission may be threatened. M3ITC claims that failure to adopt an ownership restriction could result in "[a]llowing the telephone companies to own a second delivery system that might otherwise provide healthy competition to its telecommunications and video dialtone services." Further, M3ITC argues that open eligibility would harm the public interest by preventing small business entrepreneurs from participating in LMDS in a

¹⁹⁵ Ameritech Comments at 3; Bell Atlantic Comments at 6; BellSouth Comments at 10; Joint Parties Comments at 4-5; NCTA Comments at 4-6; NYNEX Comments at 2; PTWBS Comments at 2; Summit Comments at 1; TI Comments at 18.

¹⁹⁶ M3ITC Comments at 4-5; Emc³ Comments at 7-8. M3ITC also asks the Commission to consider a restriction against MMDS licensees obtaining LMDS licenses.

meaningful way.

115. Emc³ notes that residential markets are currently dominated by LECs, and asserts that because of this dominance it generally would be anticompetitive to allow these firms to hold LMDS licenses in the same service areas, and that obtaining such licenses would enable LECs to deter the introduction of competition. Instead of a complete ban on LEC participation in LMDS, Emc³ proposes that LECs should be eligible to hold a single 50 MHz license, which would allow them to supplement their existing systems with interactive capability or other features. Emc³ claims that this restriction would be consistent with past Commission decisions prohibiting cable firms from holding MMDS licenses within their franchise areas and prohibiting cellular firms from holding PCS licenses within their service areas.

116. CTA does not believe that any particular industry should be precluded from acquiring a LMDS license. CTA argues that the presence of established telecommunications companies will help lower equipment costs and raise the acceptability of LMDS in the marketplace. To guard against anticompetitive consequences, CTA recommends that LECs that win LMDS licenses "that cover any part of or any area immediately adjacent to their existing territory" be subject to more stringent build-out requirements. Specifically, CTA proposes that these incumbent service providers must make service available to 40 percent of the population within three years, and 70 percent of the population within six years. CTA argues that this proposal is consistent with the Commission's goal when developing rules for PCS auctions and service to foster entry and competition to the maximum degree possible.¹⁹⁷

117. CellularVision makes the general statement that the Commission should promote maximum competition among service providers and that it should encourage new entrants and diversity in the telephone industry.¹⁹⁸ In a letter to the Commission dated March 29, 1996, CellularVision amends its position on eligibility. It argues that the regional "Bell" operating companies (plus affiliates) and the ten largest cable systems (plus affiliates) should each be limited to acquiring a single LMDS license that is not within its current service area. Similarly, RioVision asks that the Commission weigh carefully implementation of cross-ownership restrictions for telephony providers to enable entrepreneurial LMDS licensees the maximum opportunity to furnish competition to those firms.¹⁹⁹ Titan also requests generally that the Commission adopt rules which will foster long-term competition within the multichannel television distribution markets served by LMDS operators.²⁰⁰

¹⁹⁷ CTA extends its argument to cable TV companies and MMDS licensees, as well.

¹⁹⁸ CellularVision Comments at 19.

¹⁹⁹ RioVision Comments at 3.

²⁰⁰ The general statements by CellularVision, RioVision, and Titan apparently include concern about participation by CMRS and cable TV firms as well. RioVision's and Titan's statements also apparently extend to MMDS licensees. However, no analysis of the impact of permitting these categories of firms to

118. BellSouth responds to M3ITC's argument that eligibility restrictions should encourage entry of smaller firms by noting that there are a number of technologies available besides LMDS that smaller firms could use to provide multichannel video programming, and that no bottlenecks exist preventing entry using these technologies. BellSouth also claims that a large capital investment will be required to construct an LMDS system for a BTA, which small firms might find difficult to finance. Finally, BellSouth argues that M3ITC ignores the fact that telephony will be only a secondary use of LMDS spectrum.

c. 1996 Act

119. The 1996 Act contains a number of provisions designed to facilitate the entry of LECs and cable operators into each others' markets. The cable-telephone cross-ownership ban was eliminated.²⁰¹ Local franchise authorities were prohibited from imposing a franchise requirement or otherwise prohibiting, restricting, or limiting the ability of a cable operator to provide telecommunications services.²⁰² The video dialtone regulations, which previously governed LEC provision of video programming by means of cable systems in their telephone service areas, were also eliminated, and replaced by the "open video system" regime.²⁰³ With respect to incumbent LECs, the 1996 Act creates a number of positive incentives for the rapid introduction of new, facilities-based providers of local exchange service.²⁰⁴ Finally, to ensure future competition between telephone and cable operators, these entities with certain limited exceptions were prohibited from acquiring more than a 10 percent ownership interest in each other, and from engaging in joint ventures or partnerships to provide either telephony or video distribution.²⁰⁵ The overall statutory scheme contemplates vigorous competition between LECs and cable operators, with appropriate safeguards to avoid elimination of potential sources of competition. Another important purpose of the 1996 Act is to facilitate the entry of new players in competition with both LECs and cable operators.

120. After the enactment of the Telecommunications Act a number of parties filed *ex parte* comments in which they argue that incumbent LECs and cable companies should not be eligible to bid for the single LMDS license in their service areas. MCI Telecommunications Corp. (MCI) and WebCel Communications, Inc. argue that LECs and major cable television Multiple System Operators ("MSOs") have substantial economic incentives to forestall

acquire LMDS licenses in their service areas is included in the comments and no recommendation of a cross-ownership restriction is made.

²⁰¹ Section 301(b)(1) of the 1996 Act.

²⁰² Section 303 of the Act.

²⁰³ *See generally*, 47 U.S.C. §§ 571 et. seq. and 47 U.S.C. 573.

²⁰⁴ *See generally*, Sections 302, 402(B)(2), and 706 of the Act.

²⁰⁵ *See generally*, Section 652(a)(b)(c).

deployment of LMDS as a direct substitute for their facilities-based, monopoly networks.²⁰⁶ Specifically, WebCel argues that the Telecommunications Act clarifies Congressional intent that monopolies should not have power to exclude competitors from access to subscribers through discriminatory interconnection (citing Section 251), or by buying facilities-based competitors to prevent competition in that manner (citing Section 652). Accordingly, WebCel proposes that LMDS regulations require:

- (a) Auction eligibility rules precluding LECs and MSOs from bidding for LMDS spectrum until there is effective, facilities-based competition for each within each of their local service areas.
- (b) License transfer and assignment prohibition for LECs and MSOs until effective, facilities-based competition exists.
- (c) Licensing regulations that limit LEC and MSO investment in designated entities or other preferred auction participants, who bid for LMDS spectrum within the same monopoly service areas.

121. WebCel goes on to argue that a number of facts make LMDS a unique and valuable resource for creating the type of telecommunications capabilities promoted by the Telecommunications Act. It states that first, LMDS is truly broadband, capable of "massive voice and data throughput; second, that because service is fixed, it is better positioned than mobile services such as PCS and cellular to offer a viable alternative to cable and fiber networks; third, LMDS is a local application for which the licensees will stand on their own without the need for roaming agreements or national standards; and fourth, LMDS is positioned to be a full-service substitute for core LEC and MSO services.

122. Finally, WebCel argues that relying on auction competition will not ensure a fair outcome if monopoly carriers are allowed to participate, because monopoly carriers will value their auction process based on the opportunity cost of lost monopoly profits and market share. It charges that the record does not contain evidence that LECs or MSOs could attain economies of scope using LMDS spectrum, and it argues that build-out requirements are insufficient to ensure that the monopoly carriers will not effectively warehouse spectrum by ensuring that it is not used for facilities-based local competition.

123. Similarly, MCI advocates a complete ban on LEC and MSO participation in auctions for LMDS spectrum or on the holding of an attributable interest, in any license area which overlaps any of their local telephone or cable franchise area.²⁰⁷ MCI also suggests that

²⁰⁶ Letter to Hon. Reed E. Hundt, filed April 16, 1996, from Glenn B. Manishin, Esquire, on behalf of WebCel, ("WebCel April 16 Letter"), at 1. Letter to Hon. Reed E. Hundt, filed May 24, 1996, from Donald F. Evans, Vice-President, Federal Regulatory Affairs, MCI Telecommunications Corporation ("MCI Letter").

²⁰⁷ MCI Letter at 1.

they be prohibited for the initial LMDS license term, or at a minimum until effective competition exists as determined by the Commission, from the post-auction acquisition of any attributable interest in an LMDS operator in an overlapping service area.²⁰⁸

124. Comments filed by the Attorneys General of Pennsylvania, Minnesota and Wisconsin discussed their efforts to enforce anti-trust provisions against the cable industry vis-a-vis DBS.²⁰⁹ They argue that this experience has made them "sensitive to situations in which incumbent monopolists have an incentive to stifle competition." The Attorneys General argue that the Telecommunications Act clearly intends to facilitate and promote local competitive entry, and that LMDS is an excellent way to promote this competition. They state that they have seen many merger and buy-out cases where a monopolist is "all too willing to pay or bid premium prices for the last remaining competitor to assure itself of future monopoly profits."²¹⁰ These comments were supported by a subsequent letter from Attorneys General of Delaware, Florida, Idaho, Iowa, Massachusetts, Missouri, Oklahoma, Virginia, and West Virginia.²¹¹

3. Discussion

125. In determining whether it would be in the public interest to restrict LEC or cable eligibility to obtain a LMDS license within their respective service areas, we consider whether LMDS will provide a unique and important new source of competition to incumbent cable and telephone companies. The record of this proceeding strongly supports the conclusion that LMDS is a potentially important source of competition to both LECs and cable operators. 28 GHz LMDS licenses will permit use of up to 1.3 GHz of spectrum by a single provider, and equipment is relatively close to marketability. While it is not possible to identify all potential uses of LMDS, licensees could use this unparalleled amount of spectrum to construct sophisticated networks that will incorporate aspects of many current telecommunications offerings. It also appears that LMDS is uniquely positioned to provide competitive telecommunications services and video program delivery because of its large potential for two-way broadband capabilities. In considering eligibility for LECs and cable operators within their geographic service areas one must weigh the potential for competition

²⁰⁸ *Id* at 2.

²⁰⁹ Letter to Hon. Reed E. Hundt, filed May 10, 1996, from Thomas W. Corbett, Jr, Attorney General of Pennsylvania, from James E. Doyle, Attorney General of Wisconsin, and from Hubert H. Humphrey, III, Attorney General of Minnesota.

²¹⁰ *Id*.

²¹¹ Letter to Hon. Reed E. Hundt, filed June 28, 1996, from M. Jane Brady, Attorney General of Delaware; Robert A. Butterworth, Attorney General of Florida; Alan G. Lance, Attorney General of Idaho; Tom Miller, Attorney General of Iowa; Scott Harshbarger, Attorney General of Massachusetts; Jeremiah W. Nixon, Attorney General of Missouri; Drew Edmondson, Attorney General of Oklahoma; James S. Gilmore, Attorney General of Virginia; and Darrell V. McGraw, Jr., Attorney General of West Virginia.